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Barriers and Drivers of Health Information Technology Use for the Elderly, Chronically Ill, and Underserved

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-Based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions and new health care technologies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

To bring the broadest range of experts into the development of evidence reports and health technology assessments, AHRQ encourages the EPCs to form partnerships and enter into collaborations with other medical and research organizations. The EPCs work with these partner organizations to ensure that the evidence reports and technology assessments they produce will become building blocks for health care quality improvement projects throughout the Nation. The reports undergo peer review prior to their release.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the health care system as a whole by providing important information to help improve health care quality.

We welcome comments on this evidence report. They may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by e-mail to **epc@ahrq.gov.**

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Structured Abstract

Objectives: We reviewed the evidence on the barriers and drivers to the use of interactive consumer health information technology (IT) by specific populations, namely the elderly, those with chronic conditions or disabilities, and the underserved.

Data Sources: We searched MEDLINE®, CINHAHL®, PsycINFO®, the Cochrane Controlled Trials Register and Database of Systematic Reviews, ERIC, and the American Association of Retired Persons (AARP) AgeLine® databases. We focused on literature 1990 to present.

Methods: We included studies of all designs that described the direct use of interactive consumer health IT by at least one of the populations of interest. We then assessed the quality and abstracted and summarized data from these studies with regard to the level of use, the usefulness and usability, the barriers and drivers of use, and the effectiveness of the interactive consumer health IT applications.

Results: We identified and reviewed 563 full-text articles and included 129 articles for abstraction. Few of the studies were specifically designed to compare the elderly, chronically ill, or underserved with the general population. We did find that several types of interactive consumer health IT were usable and effective in multiple settings and with all of our populations of interest. Of the studies that reported the impact of interactive consumer health IT on health outcomes, a consistent finding of our review was that these systems tended to have a positive effect when they provided a complete feedback loop that included (a) monitoring of current patient status, (b) interpretation of this data in light of established, often individualized, treatment goals, (c) adjustment of the management plan as needed, (d) communication back to the patient with tailored recommendations or advice, and (e) repetition of this cycle at appropriate intervals. Systems that provided only one or a subset of these functions were less consistently effective.

The barriers and drivers to use were most often reported as secondary outcomes. Many studies were hampered by usability problems and unreliable technology, primarily due to the research being performed on early stage system prototypes. However, the most common factor influencing the successful use of the interactive technology by these specific populations was that the consumers' perceived a benefit from using the system. Convenience was an important factor. It was critical that data entry not be cumbersome and that the intervention fit into the user's daily routine. Usage was more successful if the intervention could be delivered on technology consumers used every day for other purposes. Finally, rapid and frequent interactions from a clinician improved use and user satisfaction.

Conclusions: The systems described in the studies we examined depended on the active engagement of consumers and patients and the involvement of health professionals, supported by the specific technology interventions. Questions remain as to (a) the optimal frequency of use of the system by the patient, which is likely to be condition-specific; (b) the optimal frequency of use or degree of involvement by health professionals; and (c) whether the success depends on repeated modification of the patient's treatment regimen or simply ongoing assistance with applying a static treatment plan. However, it is clear that the consumer's perception of benefit,

convenience, and integration into daily activities will serve to facilitate the successful use of the interactive technologies for the elderly, chronically ill, and underserved.

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Appendixes and Evidence Tables are available electronically at
http://www.ahrq.gov/downloads/pub/evidence/pdf/hitbarriers/hitbar.pdf

Executive Summary

Background

Interactive consumer health information technology (health IT) promises to engage consumers and promote their active participation in improving their health. Interactive technologies provide health information and tools that are patient-centered, offering care and support that integrates individual needs and preferences into clinical information systems. Such technologies, by tailoring health information and delivering targeted care, have significant potential to foster patient self-care monitoring and management. As the evidence on health IT interventions increases, it is important to understand how specific target groups such as the elderly, those with chronic conditions or disabilities, and underserved populations are able to access, use, and benefit from these applications.

This report was prepared on behalf of the Agency for Healthcare Research and Quality (AHRQ), in response to a recommendation from the American Health Information Community. The systematic search conducted for this report focused on studies of *interactive* health IT used by consumers or patients, and targeted to our populations of interest. The report describes factors influencing the use, usefulness, and usability of interactive consumer health IT for elderly, chronically ill, and underserved populations. It also summarizes the scientific evidence on the effectiveness of interactive health IT applications and identifies gaps in research. By examining factors that influence the use and outcomes of interactive consumer health IT, the report provides a context for future inquiry in the study of applications designed for patients to participate more fully in their health care and health care decisions.

Methods

Our search for the published literature included structured searches of both standard and specialty bibliographic databases. We searched MEDLINE® (1950- Nov 2007), CINAHL® (1982-Feb 2008), PsycINFO® (1806-Feb 2008), the Cochrane Controlled Trials Register and Database of Systematic Reviews (1st quarter 2008), ERIC (1960- March 2008), and the American Association of Retired Persons (AARP) AgeLine® (1978-Dec 2007). We focused our review of citations from 1990 to present. We included studies of all designs that described the use of interactive consumer health IT by at least one of the populations of interest (elderly, chronically ill, or underserved). We then abstracted and summarized data from these studies with regard to key questions on:

1. Level of technology usage
2. Usefulness and usability of the technology
3. Barriers to technology use
4. Drivers and facilitators to technology use
5. Effectiveness of the technology

Our analytic framework, developed in consultation with AHRQ and a Technical Expert Panel, helped guide the systematic review process. We specifically searched for articles having primary or subgroup analyses of the following health IT user groups:

1. Elderly (over the age of 65 or functionally elderly)
2. Chronically ill (condition longer than 1 year that would benefit from treatment) or disabled (impairments leading to activity limitations)
3. Underserved (including underserved minorities, low-income populations, and medically underserved geographical regions)

It was important to clearly define health IT that was both interactive and intended to be used by patients or consumers. Included papers were those that examined technology meeting the following criteria:

1. A consumer interacts directly with the technology
2. The computer processes the information in some way
3. A consumer receives or has access to patient-specific information in return.

Using this definition led us to include technologies such as self-management systems providing tailored advice, personal health records with data from a provider's electronic medical record (EMR), tailored health education, and online support groups. We specifically excluded Web browsing of general health information databases, telemedicine systems which provide a simple conduit for communication between patient and health professional, and passive monitoring systems or electronic surveys without feedback to the patient.

Results

We identified a total of 8,522 abstracts, reviewed 563 full-text articles and included 129 articles for abstraction. Few studies were specifically designed to compare the elderly, chronically ill, or underserved populations with the general population. But in general, we did find evidence that several types of interactive consumer health IT were usable and effective in multiple settings and with all of our populations of interest.

The Level of Use of Interactive Consumer Health IT

In our review of studies having some description on the level of usage of interactive consumer health IT, we found that the data were limited and presented challenges. Measures related to usage varied considerably and offered no apparent standardization of terminology. We also found that the frequency of health IT usage needed to be placed in the context of expected or intended use of the technology.

Some studies reported on the frequency of participant use of technology over time, i.e., mean logins per subjects per month, or allowed an estimation of this measure. Collectively, such studies observed reductions in usage over time. Among studies of web-based interactive systems that offered usage frequency, findings ranged from less than 1 to as many as 27 mean logins per subject month. Empiric observation revealed that more highly used applications offered patient self-management tools and/or peer group support. Studies that compared the use of specific

components within an application found the most frequently used functions to be online peer group support, bulletin boards and self-management tools. These applications were tested across a variety of chronic conditions, including diabetes, tobacco use, chronic obstructive lung disease, and congestive heart failure.

The Usefulness and Usability of Interactive Consumer Health IT

Most studies providing information on the usefulness and usability of interactive consumer health IT systems addressed these issues as a secondary component of the study. However, the data indicated that usability played a key role in the use of these systems. Most researchers measured usefulness as part of their usability assessment, finding user perceptions generally rated high, especially for self-management systems. For each type of interactive consumer health information technology, the evidence offered examples that users believed were easy to use as well as those having usability issues. A small number of studies focused on usability testing early in design of the application. In these cases, the goal was to discover and fix usability issues early on in the process. Most issues had to do with graphics clarity and simplicity for older or impaired users.

Barriers to the Use of Interactive Consumer Health IT

The most frequent barrier to consumer use of interactive health IT across studies we examined was the lack of a perceived benefit. In several studies, lack of convenience was an important barrier. Specifically, patients were less likely to use systems requiring access to equipment or technology that did not fit seamlessly into their normal daily routines. Similarly, overly cumbersome data entry was perceived as a barrier. Several studies found that of the level and timeliness of clinician involvement with the system was directly associated with patient use; low clinician participation (when it was expected by the patient) led to low patient use. Technical issues often prevented consistent use of health IT systems, especially among studies conducted on early system prototypes. Finally, although subjects were often provided with the technology for a research trial, several studies identified that costs and access to the technology would serve as barriers to use of health IT beyond the study interval.

Drivers of the Use of Interactive Consumer Health IT

As a counterpoint to the findings above, the most frequent factor associated with increased use of the interactive health IT was the patient's perception of a health benefit. Most of the systems we reviewed were designed for use by patients with a chronic condition, and it was important that patients believed the system was helping them manage their condition. Convenience of access to the interactive technology, and the amount of time required for the intervention, were both factors driving technology use. Interventions found to be beneficial were those that were delivered on devices familiar to patients and used routinely for other purposes. Clinician involvement was a driver in patient use of the technology; furthermore, rapid response from a clinician was shown to increase patient satisfaction. Also, providing content tailored to an individual consumer was shown to increase both system use and satisfaction. Finally, an

important driver of technology use relating to older users was the gradual introduction of technology.

Effectiveness of Interactive Consumer Health IT

An important and consistent finding in this review was that systems were effective when they provided a complete feedback loop that included (a) monitoring of patient status; (b) interpretation of this data by comparison to individual treatment goals; (c) adjustment of management according to patient status; (d) timely communication to the patient of tailored recommendations or advice; and (e) repetition of this cycle at appropriate intervals. These "complete loop" interventions were effective across a wide range of conditions, technologies, geographical areas, and patients' socioeconomic status. Systems providing only one or a subset of these functions were less consistently effective. Systems that delivered reminders, alone or based on patient self-monitoring were not consistently effective. Systems offering online peer interaction, alone or as part of multi-component systems, were generally effective in improving intermediate outcomes but not health outcomes. Weak but consistent evidence showed that education or information alone had minimal effect on health outcomes. Online access to a patient view of the clinician's EMR did not improve outcomes, except when combined with tailoring or bi-directional information flow. When asked, in some cases patients expressed a strong preference for human interaction, even with systems that were effective. Many studies showed these systems to be effective in our specific populations of interest: elders, those with chronic illness, members of underserved populations. However, no direct comparisons of interactive health IT between a target population and the general population were identified.

Discussion

There were several challenges to reviewing interventions based on interactive consumer health IT, primarily due to the fact that the interventions being studied varied so widely. First, the underlying technology varied significantly and included Web-based applications, hand-held PDAs or cell phones, touch-screen computers or kiosks. Second, the systems were designed for a wide variety of purposes, not a single intervention. Even though we focused the review on systems for the elderly, chronically ill, and underserved populations, we covered many application areas, such as systems for diabetes, asthma, cancer, mental disorders, smoking cessation, and medication reminding. Children with chronic conditions were included in our review, and we found that they have very different types of usage issues and systems designed for them. Third, the frequency of intended use of the various systems could be quite different. Some were single-use interactive educational systems or decision aids. Others were intended for daily use in the home. Fourth, these systems varied widely in complexity, from simple systems providing a single function to complex systems with a robust suite of diverse features. Last, the embedded care protocols and the degree to which clinicians participated differed dramatically from study to study. All of these issues are critical when interpreting the results of these studies, and the variability in approaches demands caution in generalizing these results too broadly.

Few of the studies were specifically designed to compare the elderly, chronically ill, or underserved to the general population. But in general, we found that several types of interactive consumer health IT applications were usable and effective in many settings and with all of our

populations of interest. The most important and consistent finding regarding the effectiveness of these technology interventions was the benefit of systems that provided a complete feedback loop including assessment of current patient status, interpretation of this status information in light of established treatment goals or plans, and communication back to the patient with tailored recommendations or advice, repeated over time. Interactive consumer health IT applications that provided only one or a subset of these functions were less consistently effective.

The barriers and drivers to use were most often reported as secondary outcomes in these studies. Many studies were hampered by usability problems and unreliable technology, primarily due to the nature of research typically being performed on early stage system prototypes. But beyond this, the most common factor influencing the successful use of the interactive technology by these special populations was that the consumers perceived a benefit from using the system. Convenience was also an important factor. It was critical that data entry not be cumbersome and that the intervention fit into the user's daily routine. Usage was more successful if the intervention could be delivered on technology consumers used every day for other purposes. Finally, rapid and frequent interactions from a clinician improved use and user satisfaction.

The systems described in the studies we examined depended on the active engagement of patients and the involvement of health professionals, supported by the specific technology interventions. Questions remain as to (a) the optimal frequency of use of the system by the patient, which is likely to be condition-specific; (b) the optimal frequency of use or degree of involvement by the health professionals; (c) whether their success depends on repeated modification of the patient's treatment regimen or simply ongoing assistance with applying a static treatment plan. However, it is clear that the consumer's perception of benefit, convenience and integration into daily activities will serve to facilitate the successful use of the interactive technologies for the elderly, chronically ill, and underserved. Perhaps most challenging, these systems shift the locus of care away from traditional physician office visits, and many of them involve the participation of a multidisciplinary health care team; these activities are difficult to support financially under current episode-based, fee-for-service health care reimbursement mechanisms.

Evidence Report

Chapter 1. Introduction

1. a. Goal of the Report

In response to a recommendation given to the U.S. Secretary of Health and Human Services by the American Health Information Community's Chronic Care Workgroup, the Agency for Healthcare Research and Quality (AHRQ) contracted with Oregon Health & Science University's Evidence-based Practice Center to generate an evidence report on the barriers and drivers to the use of health information technology (health IT) by the elderly, those with chronic illness or disabilities, and the underserved. This report describes factors influencing the use and usability of interactive consumer health IT in these populations. It also summarizes the scientific evidence on outcomes of using these technologies, identifies gaps in the evidence, and provides a context for future inquiry. The report's primary focus is to identify barriers and drivers to use in these populations and to characterize the features of the technology interventions that relate to improved outcomes for these specific populations.

1. b. Background

A promising aspect of interactive consumer health IT is the potential to engage and support consumers in their own care by integrating their health information needs and preferences into information systems. Such technologies provide targeted or tailored health information and/or self-care management tools or applications designed to support patients' or consumers' management of their health, health care, or health information. It is important to understand whether and how populations such as the elderly, chronically ill (including individuals with disabilities and individuals who need chronic care or end-of-life care), and underserved populations (e.g., inner-city/rural, low income, minority, etc.) will be able to access, use, and benefit from health IT.

The health care needs of these populations are growing, and health information management tools have the potential to improve access to relevant health information, facilitate communication between patients and providers, and support chronic disease management. There is an opportunity to help bridge health disparities for these populations. In order to develop and provide appropriate and effective approaches, we need to understand the barriers and drivers of health IT use for these populations. Potential barriers and drivers of health IT use include motivation, cost, access to technology, literacy, education, language, culture, or telecommunication infrastructure.

The American Medical Informatics Association (AMIA) Working Group on Consumer Health Informatics defines consumer health informatics as electronic information and communication technologies that patients/consumers use to improve their medical outcomes and/or participate in their health care decisionmaking process.[1] In addition, consumer health IT may assist individual consumers in gathering, understanding, and sharing health information with their providers.[2]

Interactive consumer health technology applications have had an increasingly important role to play in health care. Recent work based on the Institute of Medicine's Crossing the Quality Chasm report[3] has focused on fostering self-management support by encouraging providers to use education and other supportive interventions in order to systematically increase patients'

skills and confidence in managing their health problems.[4] Two of the specific initiatives have to do with patient-centered care and informatics. Patient-centered care aims to inform and involve patients and their families in decisionmaking and self-management, coordinate and integrate care, provide physical comfort and emotional support, understand patients' concepts of illness and their cultural beliefs, and understand and apply principles of disease prevention and behavioral change appropriate for diverse populations. Informatics aims to communicate, manage knowledge, and support decisionmaking using IT.[4]

This evidence review focuses on interactive consumer health IT where patients or consumers interact directly with the technology and receive patient-specific information in return. Examples of these systems include home monitoring technology with interactive disease-management or self-management technology, educational or decision-aid software that is interactively tailored to the patient's needs, online patient support groups, tailored interactive health reminder systems where interactions are linked with electronic medical records, and patient-physician electronic messaging. These types of systems may be implemented on a variety of platforms using Web/Internet technology, desktop computer applications, touch screen kiosks, personal digital assistants (PDAs), cell phones, or combinations of the above.

This review includes care protocols that may or may not involve health care professionals as part of the system, and includes only computer-mediated interactional technology that does more than simply act as a conduit between humans, as in many telemedicine applications. We consider both the specific elements and functions of the technology, as well as the embedded care protocols and implementation features. Many factors relating to how the technology is deployed to the consumer or health system can influence access, usability, and effectiveness.

1. c. Burdens of Illness, Conditions, and the Digital Divide

Approximately 120 million Americans have one or more chronic illnesses, accounting for 70 to 80 percent of health care costs. Twenty-five percent of Medicare recipients have four or more chronic conditions, accounting for two thirds of Medicare expenditures.[5, 6] Most patients with chronic conditions such as hypertension, diabetes, hyperlipidemia, congestive heart failure, asthma, and depression are not treated adequately, and the burden of chronic illness is magnified by the fact that chronic conditions often occur as comorbidities.[7, 8]

One key element of systems-oriented chronic care models is support of patient self-management in the home environment.[9] Such self-management support can reduce hospitalizations, emergency department use, and overall managed care costs.[7, 8, 10-13] In this evidence review, we specifically examine the factors that influence the use and outcomes of technology designed to empower patients to participate more fully in their health care and health care decisions, with a specific emphasis on understanding the issues for the elderly, chronically ill, and underserved.

A great many elderly persons receiving home care have functional limitations, such as reduced sensory, cognitive, or motor capabilities and may require disease management for multiple chronic conditions. Although health IT has the potential to empower patients to become more active in the care process, the elderly may be disadvantaged unless the designers of both software and hardware technology consider their needs explicitly.[14] Usability and accessibility issues are important quality criteria for Web-based interventions, but often neglected by designers and evaluators.[15]

Finally, the opportunities afforded by consumer health IT are not equally available to everyone. Both researchers and policy makers have attempted to understand and remedy the link between health disparities and Internet access. Those who most need health information often lack the means, knowledge, and skills necessary to benefit from Internet health resources.[16] One significant barrier to the use of Internet health resources is consumer access. In 2006, the Pew Internet and American Life Project found that more than one quarter of U.S. adults had no online presence, and many Americans used a slow-speed connection.[17] Non-users were more likely to be poor, less educated, over the age of 65, disabled, members of ethnic minorities, and non-native English speakers.[17]

Chapter 2. Methods

2. a. Technical Expert Panel Input

Eight individuals with relevant expertise served on the Technical Expert Panel to help define the scope of the project, provide feedback on our analytic framework and key questions, and weigh in on other critical issues throughout the project (Appendix A[*]). We specifically elicited feedback on definitions of the populations of interest (e.g., who constitutes underserved and vulnerable populations), important chronic illnesses, examples and definitions for interactive consumer health information applications, and significant barriers, drivers, and outcomes. The experts also helped to identify sources of unpublished (gray) and difficult-to-find literature and relevant databases.

2. b. Key Questions and Analytic Framework

Our preliminary key questions were developed by AHRQ and edited based on feedback from our team, the Technical Expert Panel, and AHRQ. The final key questions listed below were used to guide the systematic review process.

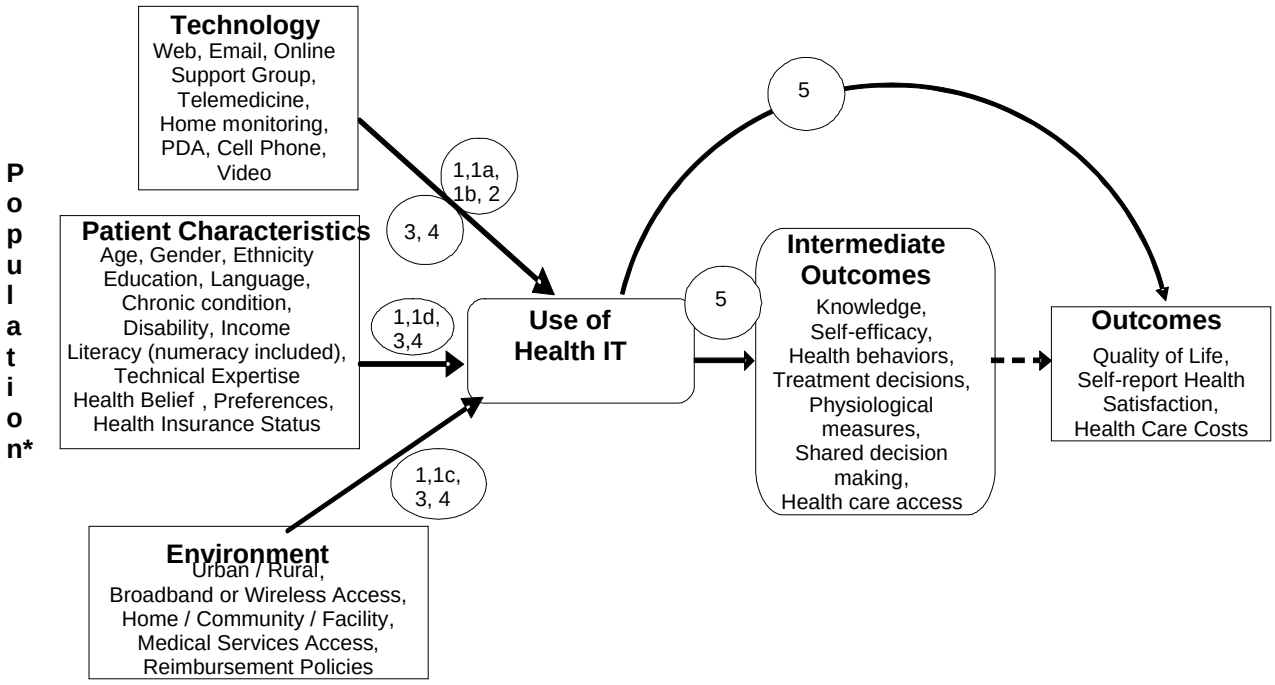
1. Among elderly, chronically ill, and underserved populations, what is the current level of use of specific forms of interactive consumer health IT?
    a. What are the primary uses of interactive consumer health IT?
    b. How does interactive consumer health IT use vary?
    c. Does use vary in settings where consumers have access to interactive health IT tools?
    d. How does the level and type of health IT use for the elderly, chronically ill, and underserved populations compare with that of the general population?
2. In the elderly, chronically ill, and underserved populations, what type of interactive consumer health IT is most useful and easy for people to use?
    a. How useful are various types of interactive consumer health IT applications?
    b. What are the usability factors associated with various types of interactive consumer health IT?
3. In the elderly, chronically ill, and underserved populations, what barriers hinder the use of consumer health IT?
    a. How do these barriers vary for these populations of interest?
    b. How do these barriers vary by type of interactive consumer health IT application?
4. In the elderly, chronically ill and underserved populations, what drivers or facilitators may stimulate or enable the use of consumer health IT?
    a. How do these drivers and facilitators vary for these populations of interest?
    b. How do these drivers and facilitators vary by type of interactive consumer health IT application?

[*] Appendixes and Evidence Tables cited in this report are available electronically at http://www.ahrq.gov/clinic/tp/hitbartp.htm

5. In the elderly, chronically ill, and underserved populations, is interactive consumer health IT effective in improving outcomes?
    a. How does the technology's effectiveness vary for our populations of interest?
    b. How does the technology's effectiveness in these populations of interest differ from the effectiveness in the general population?

The analytic framework (Figure 1) is a graphic representation[18] of the relationships among the populations, interventions, and outcomes examined in the key questions, along with potential barriers and drivers to health IT. We categorized barriers and drivers as: (1) patient characteristics, (2) attributes of the health IT, and (3) environmental factors. The Technical Expert Panel worked with us to refine the analytic framework, as well as to further clarify our definitions of patient populations, technologies, and settings of interest.

Figure 1. Analytic Framework



Note: Analytic framework for the use of health IT by the elderly, chronically ill, and underserved. Solid arrows represent relationships among variables in the framework where we systematically searched for evidence. Dashed arrows represent well-established relationships outside the scope of this review. The circled numbers indicate key questions.

2. c. Population

Populations examined in this review (Table 1) include the elderly, chronically ill, and underserved. *Elderly* was defined as mean age greater than 65 years, or functionally elderly as agreed upon by the reviewers. In considering populations with chronic illnesses, we included conditions that patients had for more than one year and that would benefit from ongoing monitoring or treatment. This included conditions such as diabetes, asthma, heart failure, chronic obstructive pulmonary disease, as well as mental illnesses. We also included disabilities where there was an impairment in body function or structure that interfered with a patient's activities. We defined underserved populations as those with an inhibited ability to receive either medical or information services. This included underserved minorities, low-income populations, and medically underserved geographic regions.

Table 1: A summary of populations included in this review

Populations	Potential Categories	Description
elderly	elderly	over 65 years of age
	functionally elderly	by life experience or health concerns; need clarity/inter-observer agreement
chronically ill or disabled	chronic condition	more than 1 year and benefits from ongoing monitoring or treatment
	impairment	impairment in body function or structure
	activity limitation	difficulty in executing activities
	participation restriction	problems experienced in participating in life situations
underserved	medically underserved population or medically underserved area	study uses Bureau of Health Professions / Health Resources and Services Administration designated medically underserved population or medically underserved area
	medically underserved area	region where individuals are inhibited in their ability to receive services
	underserved group	population which is inhibited in its ability to receive medical or information services

2. d. Technology

Our review focused on highly interactive technologies, intended primarily for use by patients or consumers, that incorporated both patient interaction and patient-specific feedback (Table 2). Examples of included technologies are self-management and monitoring systems with tailored health advice; personal medical records or access to personal data in a provider EMR; health games that adapt to patient conditions; interactive online support or chat groups; and sites with storage, indexing, retrieval, display, or advanced features (summarization and decision support).

Technology interventions were excluded if they had limited or no patient-driven involvement, if the interactions were without computer information support, or if they did not

provide patient-specific information to patients (e.g., Web browsing of general health information databases). Systems primarily or entirely for health professionals or caregivers were also excluded. Examples of excluded technologies include: passive monitoring without interactive feedback, information Web sites such as WebMD and MedlinePlus®, frequently-asked-question Websites, simple video or phone conferencing, non-tailored education-information only programs, or electronic surveys without feedback.

Table 2: Health IT inclusions and exclusions

Include: Health IT program where: • Patient interacts with the technology, • Computer/technology processes the information in some way, **and** • Patient receives information in return or has access to patient-specific information. o *Examples*: tailored health advice; clinic-linked personal health record/access; risk assessment tools, health calculators, predictive tools; interactive online support or chat groups; health games that adapt to the patient (more than simple "next page"); programs or sites with storage, indexing, retrieval, display, or advanced features (summarization and decision support).
Exclude: Health IT program where: • Limited or no patient or consumer driven involvement or • Web browsing of general health information databases or • Patient-clinician communication without computer information support (simple videoconferencing or phone) or • Systems where the patient interacts but doesn't receive patient-specific information back (e.g., electronic survey – no feedback) or • Systems primarily or entirely for health professionals or caregivers o *Examples*: passive monitoring; direct video or phone conferencing; general Web-based content (e.g., WebMD, MedlinePlus®, etc.); education, information-based only programs; electronic surveys without feedback; frequently asked question sites; tele-visit that replaces the face-to-face interaction with a clinician; video interaction

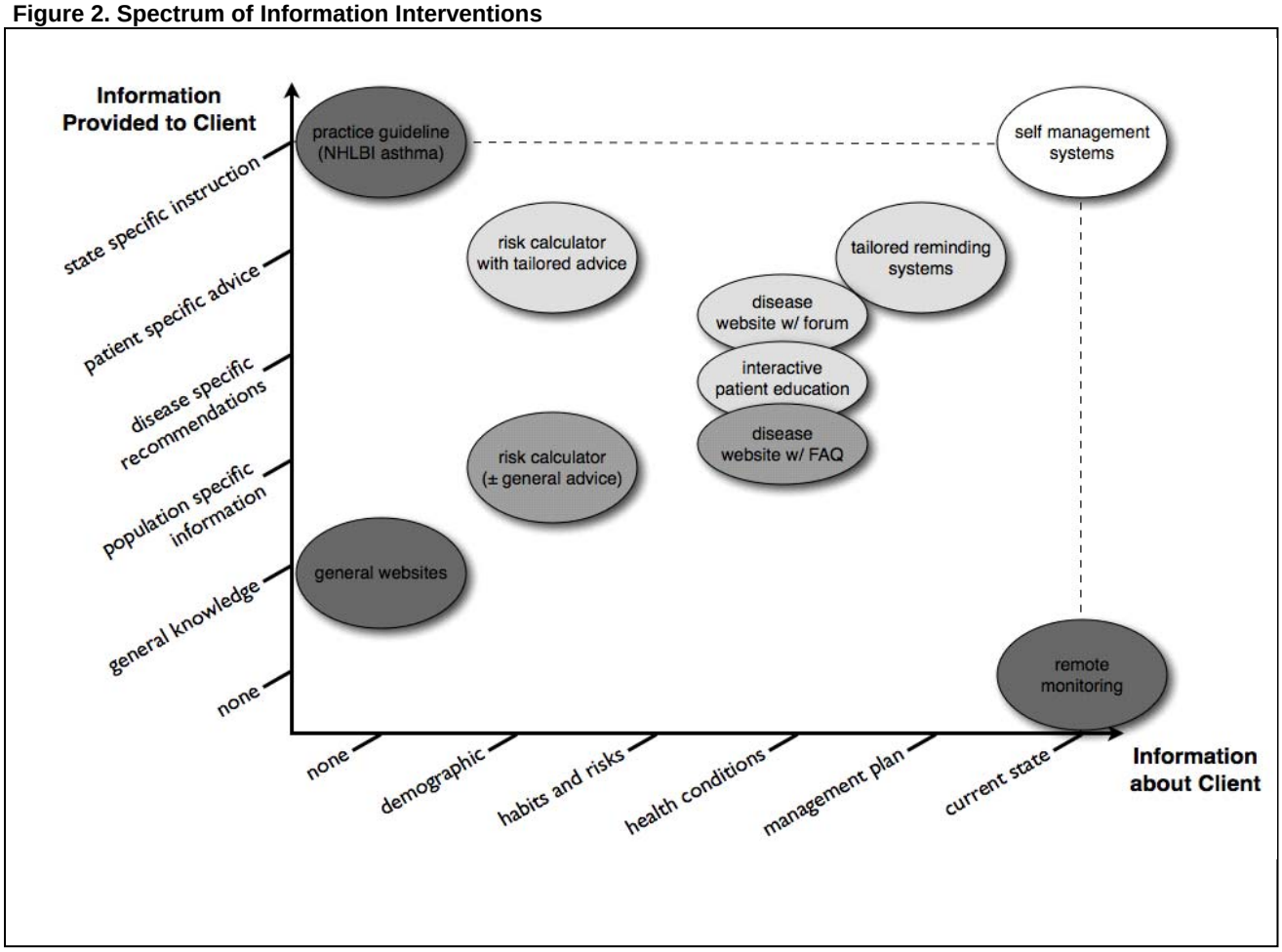
2. d. i. Further Refinement of Technologies

Some health IT interventions fit our inclusion criteria, but either had minimal tailoring of information, or minimal patient interaction with the system. Minimal tailoring included educational systems that primarily tailored the interaction based on the user's knowledge or interest, and minimal interaction included high-technology tailored reminding systems with patient-specific information but where patients had not entered or requested information. This led us to develop a method of grouping the technologies based on how they clustered along two axes: (1) the degree to which the system assessed patient-specific information and (2) the degree to which the system conveyed patient-specific recommendations (Figure 2).

We excluded health IT systems such as general health Websites and practice guidelines (at the far left of Figure 2) as they did not both assess and produce patient-specific information. We also excluded monitoring only systems (at the bottom of Figure 2) as these systems transmit information to providers but do not require patient interaction or provide the patient with information. The most relevant systems to this review are in the far upper right of this diagram and include self management systems where patients input information about themselves and receive tailored feedback in response. Studies examining these systems received full abstraction and review. Other types of interventions—such as high-technology reminding, education with

minimal tailoring, one-time-use decision aids, and online forums—were summarized qualitatively.

Figure 2. Spectrum of Information Interventions



Note: This diagram illustrates how various health information technologies differ to the degree in which they encode information about the patient (along the abscissa) and the degree to which they provide patient-specific recommendations back to the user (along the ordinate). Our technologies of interest did both (lighter colored ellipses).

2. e. Outcomes

We included studies reporting any of a broad spectrum of outcome measures, including technology use, health related behaviors, health service utilization, disease status, quality of life and functional outcomes

2. f. Study Designs

We included a broad spectrum study designs in this review, appropriate to the nature of our key questions. Whereas randomized controlled trials (RCTs) are considered optimal for the assessing the impact of specific interventions on outcomes, other study designs were more appropriate to answer other questions, such as epidemiologic studies to address rates of use of

interactive consumer health IT, and qualitative or usability methods to address questions regarding barriers and drivers, or usability. We included only reports of original studies and excluded letters, editorials, opinion pieces, news items, and commentary.

We confined this review to studies where the full-text was available in English. We identified foreign language articles with an English abstract to determine if they contained relevant data but did not find any relevant studies that required translation.

2. g. Data Sources and Search Strategy

Our search for the published literature included structured searches of both standard and specialty bibliographic databases. We searched MEDLINE® (1950-Nov 2007), CINAHL® (1982-Feb 2008), PsycINFO® (1806- Feb 2008), the Cochrane Controlled Trials Register and Database of Systematic Reviews (1st quarter 2008), ERIC (1960-March 2008), and the American Association of Retired Persons (AARP) Ageline® (1978-Dec 2007). Although all database search coverage predated 1990, we focused our review on citations from 1990 to present. Detailed searches and time periods covered are found in Appendix B[†].

We also examined the reference lists of key included studies and members of the TEP provided input on additional citations. We examined relevant systematic reviews retrieved from our searches for further citations.

2. h. Inclusion and Exclusion of Literature

In all, 8,522 English abstracts were examined and 563 full-text papers were examined for inclusion by two reviewers using refined inclusion and exclusion criteria (Appendix C). Disagreements between reviewers were resolved by discussion and consensus. Appendix D provides details on the number of captured titles and abstracts and the number of full text papers reviewed for each key question. A listing of the studies excluded after full text review are in Appendix E.

2. i. Data Abstraction

Based on the criteria in Appendix C, we included 129 unique publications for data abstraction. All included studies were abstracted into evidence tables. Data abstracted included study design, recruitment procedures, characteristics of the population, and details on the intent and implementation of the intervention. All data on outcomes including technology use, health related behaviors, health service utilization, disease status, quality-of-life and functional outcomes were abstracted. Many studies applied to more than one question.

[†]Appendixes and Evidence Tables cited in this report are available electronically at http://www.ahrq.gov/clinic/tp/hitbartp.htm

2. j. Quality Rating of Studies

Each study was assessed for internal validity using quality rating criteria developed by the United States Preventive Services Task Force,[18] and the Common Drug Review Process.[19] Factors such as adequate randomization, allocation concealment, baseline comparability of participants, blinding, and low loss to follow-up were used to assess potential study bias.[19, 20] For Key Question 5, which addressed the impact of interactive consumer health IT on outcomes, systematic reviews, randomized controlled trials, cohort studies, and case control studies were included and rated as good, fair, or poor.[18] Other studies designs, often using qualitative methods, were considered for key questions on usage, usability, barriers, and drivers. Although our team reviewed criteria for rating qualitative study designs,[21] these methods did not lend themselves to also addressing the qualitative secondary outcomes of the effectiveness studies. Thus, we did not formally rank each qualitative study (Appendix F) and incorporated evidence from all studies with information on usability, barriers, and drivers.

2. k. Data Synthesis

We focused our synthesis on interactive consumer health IT for which the patient interaction with the technology was significant and frequent and where subjects received patient-specific information in return. For these technologies, we fully abstracted the data and performed quality assessment. For educational systems with minimal tailoring, as well as for training and reminding systems, we abstracted only major results and provided a separate summary of those findings.

We reviewed and summarized our findings based on suggested approaches for developing both frameworks (as recommended by Popay and colleagues)[22] and field design propositions or guidelines for working with evidence from disparate technologies.[23, 24] This approach provided an opportunity to obtain an inferred set of findings that transcended individual cases.[23] Design propositions such as patient, environment, and technology characteristics; how and to what degree the patients or consumers used the technology; and intermediate and final health outcomes were included.

After studies were abstracted and assessed for quality, the investigators rated the strength of the body of evidence for each key question, also according to the criteria outlined by the Guide to Community Preventive Services.[25] In assessing quality at the key question level, investigators considered aggregate internal validity, aggregate external validity, and coherence and consistency. The quality and quantity of the studies and size and consistency of the results were used to grade the overall strength of the evidence.

2. l. Peer Review

We identified five individuals to serve as peer reviewers of our draft evidence report, including those with a range of personal, clinical, and professional interests in the use of health IT. Four federal organizations and four professional societies were also asked to review the draft report (Appendix G).

Chapter 3. Results

In this section of the report we review existing evidence by key question. Full details abstracted from individual studies can be found in the Data Table in Appendix H* and Quality Assessment Table in Appendix I. Summary tables for each key question are referred to in that section (Summary Tables 1-5). Although in general we did not find direct comparative evidence within studies regarding the elderly, chronically ill, and underserved populations, a summary of studies that focus on one or more of these groups is provided (Summary Table 6).

3. a. Findings for Key Question 1: Level of Use of Interactive Consumer Health IT

> Among elderly, chronically ill, and underserved populations, what is the level of usage of specific forms of interactive consumer health IT?
>
> a. What are the primary uses of interactive consumer health IT?
> b. How does interactive consumer health IT use vary?
> c. Does use vary in settings where consumers have access to interactive health IT tools?
> d. How does the level and type of interactive health IT use for the elderly, chronically ill, and underserved populations compare with that of the general population?

To determine the capacity of interactive consumer health IT to provide benefit and improve patient outcomes, it is important to quantify individual participation in its use. Ideally, a measure of usage reflects the frequency of interactive consumer health IT use over time.

We initially examined 31 studies that included some description of usage of the technology or system being evaluated.[26-56] These studies are shown in Summary Table 1.

While examining the evidence on the usage of interactive consumer health IT, two issues were identified. First, studies varied in the metrics employed to evaluate usage. Eight studies measured the time (minutes) for a subject to complete a task, such as entering data or responding to questions, or the time a subject was logged onto a Website.[27, 38, 39, 52-54, 57, 58] This metric was considered a less appropriate method to quantify usage frequency, typically describing a single-use or time-limited program; this measure was more related to usability. Six studies reported a count or proportion of subjects who used the technology, and did not provide insight into the frequency of use over time.[26, 45, 47, 48, 50, 59] In six studies, the results did not offer sufficient clarity to extract usable usage data.[29, 30, 40, 45, 60, 61] One study offered subject self-report of usage, presenting data as "transmissions per week,"[55] the accuracy of this measure was of concern.

* Appendixes and Evidence Tables cited in this report are available electronically at http://www.ahrq.gov/clinic/tp/hitbartp.htm

Second, there was the variation in the expected or "probable" use of each type of technology. This required that usage measurement be put in the context of intended technology use categories. Some technologies were expected to be used once or infrequently, such as educational programs or patient decision tools supporting a treatment choice. Many technologies, particularly Web-based applications with the purpose of patient self care and self-management, offered participants opportunities to use the application *ad hoc* or at repeated, specified times (e.g., once per day). Still other technologies, such as automatic reminders prompting a patient to adhere to a medication regimen, were not intended to be used at the discretion of the participant; these were not considered amenable to measuring usage. To achieve reasonable consistency while examining the level of technology usage, studies on usage were examined (in this Key Question) if the interactive consumer health IT application was intended for continuous use by consumers.

Studies identified to offer data on frequency-related usage presented one of three types of measurement: (1) the usage of technology by subjects over a specified time interval, (2) the change in technology usage by subjects over time, and (3) the absolute or relative usage of specific functions compared to one another, within a particular technology application. Data sources measuring usage included automated computerized measurement, such as logins or use time, or self-reported information collected by surveys.

Among studies presenting technology usage and examined here, all were quality rated for the primary study design. However, these studies did not have usage measurement as a primary objective of the study. As such, the methods used to rate the quality of the study did not readily apply to the usage findings. We included all usage results in this summary.

3. a. i. Current Level of Use of Specific Forms of Interactive Consumer Health IT

For frequency of technology usage, there was no standard terminology identified. The most common term used to quantify usage was reported as the number of "logins" by subjects during the study interval. Other terms presented included "hits," "hit-days," "logons," and "transmissions" and were assumed to represent a similar metric. The term "hit-days" was a measure of the number of days a subject used the technology or program, perhaps underestimating the total number of logins if this occurred more than once daily. As previously discussed, frequency of usage by subjects was not appropriate for all types of interactive consumer health IT, such as automated voice messaging or clinic-based applications intended for single-time use.

Seventeen studies either reported logins per subject per time interval, or allowed extrapolation of this data to generate an estimate of the *mean number of logins per subject per month*.[28, 31-37, 41-44, 46, 49, 51, 56, 62] These technology applications were accessible to subjects at their will. Among these studies, usage ranged from an average of <1 to over 23 logins per subject per month. Further description of these studies is discussed below and shown in Summary Table 1.

Seven studies described changes in interactive consumer health IT usage over time, all reporting some degree of overall reduction in usage over time.[33, 34, 37, 44-46, 51] The metrics used to report trends varied widely, including descriptions of change in usage frequency over time, change in time (e.g., minutes) subjects used the technology, and change in the proportion of subjects who logged in within specified time intervals (e.g., first three months vs. last three months). While varied reporting did not allow direct comparisons among studies, some studies observed dramatic reductions in usage over weeks to months.[34, 44, 45, 51] Among these studies--which targeted a variety of conditions including heart failure, diabetes, tobacco, and chronic obstructive lung disease--none directly assessed the reasons for usage attrition. Some authors did discuss possible factors playing a role, such as technology inconvenience or reduced motivation over time.

3. a. ii. Primary Uses of Interactive Consumer Health IT

Nine studies reported on the comparative usage of specific components within an interactive consumer health IT application, relative to other components.[34-37, 46, 51, 53, 54, 56] Studies that presented usage of components reported varied measures, including time (minutes) that subjects used a function, the frequency of functions used during logins, or the percentage of subjects using each function as part of a health IT application.

Seven studies were randomized, controlled trials (RCTs) that examined the use of technology components among experimental group subjects. These studies employed Web-based programs that offered one or more of the following functions, beyond educational information: patient self-monitoring tools (e.g., glucose, weight), tailored self-management tools (e.g., tailored feedback, decision aids), peer group discussion, ask-an-expert (posting questions to a clinical expert), posts to electronic bulletin boards, a patient's view of their provider's electronic medical record (EMR), secure messaging (secure electronic messaging with clinicians and staff), and/or text messaging.[34, 35, 37, 46, 51, 53, 54] Overall, online peer group discussion and bulletin boards were the most commonly used functions, compared with other functions available within the applications. In two studies, self-management tools[34] and ask-an-expert[36] were also frequently used functions. In one study with patients having congestive heart failure who were provided access to their EMR, progress notes were most the commonly viewed component, followed by test results.[51]

Three cohort studies reported comparative usage of interactive consumer health IT components.[32, 36, 56] One study showed that self-monitoring tools were used most frequently by patients with head and neck cancer.[56] A second study, offering Web-based self-management and peer group support, found that subjects used the bulletin board function more frequently than self-management tool functions.[36]

One study, using a randomized design, tested the effect of adding diabetes self-management and peer support functionality to an information-based application.[34] The study compared self-management (tailored online coaching), self-management plus peer support (peer group discussion), and information only (non-tailored). Across 10 months of the study, higher usage was seen in both self-management conditions compared with information-only control, and highest in self-management plus peer support. While usage dropped over the study interval for all groups, highest usage was consistently observed in the condition that included the peer group discussion function.

3. a. iii. Variation of Use According To Type of Interactive Consumer Health IT Application

Among the subset of 16 studies reporting the frequency of IT usage over time or allowing the estimation of this measure, 11 showed participant usage that was equal to or greater than 4.4 logins per subject per month (range, 4.4 to 27). Five studies showed usage to fall under 2.2 mean logins per subject per month (range, 0.7 to 2.2).

Studies observing a higher participant usage pattern (≥ 4.4 logins per subject/month) included the following interactive health IT functions:

- Patient self-monitoring with secure messaging[31, 33]
- Patient self-monitoring with e-mail alerts[49]
- Peer group discussion with self-management tools[34-37, 42, 44, 46]
- Peer group discussion with secure messaging[56]

Studies observing a lower usage pattern (≤ 2.2 logins per subject/month) included the following interactive health IT functions:

- Shared EMRs with secure messaging[28, 32, 51]
- Shared EMRs with quizzes[43]
- Automated paging and text messaging[41]

Studies reporting higher levels of technology usage appeared to have *either* peer group discussion functions *or* patient self-monitoring.[31, 33-37, 42, 44, 46, 49, 54, 56] Studies reporting a lower frequency of interactive consumer health IT use included four with shared access to electronic records with or without secure messaging with clinicians,[28, 32, 51] and one testing automated paging and text messaging,[41] and one study using a self-monitoring application that also included quizzing subjects.

This grouping was not based on any prior evidence about interactive consumer health IT usage; it was determined by empirical observation only. From a practical standpoint, the higher range of usage corresponds to logging in once per week or more frequently.

The patient conditions for these studies varied widely, and included heart failure, diabetes, cancer, HIV, and lung transplant. One study included only subjects who were medically underserved women with breast cancer.[54]

3. a. iv. Variation of Use According To Settings and Availability of the Interactive Consumer Health IT Tools

The studies included within the scope of this report did not specifically address the question of whether use varied according to setting or availability. Researchers typically provided study participants with the technology, if participants did not have it available. Some studies included participants who had little or no prior computer experience or access to the Internet. However, in one RCT testing Web-based diabetes self-management with or without peer support, 83 percent of subjects recruited into the study "had either no or extremely limited Internet experience prior to the study."[34] This study found high usage of peer group discussion and self-management tools.

3. a. v. Level and Type of Use in Populations of Interest Compared With the General Population

Few studies reported data describing individual-level factors related to usage. Three studies reported subject use of interactive consumer health IT by individual subject demographic factors. One study was an RCT of tobacco treatment medication with or without Web-based self-management and peer group support.[37] Analysis showed that technology usage was correlated with age, such that older participants had higher use frequency ($p<0.05$); this was not exclusively an elder population, however, in that this subgroup included participants aged 46 and older.

One RCT[35] of individuals with AIDS/HIV reported that "women used the program 13 percent more than [did] men", and that "minorities used discussion somewhat less and information tools somewhat more" than did non-minority subjects; these were stated in the discussion, and data supporting these findings were not presented. A third study found that Web site use was associated with being Caucasian and Non-Hispanic, and with having more symptoms and a greater number of clinic visits; this study, however, showed only a trend toward signifcance.[32]

No studies were conducted comparing the use of interactive consumer health IT in a subpopulation of interest to a more general population.

3. a. vi. Summary of Findings of the Use of Interactive Consumer Health IT

The evidence on usage of consumer interactive technologies within the scope of this report is limited and presents challenges. Among the studies examined, measurements related to usage were varied and provided little standardization of terminology. Frequency of usage also need be placed in the context of expected or intended use of the technology.

Some studies did report on the frequency of participant use of technology over time (i.e., mean logins per subjects per month), or allowed an estimation of this measure. These applications were tested across a variety of chronic conditions, including diabetes, tobacco use, chronic obstructive lung disease and congestive heart failure. Collectively, such studies observed reductions in usage over time. Among studies of Web-based interactive systems that offered usage frequency, findings ranged from <1 to 27 mean logins per subject month. Empiric observation revealed that higher usage applications offering functions that include patient self-management tools and/or peer group support. Studies that compared the use of specific components within an application found the most frequently used functions to be online peer group support, bulletin boards, and self-management tools.

3. b. Findings for Key Question 2: Usefulness and Usability of Interactive Consumer Health IT

In the elderly, chronically ill and underserved populations, what type of interactive consumer health IT is most useful and easy for people to use?

a. How useful are various types of interactive consumer health IT applications?
b. What are the usability factors with various types of interactive consumer health IT?

We reviewed 54 studies that addressed issues of usefulness and usability for interactive health IT for consumers (Summary Table 2). The majority of studies (35) were qualitative, formative evaluations,[33, 34, 56, 58, 63-93] and the rest were summative evaluations of interventions using study designs that included randomized control trials, cross-over designs, or cohort studies.[29-31, 39, 41, 43, 44, 47, 52, 55, 94-102] Although a few of the studies were designed to exclusively look at issues of usability for a particular system, none compared the usability of different types of systems within a single study.[65, 88, 95, 98, 103] In addition, most of the studies reported on usability issues as secondary findings, and not part of the primary study design. Given that our quality ratings for the summative evaluations usually did not apply to the qualitative findings on usability, we elected not to apply quality ratings on this qualitative information and considered all usability findings in our summary.

In our review of these studies, we considered usability to be "the degree to which the system and services could be used effectively, efficiently and with satisfaction by the users."[94] This is consistent with the papers reviewed here. Researchers studying the usability of health IT most often referred to using the framework described in Jacob Nielsen's 1993 book *Usability Engineering.*[104] In this framework, usability is considered to be a component of user acceptance, which refers to the willingness of users to use a system in a particular setting over a period of time. It also comprises social and practical acceptability. Nielsen's *Model of System Acceptability* includes the concepts of attractiveness, controllability, efficiency, helpfulness, and "learnability."

For those studies that specifically addressed the usability issues associated with the interactive consumer health IT, most used protocol analysis with "talk aloud" techniques. However, many studies measured other outcomes and included questionnaire items to measure the usability issues. Those evaluating a Web site often used the 20-item WAMMI (Web site Analysis and Measurement Inventory) instrument[105] to assess usability. The questionnaire items directly relate to the Nielsen framework and include a measure of global usability. The general acceptance of a common framework for discussing usability provided us with a useful structure for analyzing the results.

3. b. i. Usefulness of Various Types of Interactive Consumer Health IT Applications

With the wide mix of types of technology, even within our clusters of technology types, the usefulness of a system clearly depends very much upon how it was implemented. For those studies that measured the subjects' perceived usefulness of the system, the results were generally very positive. For the Web-based interactive self-management systems,[30, 31, 52, 55, 65, 71, 73, 79, 86, 87, 94, 95, 97-102, 105] in each case the majority of users found the system to be helpful or useful, and often this was true for more than 90 percent of the users. An automated voice response system for calls to patients with diabetes was found to be very or somewhat helpful for 98 percent of the study participants.[47] For single-use systems, such as the shared decisionmaking system for cancer patients,[52] usefulness was also generally rated as high (in this case 4.62 out of 5 points). Additionally, efficiency is an aspect of usefulness. Although user efficiency was not often measured explicitly, occasionally perceived efficiency was reported in a study, again with the majority seeing improvements in efficiency by using the system.[73] However, some studies detected efficiency problems if users were required to do a significant amount of data entry as

part of their self management.[29, 30] For these systems, users expressed the opinion that the data entry should be automated.

3. b. ii. Usability factors Associated With Various Types of Interactive Consumer Health IT

Although, most users appreciated the usefulness of the systems we reviewed, there were clearly usability problems detected. The most frequent issue had to do with technical problems encountered during the study. These often thwarted the overall participation of subjects in a study. Technical issues consisted of Internet connection interruptions causing the loss of data,[28, 29] system errors,[30, 99] and problems with the monitoring devices, including battery issues.[30] In addition, sometimes the usability issues had to do with the physical format of the devices. For example, in a medication reminding study, the size and shape of the medication drawers used as part of the overall intervention made it difficult for study participants to small pills.[106]

Most studies that addressed usability issues measured the participants' perception of the ease-of-use of the technology. Naturally, this varied even within types of technology, depending on the particular implementation. Most often though, the vast majority of participants (> 90 percent) felt that the technology they were using was understandable and easy to use.[30, 31, 39, 43, 72, 73, 95-98] Many of these studies also asked about the specific ease-of-use of system components. For example, with an asthma self-management system, 93 percent felt it was easy to record data and view data.[30] Gomez et al. found that subjects using their Web-based HIV/AIDS management system reported that the graphics were easily understood.[72] With a system for schizophrenia education, 93 percent of the subjects found the touch screen interface easy to use, but fewer (56 percent) found the overall system easy-to-use (all felt that it was at least "OK"). In this case, the usability issues arose from the organization of the content, as opposed to the usability issues associated with the more system-level interactions. At least one-third of the study participants encountered a display where they were confused on what to do next.[39] Yet there were many studies with similar self-management systems with no apparent usability problems. For example, with one diabetes management system,[43] most of the participants felt the system was easy to use, relevant, and useful and would recommend it to others. None of the participants reported needing technical help or had confusion about the system at any point. With a self-management system for congestive heart failure, all participants reported that the system was easy to use.[31] Similarly, with another diabetes self-management system, all of the participants found the system easy and convenient to use, "with minimal intrusion on their lifestyle."[96] Another indicator used to measure usability was the participants' willingness to continue using the system after the conclusion of the study. In this case, all participants reported wanting to continue with the program after the study terminated.

We found similar results for other types of interactive consumer health IT. For example, with a diabetes system that used a two-way automated messaging pager system to send tailored health-related messages to patients,[41] the researchers found that most participants felt there were no problems with the pager (71 percent), enjoyed using the pager (79 percent), and would like to continue using it after the study (68 percent). Patients with bipolar depression were able to input symptoms into a PDA device,[85] and although novice users reported being intimidated by the program at first, eventually all users felt that the system was easy to use. However, in a tablet PC for HIV+ patients study,[88] many patients had difficulty making selections by tapping the screen, since that particular implementation did not respond to the users' selections until they lifted the stylus. Many people naturally pressed instead of tapped at first.

An important aspect of the findings from the studies that address the usability of technologies was discovering what system features needed to be modified. One change included revising a patient tutorial for a diabetes home management system and creating a field training program.[75] Another modification included improving the contrast, use of color, button size, and graphics clarity for an interactive health information system designed for older users.[94] Often the largest usability changes needed to be made with regard to the data entry screens on Web-based systems,[29, 30] and in some cases it was the graphic feedback for home monitoring data that needed improvements in clarity.[30] Overall, we saw that the usability findings pointed to needing to keep systems simple and free from distracting elements, with an effort toward minimizing jumping from screen to screen. Researchers found that it was important to keep frequently used items on the main Web page with "one-click" access.[63]

3. b. iii. Usefulness and Usability Issues for Populations of Interest

No studies directly compared differences in usefulness or usability issues for our populations of interest (elderly, chronically ill, and underserved) versus the general population. However, most systems were used by people with chronic illnesses and with a wide range of ages, including the elderly. In addition, some of the studies reporting usability issues were focused on the elderly,[98] underserved populations[70] or populations with physical disabilities.[65, 79, 88] One of the studies that specifically looked at usability issues for an elderly population using an interactive system for obtaining tailored exercise recommendations[98] showed that age was directly related to the need for more assistance with the technology. A study of low-income inner city asthma patients[70] required subjects to perform routine spirometry tests and to interact with an electronic symptom diary. In this group, 2/3 of the subjects had never used a computer and nearly half had never used an ATM machine for banking. More than half of the subjects in this study were born outside the US and were non-native English speakers. Even in this group, more than 90 percent found the usability of the intervention "not complicated at all" or "not difficult at all." However, in another study of an interactive educational system for cancer symptom control, where 26 percent of the subjects had never used a computer, only 71 percent of the subjects felt the system was easy to use.

There were three studies that dealt with usability issues for patients with physical disabilities.[65, 79, 88] One study[79] tested a Web-based intervention addressing physical activity for patients with spinal cord injury (33 percent), multiple sclerosis (21 percent) and cerebral palsy (19 percent). The ratings for ease-of-use of the system were still quite high (mean of 4.5 out 5 points). Usability findings from two of the studies addressed issues of eyesight problems. Usability issues were identified in a tablet PC counseling tool for HIV+ patients' medication management.[88] Patients taking HIV medications frequently have eyesight impairment and the researchers found that some patients were having trouble seeing the content on the screen given the room lighting. They recommended increasing both the text size and the contrast level of the interface. Similarly, patients with diabetes often have vision problems. Interviews with patients with diabetes regarding various designs and interfaces for a cardiovascular risk prevention system showed that subjects had concerns about the clarity of the content on the screen, specifically mentioning that it would be common for people with diabetes to have trouble seeing detail on the screen.[65]

3. b. iv. Summary of Usefulness and Usability Issues

In summary, we found 54 studies that addressed usefulness and usability issues of interactive consumer health IT. Most of these studies addressed usefulness and usability as a secondary component of the study; however, the information collected indicated that usability played a key role in the use of these systems. Most researchers measured usefulness as part of their usability assessment and found that the users' perceived usefulness was generally rated high, especially for the self-management systems. With regard to the ease-of-use of systems, it is important to note that usability in these studies was always evaluated for a single type of system with a particular implementation, making it difficult to make general claims about usability findings. For each type of interactive consumer health information system there were examples of some that the users felt were easy to use and others with usability issues. There were a small number of studies that focused on usability testing early on in system design. In these cases, the goal was to discover and fix usability issues early on in the process. Most issues had to do with graphics clarity and simplicity for older or impaired users.

3. c. Findings for Key Question 3: Barriers to Use of Interactive Consumer Health IT

In the elderly, chronically ill and underserved populations, what barriers hinder the use of interactive consumer health IT?

a. How do these barriers vary for these populations of interest?
b. How do these barriers vary by type of interactive consumer health IT application?

We reviewed 52 studies that addressed the barriers to consumers' use of interactive health IT for consumers, with a focus on patients with chronic illness, elderly users, and underserved populations (Summary Table 3). The majority of studies (33) were qualitative, formative evaluations,[33, 34, 56, 58, 59, 63-71, 74-85, 87-89, 91-93, 101] and the rest were summative evaluations of interventions using study designs that included randomized control trials, cross-over designs, or cohort studies.[28-32, 39, 41, 43, 44, 73, 86, 90, 95, 97-99, 106-108] As with the previous section on usability, most of the studies with information on barriers to system use reported this evidence as secondary findings, and not part of the primary study design. Given that our quality ratings for the summative evaluations usually did not apply to the qualitative findings on barriers, we elected not to apply quality ratings on this qualitative information and considered all findings relating to barriers in our summary

Again, we used both Popay and Denyer's approach to summarizing the evidence,[22, 23] where we first summarized a subset of the evidence to cull out major technology design issues and then organized the rest of the evidence within that framework. The following subsections highlight the principle types of barriers to system use that we found in our review.

3. c. i. Lack of Perceived Benefit

The primary barrier to use that was described in studies that addressed this issue was the notion that if the study participants did not perceive that there was a benefit to be derived from using the system they were unlikely to engage with the intervention. This was especially true when there was a significant degree of inconvenience in data entry for the home-based self-management systems. For example, one study found that participants' use of their asthma self-management system suffered when there was no perceptible immediate benefit to outweigh the inconvenience of doing self-management via Internet. Often improvements in asthma control are not perceptible by the patient.[63] In their case, the benefits of using an asthma diary were often not recognized immediately. In a diabetes system, there were three types of patients who reported not seeing a benefit to the intervention: (1) study participants who had not experienced the problems yet, (2) those who did not understand the information, and (3) experienced users who felt they already knew the information.[43] This last group also included people with well controlled diabetes who felt they did not need assistance. The researchers' conclusion from these findings related to the need to tailor the intervention for these subpopulations.[43] Many other interventions we reviewed did tailor their materials based on stages of change and related user model variables.

For other types of interventions, such as a tailored medication reminding system, those study participants who were already doing well with their medications were more likely to report that the intervention was a nuisance and intrusive.[106] In the case of support groups, we found that needing a critical mass in number of participants was often cited a barrier to successful use of the technology. For example, in a support group for diabetes and physical activity, there was a lack of perceived benefit by many participants (66 percent) because of an insufficient number of people actively participating in discussions.[44]

In some cases, the technology was being evaluated in the context of replacing components of face-to-face interventions. For example, a schizophrenia technology intervention was tested with and without sessions with a community psychiatric nurse, as well as a combined intervention.[39] Of the people in the combination group, 13 out of 20 subjects preferred the sessions with the nurse, and 7 out of 20 preferred the sessions with the computer. Interestingly, all participants exposed to the community nurse intervention thought that the information provided by the nurse was relevant, but in the group receiving both the nurse and computer information, the good nurse information made the computer information seem less relevant (i.e., more participants in the computer only group found the computer information to be relevant).[39]

3. c. ii. Technology Intervention Did Not Fit Their Lifestyle

A second type of reported barrier to the use of interactive consumer health IT was the issue of patients finding it difficult to fit the intervention into their everyday lives. In some studies, although patients reported liking the system, they indicated that they would be unlikely to use it long term because it was not easy to integrate into their lifestyle.[63, 83, 91] One study reported factors that had to do with technical and psychological aspects.[63] The issues in this study mainly had to do with the fact that their participants had to collect their monitoring data, write it down on paper prior to computer entry. This meant that participants often waited until the weekend to do the data entry and then would only receive feedback days later. They were not using the system continuously and this prevented the intervention from being more effective. The main point in these types of studies where data entry was a barrier was that monitoring needed to be unobtrusive and automatic. In addition, use of the Internet needed to be integrated into patients' everyday lives. One study found that with reminder systems, it was necessary to consider the out-of home experience and to have a holistic approach to reminding in order to accommodate lifestyle issues.[106] For example, some participants were frustrated by perceiving that they "had to build their life around the monitor/reminder" since it would not turn off when they were gone and they were not able to take the device with them when leaving the home.

3. c. iii. Lack of Trust of the System

Another major barrier to the use of the interactive consumer health IT was the lack of trust of the information provided. Findings showed that unexpected messages or advice that contradicted a patient's experience caused them to disbelieve it and not follow the advice.[63] Systems that did not provide an explanation for the recommended action are less likely to have the intended behavior change effect on the users of the system.[63] The authors' recommendation based on this finding is to shift from providing automated treatment changes via the system to providing graded alerts on when to contact the clinician.

3. c. iv. Technological Malfunctions

Many studies encountered a wide variety of technical problems.[28-30, 56, 73, 99] These technical problems represented barriers to successful system use, but were also problematic for the quality of the study. Many times, these technological problems were issues that could have been prevented with better pilot testing of the system prior to deployment, but many times the technological problems were representative of issues that system users might encounter independently of the quality of the health technology.

The most common technological problem encountered in the studies we reviewed was the lack of reliability of patients' Internet connection.[28-30, 73] As an example, more than half of users had Internet connection issues,[30] and in two studies,[28, 73] system users had connection problems leading to the loss of some of their data. Systems that required batteries, such as the home monitoring systems,[30, 73] were also prone to having reduced patient use because of problems in keeping the batteries charges. The researchers saw a need to introduce battery checking software into their systems.

Other technological issues encountered in the studies we reviewed included system errors,[30, 99] incorrect functioning of videos,[28] and monitoring device problems.[30] In general, many of the technological issues reflected the fact that the papers were reviewed dealt mostly with research systems, as opposed to commercial systems that would presumably be much more robust and reliable. However, the basic issues of Internet connectivity and short battery life are likely to plague future systems as well.

3. c. v. Technology Too Cumbersome

The most consistent issue with many of the self-monitoring systems that required the patients to enter their data into the computer by hand was that this process was cumbersome and took too long.[29, 30, 101] In many cases, the technology exists to automate this process, but perhaps at a greater cost. As was noted before, some authors also reported that some of their participants had slow and/or intermittent Internet connections, making it cumbersome to use the intervention.[63]

3. c. vi. Confusion With the Technology and Content

There were two ways in which users' lack of understanding emerged as a barrier to the use of the health IT. The first was based on health literacy and numeracy.[32, 82, 92, 93, 103] Many patients had difficulty in comprehending the medical jargon in their view of their provider's EMR.[32] The participants in this study felt that they could cope with this issue by using dictionaries or other methods, such as asking friends. They preferred this approach to having the material "watered down" or "sugar-coated."

Other sources of confusion had more to do with the use of the technology. Several studies mentioned lack of experience with computers and with the Internet as a significant barrier.[56, 69, 77-79, 81-83, 89, 101] For example, one study[75] found it was necessary to improve their patient tutorial and create a field training program to ensure successful use of the home monitoring diabetes system.

3. c. vii. Specific Barriers With Interactive Reminding Technologies

Some of the barriers to system use were specific to the interactive reminding technologies. Users' reactions to using their 2-way automated message paging system for diabetes care is one example revealed several challenges to providing this service.[41] About 44 percent of the users found the messages to be annoying. Some found the system helpful for a few weeks, until they could anticipate the messages, and others found the messages too overwhelming. One suggestion arising from this work was that it would have been helpful for their messages to have been programmable. They also reported that patients would have liked to have changed the text. A separate barrier to this particular intervention was that the pager didn't work in all locations (i.e., at work or while traveling).[41]

3. c. viii. Clinician Factors as Barriers

Our evidence review was limited to considerations of the patient or consumer's use of health IT. However, several of the technological interventions we reviewed required active participation on the part of clinicians. Often these studies mentioned that patients perceived a lack of response and use of the system by physicians. For example, one study showed that if physicians did not examine the system's report then patients (especially those with chronic illnesses) were less satisfied.[109] In this particular study, fewer than half of the physicians looked at the report in front of the patient (49.2 percent) or discussed it with the patient (44.3 percent). Similarly, in a study of patient-provider messaging, monitoring, and email alerts, only 25 percent of the physicians involved used the system.[56] In this case, the system was not integrated with the physician's information system. Additionally, two investigations reported that physicians were reluctant to introduce the systems into their practice because of time constraints.[28, 63]

3. c. ix. Cost as a Barrier

Although the interactive consumer health IT applications that we reviewed were designed with the intention to provide quality care in a timely manner that would be less expensive than having a clinician available in person, there were two ways in which cost was mentioned as a barrier to the use of these technologies. The most common was the fact that many patients did not have access to a computer in their homes.[43, 70, 81-84, 87, 92, 101] This was particularly problematic for low-income populations, in an asthma study with low-income inner city subjects.[70] Since 2/3 of the subjects had never used a computer, the cost associated with deploying this type of intervention would have to include both the computer hardware as well as computer training. The second factor was more of an artifact of the specific implementation. The protocol for the use of some systems, such as a tailored educational program for patients with schizophrenia,[39] required that the patients come to the clinic to use a touch screen computer. The cost associated with bringing patients to the clinic was deemed to be too high for the intervention to be widely accepted. However, the alternative, being a person-to-person visit with the community nurse counselor, was even more expensive. A diabetes intervention also required technical personnel at hospital for technical support.[73] Presumably this would be true for many of the systems if they were to be used in routine clinical care.

The reimbursement for the clinical use of the types of technologies we reviewed was also brought up as a barrier to routine use outside of a study situation. For example, one study found that it would be difficult to have physicians routinely use electronic messaging with their patients if they did not receive payment or reimbursement for those interactions.[28]

3. c. x. Age and Disabilities as Barriers

We only found only two studies of usability and usefulness that compared older and younger users of an interactive consumer health IT systems, both were diabetes interventions.[47, 69] One study found that younger users were more interested in the technology.[69] Looking at a wide range of ages using an automated voice response system, one study found that younger patients (less than 55 years of age) were less likely to listen to as many messages, but more likely to want to use the system in the future. Also the younger users more often reported that the diabetes voice system would make them more satisfied with their health care.[47]

In addition, given that most of the health IT interventions reviewed were focused on chronic conditions, many studies we reviewed included a substantial number of elderly participants. For example, one study focused on a low-income elderly disabled population living in a publicly subsidized housing project.[82] Computer literacy and computer anxiety were determined to be major barriers to subjects' use of the personal health record the researchers were testing. In this group 63 percent had computer literacy problems (needing help in learning to turn the computer on, use a mouse device, etc.) and 58 percent had computer anxiety problems (unwilling to attempt to use the computer). Other barriers identified in this study included cognitive impairment (34 percent) that limited subjects' ability to remember their user name, password and Web URL address; health literacy (29 percent) that caused confusion about the content; and physical impairments (26 percent). The impairments included vision problems that made viewing the screen difficult, and decreased function of arms and hands due to cerebral vascular accidents, arthritis, multiple sclerosis, and Parkinson's disease.[82] All of these issues made using a computer much more time consuming and difficult. An additional study specifically looked at usability issues with a Web-based system designed to provide tailored exercise recommendations for older users.[98] Within this study of users over the age of 60, they found a direct relationship between age and increasing need for technical assistance.

3. c. xi. Summary of Barriers to the Use of Interactive Consumer Health It

In summary, we found 53 studies that addressed the barriers to consumer's use of interactive health IT. The most frequently mentioned barrier to consumers' use of the interactive health IT across these studies was a lack of perceived benefit. The lack of convenience was an important barrier in many studies. For example, patients were less likely to use systems that required them to access equipment or technology that did not fit into their normal daily routine, or similarly if the data entry was overly cumbersome. Several studies also found that a lack of clinician involvement was associated with less system use. In addition, due to the fact that many studies were conducted on early prototype systems, technical issues often prevented consistent use of these systems. Finally, although in these research studies patients are generally provided with the technology, several articles mentioned that for use beyond a funded study, the costs and access to the technology would be a barrier.

3. d. Findings for Key Question 4: Drivers and Facilitators of the Use of Interactive Consumer Health IT

In the elderly, chronically ill and medically-underserved populations, what drivers or facilitators may stimulate or enable the use of interactive consumer health IT?

a. How do these drivers vary for these populations of interest?
b. How do these drivers or facilitators vary by type of interactive consumer health IT application?

We identified 60 studies that addressed factors that were drivers for interactive health IT for consumers (Summary Table 4). This included 36 qualitative, formative evaluations,[33, 34, 39, 58, 59, 63-72, 74-85, 87-93, 101, 110] and 24 summative evaluations of interventions using study designs that included randomized control trials, cross-over designs, or cohort studies.[28, 29, 31, 32, 41, 43, 44, 46, 47, 56, 73, 86, 94-96, 98, 99, 102, 106, 108, 111-114] As with the previous findings on usability and barriers, most of the studies with information on drivers or facilitators to system use reported this evidence as secondary findings, and not part of the primary study design. Given that our quality ratings for the summative evaluations usually did not apply to the qualitative findings on drivers, we elected not to apply quality ratings on this qualitative information and considered all findings on drivers in our summary. The following sections describe the clusters of key concepts that were reported.

3. d. i. Perception of Health Benefit

The most general and important driver of the use of interactive consumer health IT was that the user perceived a benefit to using the system. In the following section we will review the evidence for health and quality-of-life outcomes, but here we are making a distinction as to whether the patient actually perceives some benefit. Often with self-management systems there may be long term positive outcomes that are not perceptible to the patient at the time of system use. Some examples of systems where patients did perceive a benefit during system use are listed below. Most of these studies also measured increased use related to the perceived benefits.

- **Diabetes:** In general, a driver of the use of interactive health IT interventions for patients with diabetes had to do with patients feeling empowered[77, 83] with an increased sense of security about their health. In a study of a diabetes self-management system, patients felt more confident in adjusting their insulin doses in response to monitoring data feedback.[96] Similarly, one study showed that the majority of users perceived improved glycemic control, easier treatment changes, better communication with doctor, and better diabetes education.[73] Also, participants in a study of a 2-way pager system for diabetes felt they received better health care when using the paging system. In addition, they perceived the messages to be comforting, helpful, convenient and useful. Some reported an additional benefit of reporting their blood glucose values in this way as improving their personal accountability.[41]
- **Asthma:** Patients using an asthma system perceived that keeping an electronic diary helped them manage their disease.[63] However, with a pediatric asthma system,[111] only the caregivers perceived quality-of-life improvements to a significant degree, while in children a similar trend was not statistically significant. Still, we considered this to be a driver of system use because satisfaction on the part of caregivers caring for asthmatic children improves the likelihood that the children will use the system. In this study, the children reported that using the system was fun and like that it helped them remember to take medication, compared with those with a paper diary who sometimes lost it or forgot to enter the data, in addition to reporting that they often forgot to take their medications.[111] A study of low-income inner city adult patients with asthma revealed that a driver to use of the system was that the technology provided a sense of security (88.2 percent of the patients felt safer while being monitored) and all stated that it was either extremely or very important for them to know that the results were reviewed by clinicians immediately.[70]

- **Heart Failure:** One study showed that reminders helped heart failure patients to stay on a schedule with noticeable improvements in medication management, diet and exercise, leading them to perceive that they felt better, that their blood pressure was more stable, and they had less worry.[106] These patients also realized that they required less nitroglycerine in the management of their heart failure. In another heart failure system with access to the patient's EMR, the patients perceived improvements in knowledge for self management saw an immediate benefit of having access to the electronic health record for reminding them about their most recent regimen changes, medication doses, and lab results.[32] This group also saw an improvement in reassurance (they no longer had to assume "no news is good news" and could check for accuracy of their medical record).[32]
- **Chronic Obstructive Pulmonary Disease (COPD):** Of patients using a self-management system for COPD, 73 percent were either very or completely satisfied with the system.[113] Their primary perceived benefit to using the system was increased access to their health information.
- **Osteoarthritis:** One intervention[102] using the Web-based tailored feedback and recommendations based on guidelines for osteoarthristis care, showed that most participants felt that using the Website would help them receive better care from their physician (77 percent).
- **Hypertension:** A study of an interactive voice response phone system for patients with hypertension.[71] A driver to the use of this system was that nearly all of the subjects felt it made them more aware of their condition (95 percent) and most felt that it relieved their worries about the disease (79 percent).
- **HIV/AIDS:** In a system for HIV/AIDS, the patients perceived that their health was better when using the system, but in addition they reported having a sense of greater control over their situation.[72]
- **Physical Disabilities:** One study[79] of a Web-based system to promote physical activity for patients with physical disabilities (spinal cord injury (33 percent), multiple sclerosis (21 percent), and cerebral palsy (19 percent)) notes that a driver for the use of this system was the patients' perception of increased health and performance, associated with motivational messages.

3. d. ii. Perception of Convenience and Accessibility Benefits

The perceptions of convenience and ease of access were also important drivers to the use of the health IT.[32, 39, 46, 47, 69, 77, 84, 91, 92, 95, 110] Many patients with chronic conditions who were in support groups found it much more convenient to use the online format. In a study of breast cancer patients, many participants expressed difficulty finding or being able to attend support services in their home communities, and average travel time to receive breast cancer treatment or follow-up was over 1 hour.[46] Similarly, with an automated voice response phone system for diabetes, patients liked being able to receive the calls at a time and place that was convenient for them.[47] Also, heart failure patients reported that it was helpful to be able to check lab results and medication dosages while traveling.[32] Diabetic patients received tailored recommendations via both Internet and mobile phone, and a driver to use was the convenience of immediate download of information and accessibility on a mobile device.[115]

An additional perception of convenience was the time required to complete educational sessions. A study discovered that many participants in the schizophrenia tailored education intervention preferred the shorter length of the computer sessions to the longer sessions with the community nurse counselor.[39]

3. d. iii. Rapid Response From Clinicians

A corollary to convenience as a facilitator of system use has to do with the participation of clinicians in health IT interventions. Active and timely response on the part of health care professionals was seen to be important when it was an expected component of the intervention. For example, one study reported that rapid electronic messaging turnaround and replies by their physicians increased patient satisfaction (the average turnaround time was 48 hrs in this study).[28] Similarly, patients receiving tailored printed feedback to share with their provider on smoking cessation and physical activity were more satisfied if the physician examined the report during the office visit.[109]

3. d. iv. Benefit of Anonymity for Sensitive Health Topics

We found evidence of a perceived benefit to the use of health IT in the area of anonymity regarding sensitive health problems.[72, 85, 87-89] For example, the HIV/AIDS technology study patients' appreciated the anonymity of the communications and this appeared to lead to greater perceived control over their condition and increased use of the system.[72] HIV+ participants also preferred to "discuss" sensitive topics with the computer because it reduced feelings of embarrassment and promoted privacy.[88] In this study 17 percent of the patients reported being more honest with the computer. Similarly, with a PDA system for bipolar disorder, patients reported preferring to use the tool because it was discrete and not stigmatizing.[85] Finally, for breast cancer patients using an online support group with the CHESS system, anonymity within the support groups appeared to foster a more equal participation among subjects.[87]

3. d. v. Benefit of Understanding Physicians and the Health Care System

It appears from the studies we reviewed that having a better understanding of the health care system and a better connection with their doctors is important to patients and a driver of system use. A system for heart failure patients provided patients with secure web access to their medical records, a guide to heart failure and a messaging system for communicating with their doctor and sharing information with other doctors.[32] The perceived benefits for the patients included: (1) they better understood the doctors' thought processes and decisionmaking, (2) they had a better understanding of the medical care process, leading to the perception of more control, (3) they perceived they could communicate better with the doctor and felt that they had an increased participation in care—a more active role, and (4) they felt they had more of an appreciation for the doctors' skill & expertise.[32] Similarly, the HIV/AIDS system study participants perceived that it was beneficial to have access to experts and second opinions.[72] Finally, in a patient-provider messaging/monitoring and email alert system, 83 percent of the patients felt the system provided a sense of security in being able to contact a health care provider in the hospital and 75 percent felt the system helped them communicate better with their health care providers.[56]

3. d. vi. Deliver Information on Devices Patients Use Every Day

Another clear message about improving the use of interactive consumer health IT is to deliver the messages on devices the patients or consumers use every day. One study found that if the Internet is not part of one's daily life, then SMS (Short Message Service for sending short messages to mobile devices) might work better for immediate feedback systems.[63] These researchers suggested using rewards (free SMS units) to provide perceived benefit when the physiological benefit is not obvious to the patient.[63] Text messaging was found to be especially appropriate for a younger mobile population. Rodgers et al. used mobile text messaging for smoking cessation intervention for young adults. Their arguments were that the use of cell phones with a young population is "popular, has caché among peers, is age appropriate … and that the ownership of cell phones is much higher among lower SES groups than computers." They anticipated that the use of the new multimedia phones will allow them to offer even more sophisticated distracter activities for smoking cessation that will still be low cost.[114]

3. d. vii. Tailor to Patients' Interest

Several literature reviews have demonstrated the benefits of tailoring health information for patients, both in terms of behavior change and satisfaction.[116] In our review, we found similar evidence to support this. With a diabetes system, patients preferred tailored information on several counts: (1) it answered their questions better, (2) it related to their interests and current concerns, (3) it met their comprehension level, (4) was relevant to their family history, and (5) the information was ordered according to importance to them as individuals.[43] Additionally, the system had most of the information geared toward newly diagnosed patients, and these were the participants who found the material most helpful. In a tailored versus generic information for diabetes and physical exercise, the participants using the system with tailored information had both greater system use and greater satisfaction with the system.[44] A diabetes simulation program found that the participants were motivated to download the software because they are interested in how insulin therapy varies with respect to their own circumstances.[110] With a similar diabetes system, the participants' ability to view glucose value trends provided confidence for dramatic treatment change. Looking at their own trends allow patients to be able to test insulin dose / snack effects and to develop an understanding of the causal relationships.[29]

3. d. viii. Patients in Poor Health Benefit More

Interactive consumer health IT systems seem to do better and have greater use when they are offered to patients who are sicker or more compromised, thus feeling the need for additional assistance. For example, in an online support group for women with breast cancer, those with lower perceived health status showed the greatest improvements over time. The intervention was most effective for those who started with greater expression of sadness, anxiety, and negative emotions. The women most recently diagnosed, and experiencing distress, were the most likely to benefit.[46] In addition, patients with another diabetes system said it would be most useful when they might not be in good control, when there were weather changes, or when they were planning a long journey.[29]

3. d. ix. Drivers for Older Users – Gradual Introduction of Technology

In the studies that concentrated on older users, the main finding that appeared to drive increased use of the systems was to gradually introduce the new technology. One researcher recommended starting with familiar tools and having a gradual introduction of technology to ensure successful use by older participants.[94] In addition, that study identified benefits to involving older users in the design process. They also found that using the technology to integrate older users with family caregivers and with society in general drove system use by elders. Similarly, another study reported that gradual introduction of technology worked best, stating that people who already had Internet access were more likely to accept and even want to try the new Web-based technology.[28]

3. d. x. Summary of the Drivers to the Use of Interactive Consumer Health IT

In summary, we found 60 studies that addressed the drivers and facilitators of consumers' use of health IT. Many of the findings are derived from the set of articles that also discuss barriers. Thus, many of the factors describing the drivers are the converse of the barriers listed in the previous section. The most frequent factor associated with increased use of the interactive consumer health IT was the patient's perception of a health benefit. Most of the systems in this section were designed for use by patients with chronic conditions, and it was important that the patients feel that the system was helping them manage their condition. Convenience in terms of access to the technology and the amount of time required for the intervention was shown to be a factor driving technology use. It was shown to be beneficial to deliver the interventions on devices consumers use every day for other reasons. Again, clinician involvement was a driver to the use of the technology. A rapid response from the clinician was shown to improve patient satisfaction. Also, providing content tailored to an individual consumer was shown to increase both system use and satisfaction. Finally, an important driver of technology use relating to older users was the gradual introduction of technology.

3. e. Findings for Key Question 5: Effectiveness of Interactive Consumer Health IT

In the elderly, chronically ill, and underserved populations, is interactive consumer health IT effective in improving outcomes?

a) How does the technology's effectiveness vary for our populations of interest?

b) How does the technology's effectiveness in these populations of interest differ from the effectiveness in the general population?

We identified 74 studies reporting on the outcomes of interactive consumer health IT, including 50 randomized controlled trials,[30, 35, 38, 41, 42, 44, 46, 48-51, 54, 62, 66, 78, 79, 93, 100, 102, 106-108, 114-141] three studies using a cohort design,[39, 97, 142] 17 trials with a case series (or before-after) design,[27, 29, 31, 33, 34, 95, 113, 143-152], three studies with cross sectional designs, [53, 99, 153] and one with a qualitative design.[32]

Interactive consumer health IT systems are implemented to achieve a broad variety of outcomes, from enhancing self-efficacy, to reducing levels of glycated hemoglobin, to improving functional status as measured by the Medical Outcomes Study Short-Form 36 (MOS SF36). Because this body of literature is so variable in terms of the types of outcomes used to assess the impact of interactive consumer health IT, we were broadly inclusive in terms of the outcomes reported, including:

- Attitudes, such as self-efficacy or the perception of social support.
- Knowledge, of one's condition or its treatment.
- Health-related behaviors, such as diet, exercise, or medication adherence.
- Disease status measures, such as glycated hemoglobin values, Beck Depression Inventory score, or peak expiratory flow rates.
- Functional status measures, such as the six-minute walk test.
- Quality of life measures, whether general or disease-specific.

While broadly inclusive in terms of the study designs employed and the types of outcomes measured, we were more restrictive in terms of the quality and likely validity of included reports. Using established criteria as described in the Methods section of this report, each publication was independently assessed for study quality and assigned a rating of Good, Fair, or Poor. Findings from studies assigned a rating of Good or Fair are included in this research synthesis. Findings from studies assigned a rating of Poor are discussed only to the degree that they lend additional insight, such as illustrating the importance of ensuring that systems are technically sound prior to conducting clinical trials to assess their impact.[154]

Taken together, this body of literature can be summarized in terms of a series of tentative conclusions or propositions[23] about the effectiveness of interactive consumer health IT, as follows.

3. e. i. Complete Feedback Loops

A recurring pattern that is apparent in the evidence examined for this report is the effectiveness of systems that provide a complete feedback loop with regular communication between patient and clinician or system. Across a range of medical conditions, IT, geographic areas, and socioeconomic status, we found a consistent pattern of effectiveness of multi-component systems that provide a timely response to information about the current or evolving status of the patient as part of a complete loop of interaction between patient and health professionals. These systems are highly varied and include differing combinations of component functions, but have in common components that enable:

- Monitoring and transmission of data about the current status of the patient, such as daily blood pressure, weight, and symptoms in heart failure patients, or blood glucose, diet, and activity in diabetics.
- Interpretation of this data about current patient status by comparison to previously established individual treatment goals or to published guidelines.
- Adjustment of medications, diet, or provision of information as needed, according to the data received about patient status.
- Timely feedback to the patient of adjustments in medications, diet, self-management education, or support, whether by email, voice messaging, telephone, or other means.
- Repetition of this cycle at the appropriate intervals.

Systems that provide such a complete feedback loop are grouped here according to their intended duration of use:

1. Ongoing chronic disease management systems, intended for indefinite, continuous use in the care of chronic conditions such as diabetes, heart failure, or asthma.
2. Multiple session training or treatment systems, consisting of a finite series of modules that must be completed by the patient, usually over a period of weeks, either to provide training in self-care or as a means of delivering the treatment itself, in the case of some mental health disorders.
3. Single session systems intended for one-time use, often as part of a visit to a health professional, to assist in assessment, decisionmaking, or goal setting.

3. e. i. 1. Ongoing chronic disease management

Health professional feedback. We found ten randomized controlled trials[78, 93, 115, 123, 127, 131-133, 135, 136, 139] and two case series[31, 147] of interactive consumer health IT for chronic conditions in which a health professional reviewed and responded to health status data sent by the patient. All of these showed benefits in at least some outcome measures. Positive effects were reported with systems that included a variety of health professionals reviewing and responding to the data, using a variety of technologies to communicate recommendations back to the patient, including: physician feedback using secure email;[123] nurse practitioner,[31] pharmacist,[127] or case manager[139] feedback through a the system Website accessible to the patient; nurse feedback and advice via text (SMS) messaging;[78, 115] and physician,[136] nurse,[131] or members of a diabetic care team including physicians, nurses, and dieticians depending on the message,[132] using conventional telephone lines.

We found three reports of systems for management of **hypertension** that provided a complete, interactive feedback loop. In a randomized trial of patients with hypertension, blood pressure control was improved in 261 patients who used a Website to report daily blood pressure values and who received biweekly medication adjustment from a pharmacist, compared with: (a) 259 controls who received training and advice to perform home BP monitoring, plus training in Web-based access to their EMR;[155] and (b) 258 control patients who received routine hypertension education and were given Web-based access to their EMR. Another randomized trial of adults with hypertension found reductions in blood pressure, more frequent treatment adjustments, and a higher odds ratio of hypertension being controlled when patients used a home system that combined blood pressure monitoring with reporting, review, and adjustment by a physician.[136] Finally, a case series of 49 hypertensive adults reported that greater reductions in blood pressure correlated with greater adherence to using a system that included home blood pressure monitoring, medication reminding, and physician interaction, although this study had no control group and no accounting for confounders such as medication adherence.[147]

We found four reports of randomized trials of persons with **diabetes** using systems with a complete, interactive feedback loop, each reporting improved outcomes. An initial 12-week randomized trial[132] and a subsequent 30-week randomized trial[123] of a program in Taiwan combined (a) home monitoring of blood glucose, weight, and medications with (b) daily review of these data by a physician and (c) regular communication back to the patient of recommendations from a member of diabetic care team that included physicians, nurses, and dieticians. Intervention patients also had Web-based access to their EMR. Compared to patients receiving usual care, the intervention group had lower values of glycated hemoglobin and reduced fluctuation in their blood glucose values. Outcomes, including glycated hemoglobin, fasting blood glucose, and reported physical activity, were also improved in a 12-week trial to increase physical activity in adult diabetics who, following an initial assessment, performed and reported physical activity and received weekly nurse telephone contact to monitor progress and provide stage-appropriate recommendations.[131] In a 12-week randomized trial, adults with diabetes (N = 51) had improved glycated hemoglobin and post prandial glucose using a system that combined Web-based monitoring of blood glucose, medications, and events with weekly nurse review and text message (SMS) feedback including medication adjustments, education, and reinforcement.[78, 115]

Three studies reported improved outcomes in patients with **heart failure** using systems that included home monitoring by the patient and feedback from a health professional. Southard reported on a randomized trial that included weekly monitoring of weight, activity, diet, and other data by heart failure patients, with feedback and recommendations from a case manager and dietician.[139] Patients using the intervention had greater weight loss during the 6-month trial, while both intervention and control patients had improvements in diet, activity, and serum lipids. Delgado reported on a case series of 16 patients with heart failure using a Web-based system to report daily monitoring of weight, blood pressure, heart rate, and symptoms, and receive daily responses from a nurse practitioner.[31] After 3 months, patients had improvements in three subscales of the Minnesota Living with Heart Failure Questionnaire. LaFramboise randomized 103 patients with heart failure to receive a) a health IT intervention that included monitoring, clinician assessment, and feedback with advice or encouragement; b) the health IT intervention plus home care; c) home care alone; or d) telephone care. Patients using the health IT intervention had increased self-efficacy, while all groups had equal improvement in health related quality of life, the, 6-minute walk test, and depression scores.[133]

One randomized trial included frail elderly veterans with at least one **chronic condition**: heart failure, chronic obstructive pulmonary disease, and/or diabetes. Patients randomized to a telecare system with regular monitoring, clinician review, and nurse case manager feedback for six months had fewer hospital days, fewer urgent care visits, and among those with diabetes, lower glycated hemoglobin, although cognition and quality of life were not affected.[135]

One study did not fit this pattern: adults recovering from **bypass surgery** improved equally after discharge with routine nurse telephone follow-up every 2 weeks compared with daily Web-based monitoring of symptoms with scripted management replies from a case manager.[93]

Voice message feedback. We found one randomized trial reporting results of a voice message system for patients with **heart failure** that included daily monitoring of symptoms by the patient and, on the basis of current symptoms, selected daily voice messages about self care, reviewed for appropriateness by research nurses.[119] Compared with patients receiving usual pre-discharge education, patients using the system had improved self-efficacy, health related behaviors, and improvements in some scales of the Medical Outcomes Study (MOS) Short Form-36 (SF36).

Computer-assisted feedback. Three studies, two in persons with diabetes and one in persons with asthma, reported improved outcomes using systems with complete feedback loops where feedback was provided by computer alone or by a physician with computer assistance. A randomized trial of 105 adults with **diabetes**—-using online monitoring of diet and activity with expert system diet analysis and advice—reported improved diabetic knowledge and dietary behaviors.[108] In a case series, persons with diabetes receiving computer automated dietary feedback based on periodic online dietary assessments (plus access to a diabetic self-management Website and diabetic information) had improved dietary fat compliance, diabetic support, and cholesterol, although exercise and glycated hemoglobin were unchanged.[34] Computer assisted physician recommendations were examined in a randomized trial of 100 adults with **asthma**.[49] Using a touch tone phone or the Internet for daily monitoring of peak flow, subjects received secure e-mail feedback from a physician assisted by computerized decision support. Intervention patients had fewer symptoms, better quality of life, improved adherence to medications, and improved use of an action plan, compared with self management training with action plan alone or with usual care.

No feedback. No benefit was found in a randomized trial of a system for patients with obstructive sleep apnea that provided daily monitoring of continuous positive airway pressure (CPAP) use and symptoms but no feedback such as personalization, adjustment, or support unless the patient was "high risk".[107] Functional status and CPAP use were no different after 30 days in 56 patients using the system compared with 56 controls.

3. e. i. 2. Multiple session training or treatment

Like interactive consumer health information systems intended for ongoing chronic disease management, systems intended for use in a finite series of sessions or modules tended to be effective when they incorporated a complete feedback loop that combined patient assessment or data entry with feedback based on information about the current state of the patient, but this finding was less clear and consistent for these systems. We found six studies showing improvement in outcomes with training or treatment of this type, two in patients with asthma,[130, 144] three in depression,[124, 143, 149] and one in panic or phobic disorder.[97] We found one study showing a negative effect, where improvement in alcoholic behaviors occurred with face-to-face but not with secure e-mail counseling.[118] One study of a system that provided no feedback showed no improvement,[46] while two studies did not provide evidence on the question because of weaknesses in study design or reporting.[44, 48]

Urban African-American teenagers with **asthma** had fewer days of symptoms, fewer days of missed school or missed activities, fewer hospitalizations, and improved access to controller medications 6 months after completing a four-session program on school computers that provided tailored education, including both normative ('compared with other students') and ipsative (related to self) feedback ('compared with your last session').[130] Patients had fairly low rates of medication availability or use at baseline. Ten children with asthma had significantly improved inhaler technique and improved peak flows using video monitoring and case management. Of note, Web-based symptom diaries were used less frequently than paper-based diaries.[144]

Among 57 patients with **depression** randomized to Internet-based self-help modules that included therapist feedback by e-mail, measures of depression symptoms improved compared with 60 controls participating in a moderated discussion group.[143] Improvement was also reported in a case series of 72 patients with depression who completed 8 weeks of Web-based monitoring, feedback, online cognitive behavioral therapy, e-consultation, and medication reminding. Of note, half of those enrolled did not complete the full 8 weeks, and adherence was higher with case manager reminding than with automated reminding.[149] Depressed patients solicited on the Internet had improvement in depression symptoms and depression literacy using either Web-based education or Web-based cognitive behavioral therapy compared with controls.[124] The degree to which education or therapy was tailored or personalized could not be determined from the report. **Panic and phobic disorder** symptoms improved equally well in patients using computerized cognitive behavioral therapy with brief therapist support, whether delivered over the Internet or delivered in a clinic.[97]

No Benefit. One study in this group had negative findings: **alcoholic** factory workers randomized to two face-to-face counseling sessions had improved knowledge and attitudes and reduced alcohol consumption, but workers randomized to e-mail counseling had no significant changes compared with controls.[118]

No Feedback. Owen found no difference in health-related quality of life, psychological well being, or physical function in a randomized trial of patients with **breast cancer** who completed self guided coping skills training in a system that also included peer support, a bulletin board, resource directory, and other features, but no mechanism for feedback, adjustment, or tailoring of information according to patient status.[46] A possible ceiling effect due to the patients' high baseline quality of life, and the small sample size suggest the potential for Type II error in this study.

Indeterminate. Pike randomized **smokers** seeking to quit to a static Website with downloadable booklets or any of five smoking cessation Websites, some of which included personalized feedback features.[48] Intervention patients and controls had similar abstinence rates (11 percent), but higher abstinence rates were found in sites that had higher rates of use. Data was combined for all five sites, so characteristics associated with higher use were not discernible from the study, and the influence of personalized feedback could not be determined from the report. McKay reported on a randomized trial of sedentary adults with **diabetes** offered an 8-week Web-based personalized training program with goal setting, monitoring, feedback, a personal coach, and peer forum.[44] Controls simply given pointers to generic Internet sites had equivalent significant increase in physical activity, but little can be inferred from this because of limited actual use by the intervention group,

using the peer forum once on average, and the personal coach only twice in 8 weeks, on average.

3. e. i. 3. Single session systems

Four of the interactive consumer health IT studies we identified that involved a complete feedback loop were intended for use in a single session, providing tailored information in the form of computer-assisted goal setting[100, 148] or tailored education and advice.[99, 122]

In a case series 320 adults with **diabetes** using office-based education and computer-assisted goal setting showed improvement in self-reported diet, but no change in glycated hemoglobin or body mass index.[148] There was no difference if patients received follow-up calls, telephone calls, a binder of community resources, or both. Children with **asthma** using an interactive CD-ROM to create a personalized treatment plan had greater knowledge of asthma at 1 month and fewer courses of steroids and fewer hospitalizations at 6 months, though the latter finding was not significant with intention-to-treat analysis.[100]

Low-income women significantly increased their intake of fruit and vegetables after viewing a dietary education CD-ROM followed by two reminder phone calls; there was a nonsignificant dietary change after CD-ROM alone and after a control CD-ROM concerned with stress management.[122] Of low-income women **smokers** using an interactive video with tailored advice, 79 percent reported at least one smoking cessation behavior, and favorable attitudes toward smoking declined.[99]

3. e. ii. Reminders, Alone and With Monitoring

We identified five randomized trials of interactive consumer health IT systems that provided individualized reminders to patients, and these showed inconsistent results. No difference was found in glycated hemoglobin among 25 persons with diabetes receiving automated text pages or e-mail reminders about diet, medications, exercise, etc. compared with 25 controls,[41] although patients had a positive attitude toward the technology. There was improvement in self-efficacy, self-reported adherence, and perceived support, but no difference in glycated hemoglobin among pediatric patients with diabetes receiving daily individualized reminders via mobile phone text (SMS) messages based on previous clinic visit goal-setting; knowledge of diabetes improved equally in intervention and control patients.[125] Self reported and cotinine-verified quit rates were higher among adult smokers receiving SMS text reminder messages over 6 months compared with controls receiving periodic thank you messages.[114] Adherence to medications and monitoring of peak flow, missed school days, urgent care calls, and days with severe obstruction were all improved among 66 urban children with asthma using a telephone-based monitoring and reminding device, compared with 68 controls using a paper-based diary.[128] HIV/AIDS patients had nonsignificant increase in medication adherence (though a significant increase in the subgroup with impaired memory), lower HIV RNA load, and nonsignificant increase in CD4 counts 24 weeks after randomization to use of an automated reminding device.[117]

3. e. iii. Monitoring Alone

Because this report is focused on interactive health IT for use by patients or consumers, we excluded reports of surveillance systems that automatically transmit physiologic data such as heart rhythm to providers without direct participation by the patient. Monitoring by the patient was but one component of the multi-functional interactive consumer health IT described above under Complete Feedback Loops. Three reports that we identified in our search provide some evidence on the effect of consumer health IT for monitoring alone, and the results are inconsistent. As mentioned above, a randomized trial of patients with obstructive sleep apnea using daily monitoring of CPAP use and symptoms, without feedback or other interaction, found no change in functional status or CPAP use,[107] suggesting no benefit of monitoring alone. On the other hand weight loss was correlated with adherence to monitoring, which overall was poor in a case control study of overweight adults using a handheld device to monitor calorie intake and weight.[152] Finally, control group heart failure patients provided with a scale and weight log had improvement in self care and quality of life equal to that of intervention patients with a specialized device for transmitting daily weights, suggesting that monitoring alone may have an effect.[106]

3. e. iv. Peer Interaction

We identified eight reports of studies of peer interaction in online forums or discussion groups, four concerned with peer interaction alone[34, 121, 141, 151] and four in which peer interaction is one element in a complex, multi-component system.[42, 46, 53, 129]

Peer interaction alone. We found three randomized trials that suggest that social and personal outcomes such as peer support and self efficacy are improved by interactive consumer health IT systems providing peer support. Peer interaction in an online forum among adults with diabetes increased perceived social support more than interaction with a Web-based health professional, or Web-based information access alone.[121] Peer support services among persons with diabetes increased perceived peer support at 10 months, compared with subjects receiving automated Internet services alone or regular communication with a professional health coach.[34] Measures of depression, stress, and post-traumatic stress disorder symptoms were improved among 36 women with breast cancer involved in a Web-based, structured breast cancer social support group, actively moderated by a mental health professional though no difference was found in other behavior, attitude, or anxiety measures.[141]

Peer interaction in multi-component systems. We found moderate, inconsistent evidence in three randomized trials and one correlation study that social and personal outcomes such as peer support and self efficacy are improved by interactive consumer health IT systems that provide peer support components as part of a complex, multi-component system. A randomized trial of HIV/AIDS patients using a complex multi-component system including information, decision aids, expert consultation, and peer support reported higher quality of life and lower utilization of health services during and after a 3 to 6 month trial.[129] Though some services were used more heavily than others, it could not be determined from the available data which service or combination of services were responsible for the effects, but peer communication services were among the most heavily used. One correlation study of 231 breast cancer patients using a multi-component system including information, decision aids, expert consultation, and peer support found that information competence correlated with use of information and interactive services but not with communication or expert services.[53] A randomized trial of patients with

chronic diseases receiving 6 weeks of peer-moderated Web-based training regarding diet, exercise, symptom management, medication use, and communication, along with online forum had no change in global health, illness intrusiveness, disability, aerobic exercise, or utilization, but did have improvements in pain, dyspnea, health distress, fatigue, and stretching exercises.[42] Women with breast cancer using self-guided coping training combined with peer support bulletin board, resource directory, library, and art and poetry repository had no change in health-related quality of life.[46]

3. e. v. Education or Information Alone

As described in the Methods, we excluded general-purpose Internet sites that provide information for the general public without tailoring, individualization, or direct patient interaction. We found one report that education alone impacts knowledge, and five reports that provide weak but consistent evidence that outcomes are not affected by systems that provide education alone. Children with asthma had improvement in some measures of knowledge about self-management, and possibly in self-efficacy, using an interactive CD-ROM game with role-playing and education.[138] Peer support was not affected in adults with diabetes in the control group provided with information alone, compared with interactions with health professionals or peers through an online forum.[121] Hypertension control did not improve in the control group receiving education and a blood pressure monitor compared with the monitoring and feedback intervention.[127] Teenagers in the control group receiving asthma education using generic asthma Websites were less likely to complete all four sessions and less likely to improve health-related behaviors than were those in the group receiving tailored education.[130] Users of a telephone-based cancer information service (controls) had less new knowledge and knowledge of their condition of interest than did users of an instant messaging based cancer information service, although baseline differences in groups were significant and this could simply be different populations of users.[153] Adult diabetics in the control group receiving educational materials alone did not have reduction in glycated hemoglobin and fasting blood glucose or increase in physical activity found in the intervention group using physical activity monitoring, feedback, education, and stage-appropriate prescription, including weekly nurse contacts to monitor progress and adjust recommendations.[131]

3. e. vi. Access to EMR Data and Secure Email System

We found two studies that provide weak evidence that online access to the clinician's EMR and optional secure email with clinicians does not by itself improve outcomes, except when combined with tailoring or more bidirectional information. Hypertension patients in a control group receiving online access to their EMR and the option of e-mail with clinicians did not improve their degree of hypertension control and showed limited actual use of the system, compared with the intervention group patients.[127] Heart failure patients in the control group with online access to the EMR and the option of e-mail with clinicians had improved 'general adherence,' but more ED visits, more clinic contacts, and no difference in self efficacy, health status, medication adherence, hospitalizations, clinic visits, or deaths.[51]

3. e. vii. Web-based Assessment With Recommendations

Our search retrieved one report of the outcomes of Web-based assessment and recommendations. In a randomized trial of in adults with knee osteoarthritis, satisfaction with prior care was not reduced when patients used a Website to self assess their condition and obtain with recommendations for care, compared with controls.[102]

3. e. viii. Systems May Not Be for Everyone

Of the studies concerned with the effect of interactive consumer health IT on outcomes, patients in six demonstrated or stated a preference not to use the technology. These included (a) asthma patients who stated a preference for and had higher adherence with paper logs;[30] (b) obese patients of whom 44 percent did not prefer a PDA to a paper-based diary for monitoring;[152] (c) patients with schizophrenia, of whom those given nurse-based education showed more improvement in mental state at the end of the sessions, and who on the whole were more satisfied with the nurse-based education;[39] and (d) children with asthma who used paper-based diaries twice as much as Web-based diaries in a study using video monitoring and feedback.[144] Among persons with depression adherence was higher with case manager reminding than with automated reminding.[149] Finally, problem drinkers and smokers in a primary care setting evaluated a brief tailored video doctor intervention favorably, but "Despite this overall positive response to the program, 72 percent of participants said they would be more comfortable answering questions about personal health from a ‘real doctor’ compared with a video doctor and 71 percent said they believe a ‘real doctor’ would do a better job of offering patients recommendations about wellness and healthy living than would a video doctor."[95]

3. e. ix. Summary of the Effectiveness of Interactive Consumer Health IT

In summary, we reviewed 74 studies that reported the effect of interactive consumer health IT on health outcomes or health care process measures relevant to Key Question 5. The most important and consistent finding of this review was that systems were effective when they provided a complete feedback loop that included (a) monitoring and transmission of patient status; (b) interpretation of this data by comparison with previously established individual treatment goals or published guidelines; (c) adjustment of medications, diet, or information according to patient status; (d) timely communication back to the patient with tailored recommendations or advice; and (e) repetition of this cycle at appropriate intervals. These 'complete loop' interventions were effective across a wide range of medical conditions, monitoring and communication technologies, geographical areas, and patients' socioeconomic status.

Interactive consumer health IT that provided only one or a subset of these functions were less consistently effective. Systems that provided reminders, alone or based on monitoring, were less consistently effective. Systems that provided peer interaction, alone or as part of multi-component systems, were generally effective for improving intermediate outcomes but not for health outcomes. Weak but consistent evidence showed that education or information alone had minimal effect on health outcomes. Online access to data in the clinicians' EMR and optional e-mail with clinicians did not by itself improve outcomes, except when combined with tailoring or more bidirectional information flow.

When asked, in some cases patients sometimes expressed a strong preference for human interaction, even with systems that were effective. Many studies showed these systems to be effective in specific populations of interest: elders, those with chronic illness, members of underserved populations, but our search identified no direct comparisons of outcomes among subpopulations or between a target population and the general population.

3. f. Specific Findings for Populations of Interest

Each of our key questions had sub-questions about the relative use and effectiveness of the technology by our populations of interest (elderly, chronically ill, and underserved). However, we did not find evidence for relative comparisons between groups of interest on the same technology. There were certainly papers that primarily focused on special populations, such as a specific minority group, a low income area, an elderly population, or a rural setting, but they did not answer questions of relative use and outcomes. In most of the studies we identified, the interactive consumer health IT interventions were directed at a specific subpopulation, such as rural women with breast cancer[54, 156] or inner city teens with asthma.[128, 130] Although computers were sometimes provided for subjects,[129, 130] access to e-mail or the Internet was often an inclusion criterion,[30, 31, 34, 48, 51, 53, 54, 62, 102, 107, 116, 123, 127, 132, 139, 143, 149] making it difficult to study the underserved. Also, few of the studies we identified included samples of sufficient size to permit reliable inferences about differences in subgroups. As a consequence, limited and only tentative conclusions can be made about differences in effectiveness among subpopulations, based on extrapolation from this data or on indirect comparisons. We have summarized the evidence relating to the use of interactive consumer health IT by specific populations in Summary Table 6 and the sections below.

3. f. i. African-American Population

Fifteen studies provided ethnicity data for study participants ranging from 4-88 percent African American.[47, 53, 86, 95, 102, 106, 107, 113, 128, 130, 141, 153, 157-159] Although other potentially underserved ethnic groups were listed in many of the studies, only African American populations made up the majority in any of the studies we reviewed (Summary Table 6). Three studies[106, 128, 160] focused primarily on African American populations in urban settings, with proportions ranging from 65 percent[106] to more than 98 percent[160]. Subjects reported technical usability problems in these studies, specifically difficulties reading the screen or monitor. Moreover, problems with perception of letters due to their color and difficulties related to sound were also documented.[106] The remainder of the studies providing ethnicity data had samples of less than 50 percent African American, and no subgroup analysis was provided. As noted earlier, no studies provided direct comparisons for this subgroup with other populations.

3. f. ii. Rural Population

There were a total of 9 studies that concentrated on rural underserved areas.[36, 53, 54, 60, 75, 146, 151, 156, 161] Of these, five[36, 54, 60, 151, 156] were based wholly on rural areas whereas the remaining four[53, 75, 146, 161] examined a combination of small city, rural, and urban settings.

The Ferrer-Roca 2004 study reported that 71 percent of the intervention subjects and 92 percent of the control subjects thought that the system was easy to use whereas 50 percent of the intervention subjects and 88 percent of the control subjects had difficulties in accessing the system ($p<0.01$). Besides these relevant findings, the same study also showed that 86 percent of the intervention subjects and 40 percent of the control subjects would recommend the site ($p<0.01$) whereas 33 percent of the intervention subjects and 12 percent of the control subjects did not find the system useful and efficient ($p<0.05$).[60]

Interestingly, the Kaufman 2003 study based on rural upstate New York and Hispanic New York City populations, classified usability concerns into system barriers and cognitive/skill barriers. Some of the system barriers documented in this study were problematic widgets, small fonts, bad spacing, complex tasks, screen transitions, and system stability. The cognitive/skill barriers included mouse-keyboard skill, mental model, literacy, and numeracy. Anxiety, self-efficacy, and motivation were also found to be important issues surrounding health IT use.[75]

3. f. iii. Underserved Population

One study was based in public health clinics with one provider for 10 clinic sites and 63.3 percent of the subjects having some chronic illness. A majority of the study subjects (81.1 percent) felt that the computer was easy to use whereas 12 percent asked for help and 24.8 percent had privacy concerns regarding use of the computer. Satisfaction with provider visit was significantly related to having a chronic condition, being a nonsmoker, and having a provider who reviewed the report with the patient.[109] In addition, investigators specifically looked at the barriers to the use of personal health records by low-income elderly people living in a publicly subsidized housing project.[82] They found that computer literacy and computer anxiety were the major barriers to use in this population, with 63 percent of the group having problems with computer literacy and 58 percent having problems with computer anxiety. Barriers due to cognitive impairment (34 percent), health literacy (29 percent), and physical impairments (26 percent) were also significant factors affecting the use of the personal health records. In a study of low-income women who smoked,[99] the factors associated with increased satisfaction and system use were readiness-to-change, minority, and a greater than high-school level of education. Finally, one study tested a computer tool for monitoring asthma symptoms and spirometry values in a low-income inner city area where 2/3 of the subjects had never used a computer and nearly half had never used an ATM machine for banking.[70] In addition, the majority of the subjects were non-native English speakers. Their primary barriers to the use of the asthma monitoring system were a lack of computer experience, limited availability of instructional assistance for both the computer and the intervention, and the cost associated with providing the system beyond the study period.

3. f. iv. Elderly Population

We found 13 studies with study subjects over the age of 65 years.[36, 38, 45, 47, 62, 69, 75, 82, 98, 113, 119, 120, 162] In two of the studies, the elderly population was examined as a subgroup.[38, 62] Six studies were conducted on subjects aged 65 years and above[36, 82, 119, 120, 162] and the remaining four had subjects with mean age ranging from 69.1 to 73.7 years.[45, 75, 98, 113] One study found that younger users were more interested in their diabetes system.[69] Another found that their younger patients with diabetes (less than 55 years of age) were less likely to listen to as many messages, but more likely to want to use the system in the future.[47] With a physical exercise system specifically designed for elders, researchers found that even within an older group, age was directly related to increased need for assistance with the technology. Then as mentioned above, a study with low-income elderly participants using a personal health record found computer literacy and computer anxiety to be the major barriers to use of the system.[82]

Chapter 4. Discussion

The results of our analysis of the literature pertaining to the barriers and drivers to the use of interactive consumer health IT by the chronically ill, elderly, and underserved is based on the relationships modeled in our analytic framework. As described in the methods section, we modeled the factors that influenced the degree of use of health IT as arising from patient characteristics, technology characteristics, and environmental factors. Our key questions were then generated to test these relationships, as well as the assumption that increased or improved use of the systems would improve intermediate outcomes, such as knowledge, self-efficacy, or health behaviors, as well as end outcomes, such as quality-of-life, satisfaction with care, or costs.

The summarization of evidence described in this chapter is based on Denyer[23] and Popay's[22] frameworks. For each of our five key questions, we first analyzed a subset of the papers to develop a model of how best to describe the technologies and interventions, as well as to describe the use characteristics and associated issues. This preliminary synthesis served as a framework for the rest of our summarization. Our focus in this review was on consumer health IT that was interactive, meaning that the consumer or patient was the primary user of the system and received computer-mediated patient-specific information in return. Through our review process, we found distinct technology types that needed to be assessed separately:

- In-home monitoring, disease management, and self-management systems.
- Online forums on health topics.
- Patient access to their EMR and patient/physician e-mail.
- Single or sporadic use of an interactive educational system.
- Interactive training systems that monitor patient signals and provide immediate feedback.
- Interactive and tailored reminding systems.

There are several challenges to reviewing interventions based on interactive consumer health IT, primarily due to the fact that the interventions being studied in the articles we reviewed were highly varied. Firstly, the underlying technology varied significantly and could include Web-based applications, hand-held PDAs or cell phones, and touch-screen computers or kiosks. Secondly, the systems were designed for a wide variety of purposes, not a single intervention. Even though we focused the review on systems for the elderly, chronically ill, and underserved populations, we covered many application areas, such as systems for diabetes, asthma, cancer, mental disorders, smoking cessation, and medication reminding. Children with chronic conditions were included in our review, and we found that they have very different types of usage issues and systems designed for them. Thirdly, the frequency of intended use of the various systems could be quite different. Some were single use interactive educational systems or decision aids. Others were intended for daily use in the home. Fourth, these systems varied widely in complexity, from simple systems providing a single function to complex systems with an robust suite of diverse features. Finally, the embedded care protocols and the degree to which clinicians participated on the other end differed dramatically from study to study. All of these issues are critical when interpreting the results of these studies, and the variability in approaches has made us cautious in generalizing our results too broadly.

Another issue we confronted in reviewing studies of interactive consumer health IT involved the quality ratings for our evidence. We incorporated two quality ratings, one based on the appropriateness of the methodology to the study question and the second based on the quality of the study execution. We based our ratings on a number of systems appropriate for rating evidence pertaining to our key questions on system usage and outcomes.[18, 19, 163] However, for the key questions on usability, barriers, and drivers to system use, we needed to consider the quality of the evidence for those components of the study separately. Although some articles directly addressed these issues, in most cases our evidence for usability, barriers, and drivers came from studies where these issues were not a key part of the study design, but rather qualitative evidence that accompanied an outcomes study. For these studies we did not formally rate the quality of the evidence on usability, barriers, and drivers separately.

The technologies and interventions we reviewed were typically "leading edge" and not in routine clinical use. Complex interventions such as these are difficult to deploy on a limited budget, especially in an academic setting. One of the primary barriers to system use in the studies we reviewed was that many users had technology malfunctions of some sort. Under these circumstances, it is difficult to determine whether the results of the study are representative of a more polished and tested intervention. Our evidence review of health IT has a smaller percentage of studies rated as high quality, compared with reviews of more straight-forward interventions, such as a pharmaceutical therapy. Yet this is appropriate for studies of evolving technologies. Devoting resources for a large randomized controlled trial of a complex technology early in its development stage is not warranted. Stead et al. proposed guidelines for matching the level of evaluation to the stage of development.[154, 164] For example, as systems move from specification to component development to combining components and integrating them into the environment, the appropriate evaluations move from laboratory bench tests to tests of validity and then efficacy in the field. But it is only when systems have gone through thorough quality assurance and piloting in the field that large studies designed to provide high quality outcomes information are warranted. Many of the studies we reviewed for the barriers and drivers to the use of health IT were in the relatively early stages of development and not in routine clinical use. Thus, these studies often involved a small number of subjects and measured intermediate outcomes. Additionally, the information on barriers and drivers often came from qualitative additions to studies and not the main study design.

4. a. Use of Interactive Consumer Health IT

Findings regarding usage of interactive consumer health IT need to be interpreted with regard to the intended frequency of use of the system. For example, self-management and monitoring systems may be intended to be used on a regular and continuing basis, whereas many of the educational systems we reviewed were intended to be used only once. Availability was also an issue. Some systems were only available to patients in their clinician's office. However, in studies of interventions with multiple components we were able to observe the relative frequency of patient access. For example, from these studies we found that online peer discussion and bulletin boards were the functionalities used most frequently compared with patient interactions with self-management, self-monitoring, health educational, or ask-an-expert functions within the same system. However, in general, self-management tools and systems with ask-an-expert modules were used frequently by subjects in the studies.

In general, we have found that the measurement and understanding of the usage of interactive consumer health IT has begun to be addressed, however, there remains a lack of clarity or standardized metrics. These varied measures, along with differing expectations for use for each system, presents challenges in comparing usage between systems in a meaningful way. The issue gains relevance as the field strives to determine if the measurement of health technology usage can serve as a means of determining individual engagement, activation, or preference, and whether it can serve as a proxy for intervention exposure or "dose."

The findings describing the frequency of health IT usage (mean logins per subject per month) suggest that certain interactive consumer health IT functionality —peer group support, bulletin board, and secure messaging—may be associated with greater usage by subjects. Patient and consumer surveys have identified peer support (e-groups, chat rooms) as desirable services, providing anytime social support and person-to-person interaction.

It also seems reasonable that some types of interactive consumer health IT would be expected to be used only on an intermittent or ad-hoc basis—shared access to electronic records, or messaging alone added to automatic paging—and not be used as frequently as social support and self-management applications.

4. b. Usefulness and Usability of Interactive Consumer Health IT

A great number of home care patients who require disease management are elderly and/or have functional limitations, such as reduced sensory, cognitive or motor capabilities. Although the Internet has the potential to revolutionize the process of health care delivery and empower patients to become more active in the care process, the fastest growing segment of the U.S. population— i.e., people over the age of 50 years—are at a disadvantage because designers of both software and hardware technology fail to consider them as a potential user group.[14] Usability and accessibility issues are important quality criteria for Web-based interventions, but are frequently ignored by designers and evaluators.[15] The design of a usable Web-based information system for healthy users who are familiar with computer technology is a challenge. When a system needs to address age-related constraints and the functional limitations of inexperienced users, it becomes even more difficult. Designers of systems for home care patients should aim to increase functional accessibility[165] and employ rigorous usability testing methods.

Only two of the studies we reviewed were primarily targeted at discovering usability issues, and no studies compared the usability of more than one system at a time, or across populations of users. However, in all studies reporting usability results, a majority of the users found the systems under study to be helpful or useful. Often this was true for more than 90 percent of users.

People with diabetes tended to have vision problems and were concerned about clarity and size of graphics. Several systems required improvements in the display contrast, use of color, and button size. In general, there was a need for clearer and simpler graphics for t older users or those with chronic disabilities. Often the largest usability changes needed to be made with regard to the data entry screens on Web-based systems, although in some cases it was the graphic feedback for home monitoring data that needed improvements in clarity. An additional general finding was that it was important to minimize the need for a user to jump from screen to screen. Researchers found that it was important to keep frequently used items on the main Web page with "one-click" access to important information or data entry screens. Overall, we saw that the

usability findings pointed to needing to keep systems simple and free from distracting elements. These issues were particularly relevant for older users and those with functional limitations, however, the findings were still important across all populations.

4. c. Barriers to the Use of Interactive Consumer Health IT

Our summary of the evidence on the barriers to the use of interactive consumer health IT pointed mainly to issues of motivation, access, ease of use, and convenience. Most importantly, if users did not perceive a potential health benefit (regardless of an actual benefit or not) they were less likely to use the system. Additionally, if consumers or patients did not already know how to use computers, and especially if they did not have easy access to a computer in their home, there tended to be difficulties in using the intervention.

Many of the technology interventions being studied suffered from usability and technology problems that prevented routine use as intended. Many systems were deployed for evaluation before sufficient quality testing to ensure that even motivated participants could use them. Common technology problems included unreliable Internet access, system crashes, and battery issues. Many of the systems also required updates to fix displays that generated confusion on the part of the users. Oftentimes these issues were not caught in advance of full deployment in a study.

Feedback on the lack of use of some systems often pointed to the difficulty of finding a convenient time or situation to interact with the system. Similarly, data entry on the part of patients was often viewed as cumbersome and too time consuming. Interfaces for reminding systems for medications or for chronic disease management were particularly difficult to implement in a way that would encourage sustained use.

One interesting barrier to use of some disease management or interactive self-management systems that provided either recommendations or changes in treatment based on computer protocols was a lack of trust on the part of some patients. If the system's recommendation did not fit with the patient's mental model or perception of the situation, the patient was unlikely to comply with the advice. In general, if patients did not trust the technology they were less likely to use the system or manage their health in accordance with the recommendations.

Some of the interactive consumer health IT reviewed involved the participation of a clinician as part of the intervention. This could range from secure physician e-mails to a patient, supplemental phone interactions in addition to tailored computer feedback, or clinician review of monitoring data. For interventions where patients expected clinician interaction and did not receive timely responses, usage of the system and satisfaction on the part of the patient tended to drop. These studies reported that a barrier to the successful implementation of these technology interventions was the lack of appropriate resources and workflow modifications for the health care professionals. They identified issues of the lack of reimbursement for e-health encounters and the perception of additional time required. In general, cost was often mentioned as a barrier to system use on the part of both the patient and the health care provider.

In the studies we reviewed, we did not find direct evidence for differential use of the interactive consumer health IT by populations in rural or frontier areas, minorities, low-income groups, or low education groups. There was weak evidence for age being a barrier to anticipated future use of some interventions.

As mentioned in the previous section, usability issues plagued many studies and would also be considered to be a barrier to use. Older age was associated with lower usage in some studies

of systems addressing chronic diseases, such as diabetes where vision and other functional disabilities required improved screen contrast and font size. In most studies, these issues were identified as barriers after the system had been deployed.

4. d. Drivers to the Use of Interactive Consumer Health IT

Patient perception that the system was helping them appeared to be the most important driver of system use. Generally, these were perceived health benefits. For applications that dealt with sensitive health topics, such as HIV/AIDS, patients identified the anonymity and nonjudgmental nature of interacting with a computer system as a benefit. Other perceived benefits, such as better understanding their doctors and the medical system, were also identified as drivers of technology use.

A further driver corresponding to one of the identified barriers included information from studies where the care protocols involved clinician participation. They found that a rapid response from the participating clinician improved patient satisfaction and sustained use of the system.

One important driver of system use identified in many studies was delivery of the intervention on familiar devices used by consumers or patients every day for other purposes. For example, cell phones with SMS messaging worked especially well for younger ages, and people who routinely used a computer throughout the day anyway would have an easier time adhering to protocols for interactions with self-management systems on the Web. In general, we found that it was important that patients feel the systems were convenient and easy to use, especially for interventions that required frequent sustained use. A particular driver for older individual's use of new technologies was to have an implementation that provided a gradual stepwise introduction to the technology. Finally, several studies identified the tailoring of delivered content as a driver of patient satisfaction, perceived benefit, and system use.

4. e. Effectiveness of Interactive Consumer Health IT

Ongoing self management support for chronic conditions was effective if it included a 'closed feedback loop.' Among the studies we reviewed, including 13 randomized trials and three studies with other designs, we found that consumer health IT systems that provided a complete feedback loop were generally effective at improving outcomes in chronic conditions. These systems included a combination of (a) monitoring and transmission of data about the current status of the patient; (b) interpretation of this data in light of previously established treatment goals or published guidelines; (c) adjustment of medications, diet, or patient education as required; (d) timely communication back to the patient of recommendations, advice, or information appropriate to their current state, and (e) regular repetition of this cycle. This process is analogous to the familiar Deming-Shewhart cycle for process improvement that serves as the basis for continuous quality improvement in healthcare.[166] These systems provide the means for continuous improvement through repeated refinement or adjustment of the management of the patient according to their current condition. We observed this pattern across a spectrum of chronic conditions including diabetes, heart failure, hypertension, and asthma. Effective complete feedback loop systems most often incorporated a health professional in the loop—including pharmacists, dieticians, nurses, and physicians—alone or with computer

decision support (Table 3), and used a variety of IT, including home computers, voice messaging, text messaging, e-mail, and the telephone.[31, 34, 49, 78, 108, 115, 123, 127, 131-133, 135, 136, 139]

Table 3: Examples of complete feedback loop systems

Author, Year, Design	Condition	Monitor Frequency	Feedback Frequency	Feedback Source	Nature of Information
Cho, 2006, RCT[123]	DM	Daily	Semi-weekly	Clinician e-mail	State-specific
Delgado, 2003, Case series[31]	CHF	Daily	Daily	Nurse Practitioner Website	State-specific
Glasgow, 2003, Before/After[34]	DM/Diet	NR	Quarterly	"Automatic feedback"	State-specific
Green, 2008, RCT[127]	HTN	Daily	Biweekly	Pharmacist	State-specific
Kashem, 2006 RCT[40]	CHF	> Weekly	> Weekly	RN, MD; phone, system	State-specific
Kim, 2006, RCT[131]	DM/ACT	> Weekly	Weekly	RN phone	State-specific
Kim, 2007, RCT[115]	DM	> Weekly	Weekly	RN via SMS and web	State-specific
Kwon, 2004, RCT[132]	DM	3x/Week	> Weekly	MD, RN, RD	State-specific
LaFramboise, 2003, RCT[133]	CHF	Daily	Daily	RN, phone system	State-specific
Noel 2004, RCT[135]	CHF, COPD, DM	Not clear	Not clear	Nurse case manager advice	State-specific
Rasmussen, 2005, RCT[49]	Asthma	Daily	Regular	Physician w/CDSS	State-specific
Rogers, 2001, RCT[136]	HTN	3x/week	Weekly	Physician, by phone	State-specific
Southard, 2003, RCT[139]	CHF	> Weekly	Weekly	Web use	State-specific
Turnin, 1992, RCT crossover[108]	DM	6x/month	6x/month	Expert system for diet, calorie analysis	State-specific

In essence, then, this group of closed feedback loop systems are health IT based forms of self-management support of the sort proposed in the Chronic Care Model. Of note, the systems described in the studies we examined depended on active engagement of patients and involvement of health professionals, supported by the specific technology interventions. Questions remain as to (a) the optimal frequency of monitoring, adjustment, and feedback, which are likely to be condition specific; (b) the optimal level of participation by members of the health care team; (c) the degree to which the process depends on familiarity and trust between the

patient and the other elements of the system; and (d) the role of support and encouragement, as opposed to refinement of the management plan. Perhaps most challenging, these systems increase the frequency of patient-provider interaction while shifting the location of interaction away from episode-driven office-based care, and no mechanism exists to support these activities under current health care reimbursement mechanisms.

Training or treatment through the use of multiple session or one-time use systems appear to be effective when it includes a similar complete loop of patient-specific information as the basis for tailored advice or education, although the evidence is less strong. Studies of these interactive consumer health IT systems were fewer in number and used weaker study designs, but overall the findings were comparable to the findings for chronic disease self management. Tailoring of information or adjustment of treatment based on patient state appear to be consistent elements in the effective systems, but robust studies of direct comparisons were not identified in this review. Systems providing such training or treatment were effective for patients with asthma,[130, 144] depression,[143, 149] and panic/phobic disorder,[97] while a study with no feedback for patients with breast cancer showed no improvement,[46] and a study of problem drinkers found face-to-face counseling to be effective while electronic counseling was not.[118] It is unclear from the evidence available whether these systems will have a sustained impact, and they may be best suited for conditions requiring short-term treatment. Interactive consumer health IT systems that provided peer interaction, alone or as part of multi-component systems, were generally effective for improving intermediate outcomes but not for health outcomes.

Consumer health IT systems that provide monitoring alone or reminding alone were not clearly effective. We found fewer studies of such systems, those identified had weaker study designs, and the evidence from them was not consistent. The heterogeneity of the systems described in these studies and the variety of chronic conditions to which they were applied make it difficult to generalize about their effects or lack of effects. The same can be said for systems that provide access to the EMR when they are not part of a "complete feedback loop": fewer studies were identified; the studies reviewed employed weaker study designs; and the results did not consistently show benefit, in terms of peer support, self efficacy, or other outcomes (Appendix H[*]).

4. f. Use of Interactive Consumer Health IT by Populations of Interest

Each of our key questions had sub-questions about the relative use and effectiveness of the technology by key populations (elderly, chronically ill, and underserved). However, we did not find evidence for relative comparisons between groups of interest on the same technology. There were certainly studies that primarily focused on special populations, such as a specific minority group, a low income area, an elderly population, or a rural setting, but they did not answer questions of relative use and outcomes.

4. g. Technical Difficulties Interfering With Evaluations

Of the studies of interactive consumer health IT reporting health outcomes, nine studies were compromised by technical problems that limited use by patients and limited evaluation by

[*] Appendixes and Evidence Tables cited in this report are available electronically at http://www.ahrq.gov/clinic/tp/hitbartp.htm

investigators, several of which had to be excluded on this basis. Depressed patients withdrew from a randomized trial of a self-help system, with 21 of 57 reporting the system was too demanding and only 65 percent completing all modules.[143] Elderly heart failure patients had difficulty getting medications out of a reminder device and reported difficulty reading the screen, limiting potential effect on medication adherence.[106] After initial enthusiasm, adult patients with diabetes failed to enter data, and only one of six entered data for three consecutive weeks as required for the study, citing loss of Internet connection and difficult-to-use data entry screens.[29] Adults with asthma had higher adherence to peak flow monitoring using a paper diary than an Internet-based log, citing problems with Internet connection, system errors, and other technical problems, though subjects retained a positive attitude toward Internet monitoring.[30] Geriatric diabetic patients had limited benefit from a voice message system, citing difficulty using buttons on the mobile phone and lost connections.[145] Of 30 COPD patients, 14 dropped out because of technical and other difficulties using the system.[113] An interactive voice response system failed to reach 30 percent of smokers after cardiac hospitalization and only 18 of 50 patients actually received all three calls,[50] while another IVR system frequently failed to reach veterans with diabetes.[47] Of 56 obstructive sleep apnea patients one in seven was unable to use the device to monitor sleep and CPAP use.[107] In contrast, systems without such technical problems enjoyed more complete and effective use and a more robust evaluation.

Chapter 5. Future Research

In our review of the evidence on the barriers and drivers of the use of interactive consumer health IT by the elderly, chronically ill, and underserved populations we identified several areas for future work. The most pressing need is for a principled taxonomy of interactive consumer health IT and related interventions, so that the resulting outcomes of studies involving these systems can be better interpreted by understanding effects of the various components. Currently, it is difficult to generalize across the wide variety of systems. Similarly, future research is needed to understand best practices for the design and implementation of these interactive health technologies for patients. A clear taxonomy will facilitate this effort.

In addition to standardizing our descriptions of the variety of interactive consumer health IT applications, it will be important to develop standardized and clear definitions of the intermediate outcomes relating to the use of these technologies. For example, in the studies we reviewed, system usage has been measured by logins, Web clicks, or time within a session. These varied measures, along with differing expectations for use for each system, make it difficult to compare usage between systems in a meaningful way. The issue gains relevance as the field strives to determine if the measurement of the health technology usage can serve as a means of determining individual engagement, activation, or preference, and whether it can serve as a proxy for intervention exposure or "dose."

Finally, there is a paucity of research with direct comparison of the use and outcomes of these technologies by the general population versus disadvantaged populations, such as minorities, low-income groups, elderly, disabled, and geographically remote populations. It would be very useful to test the same technology, protocol, and implementation interventions with comparison populations within the same study, to truly understand the barriers and drivers associated with these interventions.

Chapter 6. Conclusions

The findings from our evidence review on the barriers and drivers to the use of interactive consumer health IT by the elderly, chronically ill, and underserved were derived from our summarization of papers that met our inclusion criteria and quality standards (Appendix H*). These papers were reviewed according to each of our key questions on the level of use of the technology, the usability and usefulness of the technology, the barriers and drivers to the use of the technology, and the outcomes from the use of the technology. We found that it was important to characterize and specify the technology components, intended use, care protocols, content and system environment in order to interpret evidence from disparate technologies, populations, and implementations. The barriers to consumers' use of interactive consumer health IT were heavily influenced by unreliable and difficult to use technology. This was partially due to many of the studies using early stage system prototypes, as is typical for a relatively new field. Few of the studies we reviewed were specifically designed to compare the elderly, chronically ill, or underserved to the general population. But in general, we did find that several types of interactive consumer health IT were usable and effective in many settings and with all of our populations of interest. We saw that convenience and ease-of-use were important drivers of system use, especially if the interventions could be delivered on technologies users already had and interacted with on a daily basis. It was critical that data entry not be cumbersome and that the intervention fit into the user's daily routine. Perceived benefit, system trust, anonymity for sensitive health conditions, and rapid clinician feedback were also important factors influencing the successful use of interactive consumer health IT.

The most important and consistent finding regarding the effectiveness of these technology interventions was that it was important that the systems provide a complete feedback loop that included some assessment of current patient status, interpretation of this status information in light of established treatment goals or plans, and communication back the patient with tailored recommendations or advice. Interactive consumer health IT that provided only one or a subset of these functions were less consistently effective.

The systems described in the studies we examined depended on active engagement of patients and involvement of health professionals, supported by the specific technology interventions. Questions remain as to (a) the optimal frequency of use of the system by the patient, which is likely to be condition specific; (b) the optimal frequency of use or degree of involvement by the health professionals; (c) whether their success depends on repeated modification of the patient's treatment regimen or simply ongoing assistance with applying a static treatment plan. Perhaps most challenging, these systems shift the locus of care away from traditional physician office visits and many of them involve the participation of a multidisciplinary health care team; it is difficult to support these activities financially under current episode-based, fee-for-service health care reimbursement mechanisms.

* Appendixes and Evidence Tables cited in this report are available electronically at http://www.ahrq.gov/clinic/tp/hitbartp.htm

References

1. Keselman A, Logan R, Smith CA, Leroy G, Zeng-Treitler Q. Developing Informatics Tools and Strategies for Consumer-centered Health Communication. *JAMIA.* 2008;15:473-483.
2. US Dept of Heath and Human Services. http://www.hhs.gov/healthit/. Accessed July 10, 2008.
3. Committee on Quality Health Care in America. *Crossing the quality chasm: a new health system for the 21st century.* Washington D.C.: Institute of Medicine; 2001.
4. New Health Partnerships. Supporting Self Management. http://www.newhealthpartnerships.org/ProvidersPeopleInCirclePrint.aspx?id=78&linkidentifier=id&itemid=78. Accessed July 10, 2008.
5. Hoffman C, Rice D, Sung HY. Persons with chronic conditions. Their prevalence and costs. *JAMA.* 1996;276:1473-1479.
6. Wagner EH. Meeting the needs of chronically ill people. . *BMJ.* 2001;323(945-6).
7. Bodenheimer T, Lorig K, Holman H, Grumbach K. Patient self-management of chronic disease in primary care. *JAMA.* 2002;288(19):2469-2475.
8. Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness: the chronic care model, Part 2. *JAMA.* 2002;288(15):1909-1914.
9. Robert Wood Johnson Foundation. Improving chronic illness care. http://www.improvingchroniccare.org. Accessed July 5, 2008.
10. Coleman MT, Newton KS. Supporting self-management in patients with chronic illness. *Am Fam Physician.* 2005;72(8):1503-1510.
11. Lorig KR, Ritter P, Stewart AL, et al. Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Med Care.* 2001;39(11):1217-1223.
12. Renders CM, Valk GD, Griffin SJ, Wagner EH, Eijk Van JT, Assendelft WJ. Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systematic review. *Diabetes Care.* 2001;24(10):1821-1833.
13. Whitlock WL, Brown A, Moore K, et al. Telemedicine improved diabetic management. *Mil Med.* 2000;165(8):579-584.
14. Demeris G, Eysenbach G. Internet use in disease management for home care patients: a call for papers. *J Med Internet Res.* 2002;4(2):E6.
15. Eysenbach G, Powell J, Kuss O, Sa E-R. Empirical studies assessing the quality of health information for consumers on the world wide web: a systematic review. *JAMA.* 2002;287(20):2691-2700.
16. Ratzan L. Making sense of the Web: a metaphorical approach. *Information Research.* 2000;6(1).
17. Madden M, Fox S. *Riding the Waves of "Web 2.0": More than a buzzword, but still not easily defined*: Pew Internet Project; October 5, 2006.
18. Harris RP, Hefland M, Woolf SH, et al. Methods Work Group, Third US Preventive Services Task Force. Current methods of the US Preventive Services Task Force: a review of the process. *Am J Prev Med.* 2001;20(3 Suppl):21-35.
19. Khan K, ter Riet G, Popay J, Nixon J, Kleijnen J. *Undertaking Systematic Reviews of Research on Effectiveness: Stage II: Conducting the Review.* York: University of York; 2001.
20. Verhagen AP, de Vet HC, de Bie RA, et al. The delphi list a criteria list for quality assessment of randomized clinical trials for conducting systematic reviews developed by delphi consensus. *J Clin Epidemiol.* 1998;51(12):1235-1241.
21. Critical Appraisal Skills Programme. 10 questions to help you make sense of qualitative research: Milton Keynes Primary Care Trust; 2002.
22. Popay J, Baldwin S, Arai L, et al. *Methods Briefing 22: Narrative Synthesis in Systematic Reviews.* Manchester, England: Cathie Marsh Centre for Census and Survey Research; 2006.
23. Denyer D, Tranfield D, van Aken JE. Developing Design Propositions through

Research Synthesis. *Organization Studies.* 2008;29(3):393-413.

24. Tranfield DR, Denyer D, Smart P. Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management.* 2003;14:207-222.

25. Task Force on Community Preventive Services. *Guide to Community Preventive Services: What works to promote health?* New York: Center for Disease Control; 2005.

26. An LC, Perry CL, Lein EB, et al. Strategies for increasing adherence to an online smoking cessation intervention for college students. *Nicotine Tob Res.* 2006;8 Suppl 1:S7-12.

27. Bachofen M, Nakagawa A, Marks IM, et al. Home self-assessment and self-treatment of obsessive-compulsive disorder using a manual and a computer-conducted telephone interview: replication of a UK-US study. *J Clin Psychiatry.* 1999;60(8):545-549.

28. Cathala N, Brillat F, Mombet A, et al. Patient followup after radical prostatectomy by Internet medical file. *J Urol.* 2003;170(6 Pt 1):2284-2287.

29. Cavan DA, Everett J, Plougmann S, Hejlesen OK. Use of the Internet to optimize self-management of type 1 diabetes: preliminary experience with DiasNet. *J Telemed Telecare.* 2003;9 Suppl 1:S50-52.

30. Cruz-Correia R, Fonseca J, Lima L, et al. Web-based or paper-based self-management tools for asthma--patients' opinions and quality of data in a randomized crossover study. *Stud Health Technol Inform.* 2007;127:178-189.

31. Delgado DH, Costigan J, Wu R, Ross HJ. An interactive Internet site for the management of patients with congestive heart failure. *Can J Cardiol.* 2003;19(12):1381-1385.

32. Earnest MA, Ross SE, Wittevrongel L, Moore LA, Lin C-T. Use of a patient-accessible electronic medical record in a practice for congestive heart failure: patient and physician experiences. *JAMIA.* 2004;11(5):410-417.

33. Finkelstein SM, Snyder M, Edin-Stibbe C, et al. Monitoring progress after lung transplantation from home-patient adherence. *J Med Eng Technol.* 1996;20(6):203-210.

34. Glasgow RE, Boles SM, McKay HG, Feil EG, Barrera M, Jr. The D-Net diabetes self-management program: long-term implementation, outcomes, and generalization results. *Prev Med.* 2003;36(4):410-419.

35. Gustafson DH, Hawkins RP, Boberg EW, Bricker E, Pingree S, Chan CL. The use and impact of a computer-based support system for people living with AIDS and HIV infection. *Proc Annu Symp Comput Appl Med Care.* 1994:604-608.

36. Gustafson DH, McTavish F, Hawkins R, et al. Computer support for elderly women with breast cancer. *JAMA.* 1998;280(15):1305.

37. Japuntich SJ, Zehner ME, Smith SS, et al. Smoking cessation via the internet: a randomized clinical trial of an internet intervention as adjuvant treatment in a smoking cessation intervention. *Nicotine Tob Res.* 2006;8 Suppl 1:S59-67.

38. Jones R, Pearson J, McGregor S, et al. Randomised trial of personalised computer based information for cancer patients. *BMJ.* 1999;319(7219):1241-1247.

39. Jones RB, Atkinson JM, Coia DA, et al. Randomised trial of personalised computer based information for patients with schizophrenia.[erratum appears in BMJ 2001 May 5;322(7294):1103]. *BMJ.* 2001;322(7290):835-840.

40. Kashem A, Droogan MT, Santamore WP, et al. Web-based Internet telemedicine management of patients with heart failure. *Telemed J E Health.* 2006;12(4):439-447.

41. Leu MG, Norris TE, Hummel J, Isaac M, Brogan MW. A randomized, controlled trial of an automated wireless messaging system for diabetes. *Diabetes Technol Ther.* 2005;7(5):710-718; discussion 719-720.

42. Lorig KR, Ritter PL, Laurent DD, Plant K. Internet-based chronic disease self-management: a randomized trial. *Med Care.* 2006;44(11):964-971.

43. Ma C, Warren J, Phillips P, Stanek J. Empowering patients with essential information and communication support in the context of diabetes. *Int J Med Inf.* 2006;75(8):577-596.

44. McKay HG, King D, Eakin EG, Seeley JR, Glasgow RE. The diabetes network internet-based physical activity intervention: a randomized pilot study. *Diabetes Care.* 2001;24(8):1328-1334.

45. Nguyen HQ, Carrieri-Kohlman V, Rankin SA, Slaughter R, Stulbarg MS. Pilot study of an online dyspnea self-management program for COPD. *AMIA Annu Symp Proc.* 2003;Annual

Symposium Proceedings/AMIA Symposium.:951.

46. Owen JE, Klapow JC, Roth DL, et al. Randomized pilot of a self-guided internet coping group for women with early-stage breast cancer. *Ann Behav Med.* 2005;30(1):54-64.

47. Piette JD, Mah CA. The feasibility of automated voice messaging as an adjunct to diabetes outpatient care. *Diabetes Care.* 1997;20(1):15-21.

48. Pike KJ, Rabius V, McAlister A, Geiger A. American Cancer Society's QuitLink: randomized trial of Internet assistance. *Nicotine Tob Res.* 2007;9(3):415-420.

49. Rasmussen LM, Phanareth K, Nolte H, Backer V. Internet-based monitoring of asthma: a long-term, randomized clinical study of 300 asthmatic subjects. *J Allergy Clin Immunol.* 2005;115(6):1137-1142.

50. Reid RD, Pipe AL, Quinlan B, Oda J. Interactive voice response telephony to promote smoking cessation in patients with heart disease: a pilot study. *Patient Educ Couns.* 2007;66(3):319-326.

51. Ross SE, Moore LA, Earnest MA, Wittevrongel L, Lin C-T. Providing a web-based online medical record with electronic communication capabilities to patients with congestive heart failure: randomized trial. *J Med Internet Res.* 2004;6(2):e12.

52. Ruland CM, White T, Stevens M, Fanciullo G, Khilani SM. Effects of a computerized system to support shared decision making in symptom management of cancer patients: preliminary results. *JAMIA.* 2003;10(6):573-579.

53. Shaw BR, Han JY, Baker T, et al. How women with breast cancer learn using interactive cancer communication systems. *Health Educ Res.* 2007;22(1):108-119.

54. Smith L, Weinert C. Telecommunication support for rural women with diabetes. *Diabetes Educ.* 2000;26(4):645-655.

55. Tsang MW, Mok M, Kam G, et al. Improvement in diabetes control with a monitoring system based on a hand-held, touch-screen electronic diary. *J Telemed Telecare.* 2001;7(1):47-50.

56. van den Brink JL, Moorman PW, de Boer MF, Pruyn JFA, Verwoerd CDA, van Bemmel JH. Involving the patient: a prospective study on use, appreciation and effectiveness of an information system in head and neck cancer care. *Int J Med Inf.* 2005;74(10):839-849.

57. Nakagawa A, Marks IM, Park JM, et al. Self-treatment of obsessive-compulsive disorder guided by manual and computer-conducted telephone interview. *J Telemed Telecare.* 2000;6(1):22-26.

58. Wilkie DJ, Huang HY, Berry DL, et al. Cancer symptom control: feasibility of a tailored, interactive computerized program for patients. *Fam Community Health.* 2001;24(3):48-62.

59. Zabinski MF, Wilfley DE, Pung MA, Winzelberg AJ, Eldredge K, Taylor CB. An interactive internet-based intervention for women at risk of eating disorders: a pilot study. *Int J Eat Disord.* 2001;30(2):129-137.

60. Ferrer-Roca O, Franco Burbano K, Cardenas A, Pulido P, Diaz-Cardama A. Web-based diabetes control. *J Telemed Telecare.* 2004b;10(5):277-281.

61. Zrebiec JF, Jacobson AM. What attracts patients with diabetes to an internet support group? A 21-month longitudinal website study. *Diabet Med.* 2001;18(2):154-158.

62. Lee T-I, Yeh Y-T, Liu C-T, Chen P-L. Development and evaluation of a patient-oriented education system for diabetes management. *Int J Med Inf.* 2007;76(9):655-663.

63. Anhoj J, Nielsen L. Quantitative and qualitative usage data of an Internet-based asthma monitoring tool. *J Med Internet Res.* 2004;6(3):e23.

64. Bond GE. Lessons learned from the implementation of a Web-based nursing intervention. *Cin Comput Inform Nurs.* 2006;24(2):66-74.

65. Carroll C, Marsden P, Soden P, Naylor E, New J, Dornan T. Involving users in the design and usability evaluation of a clinical decision support system. *Comput Methods Programs Biomed.* 2002;69(2):123-135.

66. Chen H, Yeh M, Chao Y. Comparing effects of auricular acupressure with and without an Internet-assisted program on smoking cessation and self-efficacy of adolescents. *J Altern Complement Med.* 2006;12(2):147-152.

67. Cleland J, Caldow J, Ryan D. A qualitative study of the attitudes of patients and staff to the use of mobile phone technology for recording and gathering asthma data. *J Telemed Telecare.* 2007;13(2):85-89.

68. Crosbie JH, Lennon S, McNeill MDJ, McDonough SM. Virtual reality in the rehabilitation of the upper limb after stroke: the user's perspective. *Cyberpsychol Behav.* 2006;9(2):137-141.

69. Feil EG, Glasgow RE, Boles S, McKay HG. Who participates in Internet-based self-management programs? A study among novice computer users in a primary care setting. *Diabetes Educ.* 2000;26(5):806-811.

70. Finkelstein J, Hripcsak G, Cabrera MR. Patients' acceptance of Internet-based home asthma telemonitoring. *Proc AMIA Symp.* 1998;Annual Symposium.:336-340.

71. Friedman RH, Stollerman JE, Mahoney DM, Rozenblyum L. The virtual visit: using telecommunications technology to take care of patients. *JAMIA.* 1997;4(6):413-425.

72. Gomez EJ, Caceres C, Lopez D, Del Pozo F. A web-based self-monitoring system for people living with HIV/AIDS. *Comput Methods Programs Biomed.* 2002a;69(1):75-86.

73. Gomez EJ, Hernando ME, Garcia A, et al. Telemedicine as a tool for intensive management of diabetes: the DIABTel experience. *Comput Methods Programs Biomed.* 2002b;69(2):163-177.

74. Gustafson DH, Hawkins R, Pingree S, et al. Effect of computer support on younger women with breast cancer. *J Gen Intern Med.* 2001;16(7):435-445.

75. Kaufman DR, Patel VL, Hilliman C, et al. Usability in the real world: assessing medical information technologies in patients' homes. *J Biomed Inform.* 2003b;36(1-2):45-60.

76. Kerkenbush NL, Lasome CEM. The emerging role of electronic diaries in the management of diabetes mellitus. *AACN Clin Issues.* 2003;14(3):371-378.

77. Kim H, Yoo Y, Shim H. Effects of an Internet-based intervention on plasma glucose levels in patients with type 2 diabetes. *J Nurs Care Qual.* 2005;20(4):335-340.

78. Kim HS, Jeong HS. A nurse short message service by cellular phone in type-2 diabetic patients for six months. *J Clin Nurs.* 2007;16(6):1082-1087.

79. Kosma M, Cardinal BJ, McCubbin JA. A pilot study of a web-based physical activity motivational program for adults with physical disabilities. *Disabil Rehabil.* 2005;27(23):1435-1442.

80. Laplante-Levesque A, Pichora-Fuller KM, Gagne J. Providing an internet-based audiological counselling programme to new hearing aid users: a qualitative study. *Int J Audiol.* 2006;45(12):697-706.

81. Liu C, Yeh Y, Lee T, Li Y. Observations on online services for diabetes management. *Diabetes Care.* 2005;28(11):2807-2808.

82. Lober WB, Zierler B, Herbaugh A, et al. Barriers to the use of a personal health record by an elderly population. *AMIA Annu Symp Proc.* 2006;Annual Symposium Proceedings/AMIA Symposium.:514-518.

83. Ralston JD, Revere D, Robins LS, Goldberg HI. Patients' experience with a diabetes support programme based on an interactive electronic medical record: qualitative study. *BMJ.* 2004;328(7449):1159.

84. Reed K, Lehmann ED. Website review: diabetes insight--www.diabetes-insight.info. *Diabetes Technol Ther.* 2005b;7(3):573-580.

85. Schärer LO, Hartweg V, Valerius G, et al. Life charts on a palmtop computer: first results of a feasibility study with an electronic diary for bipolar patients. *Bipolar Disord.* 2002;4 Suppl 1:107-108.

86. Sciamanna CN, Novak SP, Houston TK, Gramling R, Marcus BH. Visit satisfaction and tailored health behavior communications in primary care. *Am J Prev Med.* 2004;26(5):426-430.

87. Shaw BR, McTavish F, Hawkins R, Gustafson DH, Pingree S. Experiences of women with breast cancer: exchanging social support over the CHESS computer network. *J Health Commun.* 2000;5(2):135-159.

88. Skeels MM, Kurth A, Clausen M, Severynen A, Garcia-Smith H. CARE+ user study: usability and attitudes towards a tablet pc computer counseling tool for HIV+ men and women. *AMIA Annu Symp Proc.* 2006;Annual Symposium Proceedings/AMIA Symposium.:729-733.

89. Smaglik P, Hawkins RP, Pingree S, Gustafson DH, Boberg E, Bricker E. The quality of interactive computer use among HIV-infected individuals. *J Health Commun.* 1998;3(1):53-68.

90. van den Brink JL, Moorman PW, de Boer MF, van Bemmel JH, Pruyn JFA, Verwoerd CDA. An information system to support the care for head and neck cancer patients. *Support Care Cancer.* 2003;11(7):452-459.

91. van't Riet A, Berg M, Hiddema F, Sol K. Meeting patients' needs with patient information systems: potential benefits of qualitative research methods. *Int J Med Inf.* 2001;64(1):1-14.

92. Yeh Y-T, Chiu Y-T, Liu C-T, Wu S-J, Lee T-I. Development and evaluation of an integrated patient-oriented education management system for diabetes. *Stud Health Technol Inform.* 2006;122:172-175.

93. Zimmerman L, Barnason S, Nieveen J, Schmaderer M. Symptom management intervention in elderly coronary artery bypass graft patients. *Outcomes Manag.* 2004;8(1):5-12.

94. Andersson NB, Hanson E, Magnusson L. Views of family carers and older people of information technology. *Br J Nurs.* 2002;11(12):827-831.

95. Gerbert B, Berg-Smith S, Mancuso M, et al. Using innovative video doctor technology in primary care to deliver brief smoking and alcohol intervention. *Health Promot Pract.* 2003;4(3):249-261.

96. Holman RR, Smale AD, Pemberton E, Riefflin A, Nealon JL. Randomized controlled pilot trial of a hand-held patient-oriented, insulin regimen optimizer. *Med Inform (Lond).* 1996;21(4):317-326.

97. Kenwright M, Marks IM. Computer-aided self-help for phobia/panic via internet at home: a pilot study. *Br J Psychiatry.* 2004;184:448-449.

98. Kressig RW, Echt KV. Exercise prescribing: computer application in older adults. *Gerontologist.* 2002;42(2):273-277.

99. McDaniel AM, Hutchison S, Casper GR, Ford RT, Stratton R, Rembusch M. Usability testing and outcomes of an interactive computer program to promote smoking cessation in low income women. *Proc AMIA Symp.* 2002;Annual Symposium.:509-513.

100. McPherson AC, Glazebrook C, Forster D, James C, Smyth A. A randomized, controlled trial of an interactive educational computer package for children with asthma. *Pediatrics.* 2006;117(4):1046-1054.

101. Sciamanna CN, Ford DE, Flynn JA, Langford C. An evidence-based interactive computer program to assist physicians in counseling smokers to quit. *MD Comput.* 1999;16(5):54-60.

102. Sciamanna CN, Harrold LR, Manocchia M, Walker NJ, Mui S. The effect of web-based, personalized, osteoarthritis quality improvement feedback on patient satisfaction with osteoarthritis care. *Am J Med Qual.* 2005;20(3):127-137.

103. Kaufman DR, Starren J, Patel VL, et al. A cognitive framework for understanding barriers to the productive use of a diabetes home telemedicine system. *AMIA Annu Symp Proc.* 2003a;Annual Symposium Proceedings/AMIA Symposium.:356-360.

104. Nielsen J. *Usability Engineering*. San Francisco, CA: Morgan Kaufmann Publishers; 1993.

105. Kirakowski J, Claridge N. The Website Analysis and Measurement Inventory: WAMMI. http://www.wammi.com/. Accessed 24 Jun, 2008.

106. Artinian NT, Harden JK, Kronenberg MW, et al. Pilot study of a Web-based compliance monitoring device for patients with congestive heart failure. *Heart Lung.* 2003;32(4):226-233.

107. Taylor Y, Eliasson A, Andrada T, Kristo D, Howard R. The role of telemedicine in CPAP compliance for patients with obstructive sleep apnea syndrome. *Sleep Breath.* 2006;10(3):132-138.

108. Turnin MC, Beddok RH, Clottes JP, et al. Telematic expert system Diabeto. New tool for diet self-monitoring for diabetic patients. *Diabetes Care.* 1992;15(2):204-212.

109. Sciamanna CN, Gifford DR, Smith RJ. Design and acceptability of patient-oriented computerized diabetes care reminders for use at the point of care. *Med Inform Internet Med.* 2004;29(2):157-168.

110. Reed K, Lehmann ED. Diabetes website review: www.2aida.org. *Diabetes Technol Ther.* 2005a;7(5):741-754.

111. Jan R-L, Wang J-Y, Huang M-C, Tseng S-M, Su H-J, Liu L-F. An internet-based interactive telemonitoring system for improving childhood asthma outcomes in Taiwan. *Telemed J E Health.* 2007;13(3):257-268.

112. Kenwright M, Marks I, Graham C, Franses A, Mataix-Cols D. Brief scheduled phone support from a clinician to enhance computer-aided self-help for obsessive-compulsive disorder: randomized controlled trial. *J Clin Psychol.* 2005;61(12):1499-1508.

113. Nguyen HQ, Carrieri-Kohlman V, Rankin SH, Slaughter R, Stulbarg MS. Is Internet-based

support for dyspnea self-management in patients with chronic obstructive pulmonary disease possible? Results of a pilot study. *Heart Lung.* 2005;34(1):51-62.

114. Rodgers A, Corbett T, Bramley D, et al. Do u smoke after txt? Results of a randomised trial of smoking cessation using mobile phone text messaging. *Tob Control.* 2005;14(4):255-261.

115. Kim H. A randomized controlled trial of a nurse short-message service by cellular phone for people with diabetes. *Int J Nurs Stud.* 2007;44(5):687-692.

116. Strecher VJ, Shiffman S, West R. Moderators and mediators of a web-based computer-tailored smoking cessation program among nicotine patch users. *Nicotine Tob Res.* 2006;8 Suppl 1:S95-101.

117. Andrade ASA, McGruder HF, Wu AW, et al. A programmable prompting device improves adherence to highly active antiretroviral therapy in HIV-infected subjects with memory impairment. *Clin Infect Dis.* 2005;41(6):875-882.

118. Araki I, Hashimoto H, Kono K, Matsuki H, Yano E. Controlled trial of worksite health education through face-to-face counseling vs. e-mail on drinking behavior modification. *J Occup Health.* 2006;48(4):239-245.

119. Barnason S, Zimmerman L, Nieveen J, Schmaderer M, Carranza B, Reilly S. Impact of a home communication intervention for coronary artery bypass graft patients with ischemic heart failure on self-efficacy, coronary disease risk factor modification, and functioning. *Heart Lung.* 2003;32(3):147-158.

120. Barnason S, Zimmerman L, Nieveen J, Hertzog M. Impact of a telehealth intervention to augment home health care on functional and recovery outcomes of elderly patients undergoing coronary artery bypass grafting. *Heart Lung.* 2006;35(4):225-233.

121. Barrera M, Jr., Glasgow RE, McKay HG, Boles SM, Feil EG. Do Internet-based support interventions change perceptions of social support?: An experimental trial of approaches for supporting diabetes self-management. *Am J Community Psychol.* 2002;30(5):637-654.

122. Block G, Wakimoto P, Metz D, et al. A randomized trial of the Little by Little CD-ROM: demonstrated effectiveness in increasing fruit and vegetable intake in a low-income population. *Prev Chronic Dis.* 2004;1(3):A08.

123. Cho J-H, Chang S-A, Kwon H-S, et al. Long-term effect of the Internet-based glucose monitoring system on HbA1c reduction and glucose stability: a 30-month follow-up study for diabetes management with a ubiquitous medical care system. *Diabetes Care.* 2006;29(12):2625-2631.

124. Christensen H, Griffiths KM, Jorm AF. Delivering interventions for depression by using the internet: randomised controlled trial. *BMJ.* 2004;328(7434):265.

125. Franklin VL, Waller A, Pagliari C, Greene SA. A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes. *Diabet Med.* 2006;23(12):1332-1338.

126. Frenn M, Malin S, Brown RL, et al. Changing the tide: an Internet/video exercise and low-fat diet intervention with middle-school students. *Applied nursing research : ANR.* 2005;18(1):13-21.

127. Green B, et al. Effectiveness of Home Blood Pressure Monitoring, Web Communication, and Pharmacist Care on Hypertension Control. *JAMA.* 2008;299(24):2857-2867.

128. Guendelman S, Meade K, Benson M, Chen YQ, Samuels S. Improving asthma outcomes and self-management behaviors of inner-city children: a randomized trial of the Health Buddy interactive device and an asthma diary. *Arch Pediatr Adolesc Med.* 2002;156(2):114-120.

129. Gustafson DH, Hawkins R, Boberg E, et al. Impact of a patient-centered, computer-based health information/support system. *Am J Prev Med.* 1999;16(1):1-9.

130. Joseph CLM, Peterson E, Havstad S, et al. A web-based, tailored asthma management program for urban African-American high school students. *Am J Respir Crit Care Med.* 2007;175(9):888-895.

131. Kim C, Kang D. Utility of a Web-based intervention for individuals with type 2 diabetes: the impact on physical activity levels and glycemic control. *Cin Comput Inform Nurs.* 2006a;24(6):337-345.

132. Kwon H-S, Cho J-H, Kim H-S, et al. Establishment of blood glucose monitoring system using the internet. *Diabetes Care.* 2004;27(2):478-483.

133. LaFramboise LM, Todero CM, Zimmerman L, Agrawal S. Comparison of Health Buddy with traditional approaches to heart failure

management. *Fam Community Health.* 2003;26(4):275-288.

134. Levetan CS, Dawn KR, Robbins DC, Ratner RE. Impact of computer-generated personalized goals on HbA(1c). *Diabetes Care.* 2002;25(1):2-8.

135. Noel HC, Vogel DC, Erdos JJ, Cornwall D, Levin F. Home telehealth reduces healthcare costs. *Telemed J E Health.* 2004;10(2):170-183.

136. Rogers MAM, Small D, Buchan DA, et al. Home monitoring service improves mean arterial pressure in patients with essential hypertension: a randomized, controlled trial. *Ann Intern Med.* 2001;134(11):1024-1032, I1042.

137. Safren SA, Hendriksen ES, Desousa N, Boswell SL, Mayer KH. Use of an on-line pager system to increase adherence to antiretroviral medications. *AIDS Care.* 2003;15(6):787-793.

138. Shegog R, Bartholomew LK, Parcel GS, Sockrider MM, Masse L, Abramson SL. Impact of a computer-assisted education program on factors related to asthma self-management behavior. *JAMIA.* 2001;8(1):49-61.

139. Southard BH, Southard DR, Nuckolls J. Clinical trial of an Internet-based case management system for secondary prevention of heart disease. *J Cardiopulm Rehabil.* 2003;23(5):341-348.

140. Stuart GW, Laraia MT, Ornstein SM, Nietert PJ. An interactive voice response system to enhance antidepressant medication compliance. *Top Health Inf Manage.* 2003;24(1):15-20.

141. Winzelberg AJ, Classen C, Alpers GW, et al. Evaluation of an internet support group for women with primary breast cancer. *Cancer.* 2003;97(5):1164-1173.

142. Albisser AM, Harris RI, Albisser JB, Sperlich M. The impact of initiatives in education, self-management training, and computer-assisted self-care on outcomes in diabetes disease management. *Diabetes Technol Ther.* 2001;3(4):571-579.

143. Andersson G, Bergstrom J, Hollandare F, Carlbring P, Kaldo V, Ekselius L. Internet-based self-help for depression: randomised controlled trial. *Br J Psychiatry.* 2005;187:456-461.

144. Chan DS, Callahan CW, Sheets SJ, Moreno CN, Malone FJ. An Internet-based store-and-forward video home telehealth system for improving asthma outcomes in children. *Am J Health-Syst Pharm.* 2003;60(19):1976-1981.

145. Durso SC, Wendel I, Letzt AM, Lefkowitz J, Kaseman DF, Seifert RF. Older adults using cellular telephones for diabetes management: a pilot study. *Medsurg Nurs.* 2003;12(5):313-317.

146. Estabrooks PA, Nelson CC, Xu S, et al. The frequency and behavioral outcomes of goal choices in the self-management of diabetes. *Diabetes Educ.* 2005;31(3):391-400.

147. Ewald S, vor dem Esche J, Uen S, Neikes F, Vetter H, Mengden T. Relationship between the frequency of blood pressure self-measurement and blood pressure reduction with antihypertensive therapy : results of the OLMETEL (OLMEsartan TELemonitoring blood pressure) study. *Clin Drug Invest.* 2006;26(8):439-446.

148. Glasgow RE, Toobert DJ. Brief, computer-assisted diabetes dietary self-management counseling: effects on behavior, physiologic outcomes, and quality of life. *Med Care.* 2000;38(11):1062-1073.

149. Robertson L, Smith M, Castle D, Tannenbaum D. Using the Internet to enhance the treatment of depression. *Australas.* 2006;14(4):413-417.

150. Safren S. Internet paging system helps improve adherence. Counseling is combined with reminders. *Aids Alert.* 2002;17(9):118-119.

151. Woodruff SI, Edwards CC, Conway TL, Elliott SP. Pilot test of an Internet virtual world chat room for rural teen smokers. *J Adolesc Health.* 2001;29(4):239-243.

152. Yon BA, Johnson RK, Harvey-Berino J, Gold BC, Howard AB. Personal digital assistants are comparable to traditional diaries for dietary self-monitoring during a weight loss program. *J Behav Med.* 2007;30(2):165-175.

153. La Porta M, Hagood H, Kornfeld J, Treiman K. Evaluating the NCI's Cancer Information Service Contact Centers: meeting and exceeding the expectations of the public. *J Cancer Educ.* 2007a;22(1 Suppl):S18-25.

154. Stead WW, Haynes RB, Fuller S, et al. Designing medical informatics research and library--resource projects to increase what is learned. *JAMIA.* 1994;1(1):28-33.

155. Bell KM. *Report to the Office of the National Coordinator for Health Information Technology on Defining Key Health Information Technology Terms* Washington, DC: The National Alliance for Health Information Technology; April 28, 2008.

156. Hill W, Weinert C, Cudney S. Influence of a computer intervention on the psychological status of chronically ill rural women: preliminary results. *Nurs Res.* 2006;55(1):34-42.

157. Brennan PF, Moore SM, Bjornsdottir G, Jones J, Visovsky C, Rogers M. HeartCare: an Internet-based information and support system for patient home recovery after coronary artery bypass graft (CABG) surgery. *J Adv Nurs.* 2001;35(5):699-708.

158. La Porta M, Hagood H, Patt J, Hodorowski JK, Treiman K. The NCI's Cancer Information Service: meeting the public's cancer information needs via the internet. *J Cancer Educ.* 2007b;22(1 Suppl):S26-34.

159. Meigs JB, Cagliero E, Dubey A, et al. A controlled trial of web-based diabetes disease management: the MGH diabetes primary care improvement project. *Diabetes Care.* 2003;26(3):750-757.

160. Joseph AM. Care Coordination and Telehealth Technology in Promoting Self-Management Among Chronically Ill Patients. *Telemed J E Health.* 2006;12(2):156-159.

161. Gustafson DH, Hawkins RP, Boberg EW, et al. CHESS: ten years of research and development in consumer health informatics for broad populations, including the underserved. *Medinfo.* 2001;10(Pt 2):1459-1563.

162. Holbrook A, Labiris R, Goldsmith CH, Ota K, Harb S, Sebaldt RJ. Influence of decision aids on patient preferences for anticoagulant therapy: a randomized trial. *Cmaj.* 2007;176(11):1583-1587.

163. *Critical Appraisal Skills Programme (CASP): 10 Questions to Help You Make Sense of Qualitative Research*: National CASP Collaboration for Qualitative Methodologies; 2002.

164. Stead WW. Matching the level of evaluation to a project's stage of development. *JAMIA.* 1996;3(1):92-94.

165. Demiris G, Finkelstein SM, Speedie SM. Considerations for the design of a Web-based clinical monitoring and educational system for elderly patients. *JAMIA.* 2001;8(5):468-472.

166. Berwick DM. Continuous improvement as an ideal in health care. *N Engl J Med.* 1989;320(1):53-56.

SUMMARY TABLES

Summary Table 1. Level of Use of Interactive Consumer Health IT (KQ 1)

Author, Year Design, N	Condition and/or Population	Interactive Health IT	Findings: Technology Usage	Usage Comments
An, 2006[26] Cohort, N=47 Experimental arm of RCT, N=257	Smoking College students	Web-based self-monitoring and goal setting; discussion board; quiz with tailored feedback; weekly email reminders; Question of the Week; peer coach emails weekly if not completing tasks	Website use by study: Pilot: % subjects using site was 53%, 21% and 26% for weeks 1, 2, and 5, respectively RCT: mean 95% over 20 weeks (range, 89% to 98%)	Subject proportion usage
Bachofen, 1999[27] Cohort study N=21	Obsessive-compulsive disorder	IVR self-management; IVR calls after reading a 190-page manual on ERP (clinician-guided exposure and ritual prevention)	Subjects used system mean 67.2 +/- 38.3 days 22 days for self-assessment; 45 days for ERP	Limited-time intervention; Unclear inteneded use; Mean time used reported
Cathala, 2003[28] Cohort, N=140	Prostate cancer; post-op radical prostatectomy	Web-based access to hospital medical records, secure messaging with surgical team, monitoring PSA level, and answer questions	Website use over 6 months: 95% “regularly connected”, mean logons 8/subject (range: 1-22); Mean 2 PSA entries/subject; Mean 2 messages/subject	58% subjects described as “senior executives”; Usage Estimate: 1.3 logins/subject/month
Cavan, 2003[29] Cohort, N=6	Type I Diabetes	Web-based monitoring blood glucose and insulin use; food diary; feedback with glucose level simulation; patient decision support for insulin dosing	Website use over 6 months: 1 of 6 subjects input 4 days’ data on 3 occasions first month (study request). No input for several wks; Subjects input mean of 5 sets of data (range: 2-8)	Unable to estimate frequency
Cruz-Correia, 2007[30] Randomized, cross-over study, N=21	Asthma	Web-based self-monitoring of peak flow and symptoms; tailored action plan; decision support tool for patients and physician; Compared to paper-based monitoring	Website use during 4 week periods: variable monitoring, about half of scheduled monitoring conducted; paper tools more likely complete	Unable to estimate frequency
Delgado, 2003[31] Cohort, N=6	Congestive heart failure	Web-based self-monitoring of weight, BP, medication; secure messaging with providers; educational content	Website use over 3 months: Mean 73 logons/subject	Poor description of use over time; Usage Estimate: 22 logins/subject/month
Earnest, 2004[32] Randomized trial, N=107	Congestive heart failure	Web-based access to electronic records, secure messaging with clinical team; educational content	Website use over 1 year (N= 54): 80% used once or more, mean 8 hit-days/subject; Results suggest use associated with White, Non-Hispanic, more symptoms, more clinic visits (NS)	Usage Estimate: 0.7 logins/subject/month

Summary Table 1. Level of Use of Interactive Consumer Health IT (KQ 1)

Author, Year Design, N	Condition and/or Population	Interactive Health IT	Findings: Technology Usage	Usage Comments
Finkelstein, 1996[33] Cohort, N=41	Lung transplant	Web-based self-monitoring of symptoms, vital signs and automated spirometry readings; symptom diary; weekly transmission to clinicians	Monitoring over 1 year: 82% submitted weekly data; 8941 transmissions by 41 subjects, for mean of 4.5 records/week sent; Initial 6.2 records/wk , remained >3.9 records/wk for 43 weeks	Usage Estimate: 16 logins/subject/month
Glasgow, 2003[34] Randomized trial, N=320	Type II Diabetes	Web-based educational content, dietary goal setting (Basic); with glucose monitoring and feedback, online coach 2x/wk, Q & A forum (Self-Mgmt Condition); with online peer support monitored, e-news (Peer Support Condition)	Website use over 10 months: Highest in months 1-3, continued drop months 4-6 and 7-10; Mean logons/subject/month with Peer Support 18.7, with Self-Mgmt 16.7, with Basic 9.4 and 11.4; Use higher in Peer Support for months 4-6 (13.2) and 7-10 (6.7)	Usage Estimate: 18.7 logins/subject/month
Gustafson, 1994[35] Randomized trial, N=204	HIV/AIDS	CHESS: computerized information and problem-solving, Q & A, ask an expert, health profile, peer discussion group, personal stories, decision aids	Use over 3 to 6 months (N= 116): 116 subjects used 15,966 times; Mean 138 uses/subject; Mean time use 39 hrs/subject; 34% of use occurred 9 pm – 7 am; 73% of use was peer discussion, 17% was information and 4% was problem-solving; Use 13% more in women; Minorities used discussion slightly less and information slightly more	Usage Estimate: 23 logins/subject/month
Gustafson, 1998[36] Cohort, N=38	Breast cancer	CHESS: computerized information and problem-solving, Q & A, ask an expert, health profile, peer discussion group, personal stories, decision aids	Use over 10 weeks: Mean 6.8 uses/week/subject; 100% used discussion group, ask an expert, Q & A, health profile; 71% of uses for social support, 16% of uses for information	Usage Estimate: 27 logins/subject/month
Japuntich, 2006[37] Randomized trial, N=284	Smoking	CHESS: web-based information and problem-solving, discussion group, chat room, Q & A, ask an expert, mood self-management	Use over 12 wks (N=140): Use declined over period; Mean logins 33.6/subject ; Mean total time on 486.4 min; Support tools (discussion, chat) used most and information least; Gender, race, education not associated with use; older age correlated with greater use	Usage Estimate: 11.2 logins/subject/month
Jones, 1999[38] Randomized trial, N=525	Breast, cervical, prostate or laryngeal cancer	Computer touch-screen access to general (N=167) or personalized (n=93) information including electronic record, explanation of content, print-outs	Program use over 3 months: Mean time use was 12 minutes; 29% returned to use program; 11.8% with personalized information used after wk 3, vs. 2.6% with general information	Unclear inteneded use; Mean time use reported; Subject proportion usage

Summary Table 1. Level of Use of Interactive Consumer Health IT (KQ 1)

Author, Year Design, N	Condition and/or Population	Interactive Health IT	Findings: Technology Usage	Usage Comments
Jones, 2001[39] Randomized trial, N=112	Schizophrenia	Computer touch-screen access to general or personalized information including electronic record, explanation of content, feedback displays, print-outs	Program use: Median time for 5 sessions 69 min (range 34-143)	Limited-time intervention; Median time use reported
Kashem, 2006[40] RCT N=36	Congestive heart failure	Web-based self-monitoring weight, vitals, medications, graphic data feedback, patient-provider text messaging	Patient data entry: 1,253 Patient text messaging: 362 Provider non-tailored messages: 836 Provider tailored text messages: 416 Total Internet interactions: 2,867	Transactions reported; unable to measure frequency
Leu, 2005[41] Randomized trial, N=50	Type I & II Diabetes	Wireless paging and messaging: automated reminders of subject's choice (e.g. check glucose, eat, take Rx, exercise), 2-way text messaging	Use over 3-6 months (N=25): 12,025 messages sent to subjects, with 1,676 responses; 114 additional messages sent from subjects, 16 needing action	Usage Estimate: < 1 message/subject/month
Lorig, 2006[42] Randomized trial, N=958	Heart disease, Type II diabetes, *or* chronic lung disease	Web-based self-management, with bulletin board, discussion group, educational information, weekly postings and moderated activities for 6 weeks, buddy support by email, email reminders to participate	Website use over 1 year (N=354): Mean logon 26.5 times/subject (range 0-177); 8 never logged on;	Usage Estimate: 17.7 logins/subject/month
Ma, 2006[43] Cohort, N=12	Type II Diabetes	Diabetes Information Profile (DIP): info tailoring and priority algorithms; Quiz Service: quiz tailoring and priority algorithms; Agenda Service: agenda algorithms.	Website use over 3 months: Median login 6 times/subject (range 2-15); total logins 82; 82 of 257 information items visited for 10 sec or more; 1 of 12 subjects made an agenda; of 5 subjects using quizzes, mean 61.8 questions conducted	Usage Estimate: 2 logins/subject/month
Mckay, 2001[44] Randomized trial, N=78	Type II Diabetes who were sedentary	Web-based self-management, goal physical activity setting, tailored and graphic feedback, online coaching, peer discussion group; Control condition basic website	Use over 8 weeks: Total logons 341 for full program vs. 105 for informational website; Mean logon/wk 1.1 vs. 0.3; Mean group posting 1.1/subject; Mean messg to coach 2.1/subject; Use declined from mean 2.7 logons/subject/wk first 2 weeks to 0.5 in last 2 weeks	Usage Estimate: 4.4 logins/subject/month
Nguyen, 2003[45] Cohort, N=16	Chronic obstructive pulmonary disease	Web-based self-management with exercise monitoring, goal setting and feedback, pulmonary function and symptom monitoring, weekly education, peer and professional chat, bulletin boards, email	First month registered most logins (330) compared to 104 in the final month	Unable to estimate frequency

Summary Table 1. Level of Use of Interactive Consumer Health IT (KQ 1)

Author, Year Design, N	Condition and/or Population	Interactive Health IT	Findings: Technology Usage	Usage Comments
Owen, 2005[46] Cohort, N=62	Breast cancer	Web-based self-guided training for coping skills, posted exercises every 2 weeks, bulletin board, discussion group, symptom management, educational information, email reminders	Use over 12 weeks: Mean 35.5 total logins/subject; Mean 9.5 bulletin posts/subject; Coping skills component highest use for 8 weeks then steep drop; Bulletin board had highest continuous use	Usage Estimate: 11.8 logins/subject/month
Piette, 1997[47] Cohort, N=65	Diabetes	Automated voice messaging to communicate messages, collect information, and identify concerning issues (promting a clinician telephone call)	AVM contact over 4 weeks: 3.3 out of 4 calls completed; 57% contacted all 4 wks, 23% contacted 3 of 4 wks, 15% contacted twice, 5% contacted once	Subject proportion usage
Pike, 2007[48] Cohort, N=NR	Smoking	Recruitment to an interactive, tailored website	Wide variation in website use; 3 sites had higher use (20% or more subjects making 5 or more visits) and 3 had lower use (<10% make 5 or more visits); non-ITT quitting was 26% vs. 22.1% in high vs. low site use.	Subject proportion usage
Rasmussen, 2005[49] Randomized trial, N=300	Asthma	Web-based self-monitoring, input peak flow and symptoms, tailored action plans feedback, decision support for clinicians, email if treatment changes needed	Website use over 6 months: Mean use of self-management tool was 4 times in 2-week periods (range, 1-6)	Usage Estimate: 8 logins/subject/month
Reid, 2007[50] Randomized trial, N=99	Smokers with heart disease	Interactive voice response after discharge from hospital on day 3, 14 and 30. If subject wanted to quit or had confidence <7 (out of 10), nurse counselor called 3 times over 8 week period	IVR contact (N=50): Day 3, 35/50 (70%) Day 14, 36/50 (72%) Day 30, 34/50 (68%)	Subject proportion usage
Ross, 2004[51] Randomized trial, N=107	Congestive heart failure	Web-based access to electronic records, secure messaging with clinical team; educational content	Website use over 1 year (N=54): 43 subjects logged in 581 times; Use highest during month 1 to 3, thereafter 24% used it monthly; Subjects most frequently viewed clinical notes and lab results, and education guide was viewed least; 41 subjects sent 63 e-messages; Message categories: appointment 20%, refills 15%, Rx question 14%, tests 12%, feeling ill 8%, info 3%	Usage Estimate: 0.9 logins/subject/month

Summary Table 1. Level of Use of Interactive Consumer Health IT (KQ 1)

Author, Year Design, N	Condition and/or Population	Interactive Health IT	Findings: Technology Usage	Usage Comments
Ruland, 2003[52] Randomized trial, N=52	Cancer	Computerized touch-screen shared decision support for patients and clinicians, on patient symptoms, functional problems, and preferences, printed rank-order summary used for shared clinical decision-making	Use of decision tool: Median time 9 min to complete (range 0.5-49 minutes); 25% of subjects used <5 minutes	Limited-time intervention; Median time use reported
Shaw, 2007[53] Randomized trial, N=231	Breast cancer Underserved	CHESS: Web-based information, discussion group, ask an expert, and interactive services (tailored action plan, decision aids, health tracking	Use over 4 months, by category: Mean use discussion 506.2 min; Mean use information 35.5 min; Mean use ask an expert 28 min; Mean interactive service 27.9 min	Minutes used, not frequency
Smith, 2000[54] Randomized trial, N=30	Diabetes Rural women	Computer with web-based health and diabetes information. 'health chat' self management training, monitored discussion group, 'Mailbox' private email, structured classroom, Q & A, bulletin board	Website use over 5 months: Mean use time 63.8 min/month; First month use 129 min, then mean time declined to 68, 78, 44, an 37 min for month 2 through 5; Highest use for discussion group, mean 111 times/subject total; Mailbox (email) 40 times/subject; Self-mgmt 38 times/subject	Minutes used, not frequency
Tsang, 2001[55] Randomized cross-over study, N=20	Diabetes	Computer diabetes monitoring with food diary and nutritional feedback, blood glucose monitoring, messaging to and from clinicians	Use over 6 months (N=19): Transmissions per week reported as >7/week by 15.8%, 5-6 by 10.5%, 3-4 by 21%, 1-2 by 36.8%, and <1 by 15.8%	Subject self-report
van den Brink, 2005[56] Cohort, N=36	Head and neck cancer	Web-based secure messaging, health and cancer information, support group forum, monitoring by questionnaire, e-mail alerts for concerning responses	Use over 6 weeks: Total sessions 982, with mean sessions/subject 273 (range 4-69); Sessions lasted mean 12 mins; 16% occurred after office hours; Use of functions: monitoring 100%, ask questions 64%, read messages 75%, contact subjects 8%, review information 61%	Usage Estimate: 5 logins/subject/month

Abbreviations

< X = less than X
> X = greater than X
≥ X or ≤ X = greater than or equal to X or less than or equal to X
BP = blood pressure
CHESS = Comprehensive Health Enhancement Support System
DIP = diabetes information profile
mgmt = management
min(s) = minute(s)
PSA = prostate-specific antigen
Q&A = question and answer
RCT = randomized controlled trial
Rx = precription
sec(s) = second(s)
TBD = to be determined
wk(s) = week(s)

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Andersson, 2002[94] RCT, N=44	Headaches	Therapist initiated telephone contact via the internet	Gradual introduction Attractive User involvement in development Familiar tools Controllability	Contrast, color, button size, graphics	Helpfulness Learn ability	Efficiency Global Usability
Anhoj, 2004[63] Qualitative, N=231	Asthma	Website with tailored feedback and support	One-click access to frequently used items	Distracting news, flashy graphics, opinion polls	NR	NR
Bond, 2006[64] Qualitative Study, N=35 users; 52 surveyed	Diabetes	Tailored self-management instruction, chat/discussion, bulletin boards, advice, counseling, log of self-management activities, and information	Tailored program greatly increased usability	Size, graphics	NR	NR
Carroll, 2002[65] Qualitative Study, N=14	Type II Diabetes	Specifically usability testing; CV risk prevention; used in clinic; qualitative interviews comparing designs and interfaces.	Plain, simple backgrounds for display Using pie charts	Concern about clarity of information	NR	86%
Cavan, 2003[29] Cohort, N=16	Type I Diabetes	Web-based, feedback, patient decision support	NR	Data entry screens hard to follow	NR	NR
Chen, 2006[66] Qualitative Study, N=77	Smoking (Cessation program)	Smoking cessation program (classroom), and Internet-assisted instruction program	Very easy to use	NR	Difficulty: 1.36 out of 7 (very low difficulty)	Very helpful in quitting smoking
Cleland, 2007[67] Qualitative Study, N=12	Asthma	Electronic peak flow meter linked to a mobile phone with an interactive screen to record current asthma symptoms transmitted to and stored in a server	Fast, easy to use, time saver	Problematic cable attachments and data head, sensitivity of Piko meter, absence of a good cell signal	Very easy to use	Staff agreed that technology was easy to use and wildly popular with pts
Crosbie, 2006[68] Qualitative Study, N=20	Stroke	Stroke rehabilitation, user moves arms and hands in a virtual environment and interacts with familiar objects	VE allowed pts with limited movement to experience sense of 'presence'	Virtual reality made some of the healthy users motion sick	Easy to use	Very satisfied

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Cruz-Correia, 2007[30] RCT, N=21	Asthma	Web-based self-monitoring, tailored action plan; decision support	East to record data, view data,	User interface issues, difficult to interpret content	Useful	Like it
Delgado, 2003[31] Cohort, N=6	Congestive heart failure	Web-based, secure messaging, educational content	Reliable responses from clinic Good quality of care	NR	Easy to use	Useful
Feil, 2000[69] Qualitative Study, N=160	Type 2 Diabetes	D-Net intervention: peer social support and personalized dietary intervention	NR	Computer was initial barrier to program participants	NR	NR
Finkelstein, 1996[33] Qualitative Study, N=41	Post Lung Transplant patients	Electronic spirometer/diary (patient daily self-measurements of standard spirometry, vital signs, and symptoms recorded at home)	NR	Very few phone calls, only tech glitches were in the original developmental stages of device	All patients able to record daily entries	NR
Finkelstein, 1998[70] Qualitative Study, N=17	Asthma/underserved	Symptom diary and spirometry test	NR	NR	Not complicated at all, very easy to use	NR
Friedman, 1997[71] Qualitative Study, N=516	Elderly/Chronically Ill	TLC: carries out automated, telephone-based health care encounters with patients in their homes	NR	NR	Majority found it very easy to use	Satisfied, made more aware of disease/alleviated worries about disease
Gerbert, 2003[95] Randomized Trial, N=52	Smoking & Alcoholism (48% AA; 12%Latino; low income)	Brief motivational video risk assessment with tailored advice	Convenience (right amount of time;5.7 / 7); privacy(5.95/ 7 pts); confidential (5.9/7pts); honest (6.94/7 pts)	71% would feel more comfortable with a "real" doctor.	6.8 on 7 pt scale	5.7 on 7pt scale
Glasgow, 2003[34] Qualitative Study, N=320	Diabetes Mellitus	Computer assessed, analyzed, and presented feedback on patients' dietary patterns, barriers to and support for dietary self-management, and tailored dietary fat reduction goal	NR	NR	NR	NR

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Gomez, 2002a[72] Qualitative, N=NR	HIV/AIDS	Web based self monitoring system for HIV/AIDS patient care	Graphics	NR	NR	NR
Gomez, 2002b[73] Qualitative, N=NR	HIV/AIDS	Web based self monitoring system for HIV/AIDS patient care	Reliable	NR	Easy to use Easy to learn	Good efficiency
Gustafson, 2001[74] Qualitative Study, NR	HIV/AIDS, breast cancer	Elderly, have/had cancer, not specific to one study!!	NR	NR	NR	NR
Holman, 1996[96] Randomized, cross-over, N=6	Diabetes	Hand held computer for self management and to make treatment recommendations	Convenient to use	NR	Easy to use	Enjoyed using the system Wanted to continue
Jones, 2001[39] RCT, N=112	Schizophrenia	Computer touch-screen, electronic record, feedback displays	Touch screen easy to use	Some displays confusing	Easy to use	NR
Kaufman, 2003[75] Qualitative, N=25	Diabetes	Videoconferencing, vitals upload and review, education, email	NR	Patient tutorial needs revision; creation of a field training program	NR	NR
Kenwright, 2004[97] Cohort, N=27	Phobia or Panic Disorder	FearFighter - Internet self-help system			"generally felt comfortable using the system"	(70% satisfied with an Internet Intervention)
Kerkenbush, 2003[76] Qualitative Study, NR	DM	Track blood glucose levels, dietary intake, and activity level	NR	NR	Easy to use	NR
Kim, 2005[77] Qualitative Study, N=42	Diabetes Mellitus	Access a website via their mobile phone or Internet and input their blood glucose levels every day; patients were sent the optimal recommendations by both the mobile phone and the internet	NR	NR	Easy to use	Very satisfied

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Kim, 2007[78] Qualitative Study, N=33	Diabetes Mellitus	Nurse short message service by mobile phone and internet on glycosylated hemoglobin (HbA1c) levels and adherence to diabetes control recommendations; patients input information and were sent weekly recommendations	NR	NR	NR	NR
Kosma, 2005[79] Qualitative Study, N=25	Physical Disability	Web-based physical activity motivational with and without discussion, weekly motivational messages	NR	NR	4.5 out of 5	Helpful: 3.4/5
Kressig 2002[98] Cohort, N=34	Physical activity for elderly	computer system for exercise promotion (questionnaire with tailored recommendations)		Most problems had to do with survey issues, not computer. 22% questions were mouse related.	4.6/5pt	21.45/24pts on acceptability of recommendation
LaPlante-Levesque, 2006[80] Qualitative Study, N=3	Impaired hearing/hearing loss	Email communication between a new hearing aid user and the audiologist or from the audiologist to the client	All seemed 'comfortable' with the program-study is broken down into experience of each individual	NR	NR	NR
Leu, 2005[41] RCT, N=50	Type I & II Diabetes	Wireless messaging, automated reminders	Pager useful	NR	NR	Enjoyed using pager Wanted to continue (68%)
Liu, 2005[81] Qualitative Study, N=274	Type II Diabetes	POEM: Education management system: patient specific educational materials, medication data, and laboratory test results, as well as reminders with emails and short messages via cell phone	NR	NR	NR	NR

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Lober, 2006[82] Qualitative Study, N=38	Elderly	Personal health records with areas for communication with health professional	Ability to print out PHR	Visibility, icon size, graphics	NR	NR
Ma, 2006[43] Cohort, N=12	Type II Diabetes	Information tailoring, question tailoring	System was useful System is relevant	None	Easy to use	Would recommend system to others
McDaniel, 2002[99] Cohort, N=110	Smoking; Low income women	Interactive smoking cessation software		technology malfunctions; software errors		60.2 / 70pts; minority participants more satisfied
McKay, 2001[44] RCT, N=78	Type II Diabetes, sedentary	Web-based, tailored and graphic feedback, peer discussion	No difference between groups in helpfulness of the PA section or relevance of the program	NR	No difference between groups in ease of use	NR
McPherson, 2006[100] Randomized Trial, N=101	Children with Asthma	Multimedia educational program				35 / 37 felt is was a good way to learn about asthma; 31 / 37 felt they learned more from using the computer
Piette, 1997[47] Cohort, N=65	Diabetes	Voice messaging	No difficulty entering answers into touchtone system	NR	No difficulty understanding the messages	Calls very or somewhat helpful Wanted to continue
Ralston, 2004[83] Qualitative Study, N=9	Diabetes Mellitus	Living with diabetes program: web-based disease management module to support care	NR	NR	NR	NR
Reed, 2005[84] Qualitative Study, N=NR	Diabetes Mellitus	Not specified, website review; www.diabetes-insight.info	Easy to navigate and comprehensive Few advertisements	NR	NR	NR

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Ruland, 2003[52] Randomized trial, N=52	Cancer	Computerized touch-screen shared decision support and decision-making	Use of touch pad system without assistance System a useful tool	Not rated positively: Learning to use the computer To get it to do what I want Clear and understandable on how to operate Can become skillful using the computer	Questions easy to answer Do not find it overall easy to use	NR
Schärer, 2002[85] Qualitative Study, N=600	Bipolar Disorder	PDA; Patients encouraged to report most manic and depressive state not only in the presence of mood swings, information analyzed and sent to patient via email or paper	Experience with PDAs	PDA intimidating to novices at beginning	All expressed satisfaction with ease and use of IT	All expressed satisfaction with ease and use of IT
Sciamanna, 1999[101] Qualitative Study, N(Pilot)=29, N(Study B)=503	Smoking	Patients answer questions, these are analyzed and patient provided with tailored quit-smoking material, also physicians provided with information to help counsel patients	NR	NR	Easy to use	NR
Sciamanna, 2004[86] Cohort, N=150	Smoking & physical activity	Computer assessment with tailored printed feedback	NR	NR	Easy to use	NR
Sciamanna, 2005[102] Quasi-experimental, N=121	Osteoarthritis	Computer assessment with tailored feedback about OA and OA care	NR	NR	Easy to use	Most rated IT excellent or very good, no one rated as fair or poor
Shaw, 2000[87] Qualitative Study, N=20	Breast Cancer	CHESS	NR	NR	Found easy to use	NR
Skeels, 2006[88] Cohort, N=30	HIV+	CARE+ Tablet PC counseling	NR	Tablet PC screen difficult to see Radio buttons Confusion on how to use tablet PC	NR	NR

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

			Usability Outcomes			
Author, Year, Design, N	**Condition**	**Intervention/Technology Type**	**Useful (technology elements)**	**Problematic technology elements**	**Ease of Use**	**Satisfaction**
Smaglik, 2008[89] Qualitative Study, N=36	HIV/AIDS	HIV CHESS support groups	NS	NS	NS	NS
Tsang, 2001[55] Randomized cross-over study, N=19	Diabetes	Hand-held electronic diary with touch screen	NR	Technical issues	95% felt system was easy to use	NR
van den Brink, 2003[90] Qualitative Study, N=NR	Head and Neck Cancer	Not specified-summary of electronic information system	NR	NR	NR	NR
van den Brink, 2005[56] Cohort N=36	Head & neck cancer	Electronic health information support system	NR	Technical issues	NR	NR
van't Riet, 2001[91] Qualitative Study, N=14 families	Amblyopia	Interactive computer system that helps with communication between patients, their parents and caregiver	NR	NR	NR	NR
Wilkie, 2001[58] Descriptive, N=41	Cancer	The Symptom Report program was designed as an interactive, touch-screen method for assessment of pain and fatigue.	NR	NR	System was easy to use	NR
Yeh, 2006[92] Qualitative Study, N=274	Diabetes Mellitus	POEM: Education management system: patient specific educational materials, medication data, and laboratory test results, as well as reminders with emails and short messages via cell phone	NR	NR	NR	NR
Zimmerman, 2004[93] Qualitative Study, N=52	CABG/Elderly (≥65 yrs)	CABG patients access web for daily information on recovery, provider can observe patients' progress at home	NR	NR	NR	NR

Summary Table 2. Usability of Interactive Consumer Health IT (KQ 2)

Abbreviations

< X = less than X
≤ X or ≥ X = less than or equal to X or greater than or equal to X
> X = greater than X
BP = blood pressure
CABG = coronary artery bypass graft
CHESS = Comprehensive Health Enhancement Support System
CV = cardiovascular
DM = diabetes mellitus
HgBA1c = glycosylated hemoglobin
NR = not reported
NS = not significant
OA = osteoarthritis
PA = peer assessment
PDA = personal digital assistant
PHR = personal health records
RCT = randomized controlled trial
TBD = to be determined
VE = virtual entertainment

Summary Table 3. Barriers to Use of Interactive Consumer Health IT (KQ 3)

Author, Year, Design, N	Condition and/or Population	Interactive Computer Technology (ICT)	Barriers
Anhoj, 2004[63] Qualitative, N=231	Asthma	Website with tailored feedback and support	- Doctors reluctant due to time constraints - Did not fit into patients' everyday lives - Used inefficiently - Contradictory information, caused disbelief and results with not follow the advice - Access to the Internet - The benefits are not immediate - Lack of trust with virtual expert
Artinian, 2003[106] RCT, N=18	Congestive heart failure	Video cassette monitoring connected to telephone line	- 44% hated it - Perception that they had to build their life around the monitor/reminder - Nuisance and intrusive - 44% had technical problems - Difficult to get small pills - Text on screen too small; color contrast difficult to read; needed longer message for clarity
Bond, 2006[64] Qualitative Study, N=35 users; 52 surveyed	Diabetes	Tailored self-management instruction, chat/discussion, bulletin boards, advice, counseling, log of self-management activities, and information	- Lack of computer experience and lack of personal instruction - Non-tailored device/program (in this case, larger text/icons and physical limitations such as double-clicking the mouse had to be implemented) - Lack of access to a computer (computers were given/installed for free in patient's homes in this study)
Carroll, 2002[65] Qualitative Study, N=14	Type II Diabetes	Specifically usability testing; CV risk prevention; used in clinic; qualitative interviews comparing designs and interfaces.	- Visibility - Lack of computer skills
Cathala, 2003[28] Cohort, N=140	Prostate cancer; post-op radical prostatectomy	Web-based monitoring with messaging	- 11% had connection problems - 14% had technical problems - Physician email not reimbursed
Cavan, 2003[29] Cohort, N=16	Type I Diabetes	Web-based, feedback, patient decision support	- Took too much time - Internet connection interruption caused loss of data
Chen, 2006[66] Qualitative Study, N=77	Smoking (Cessation program)	Smoking cessation program (classroom), and Internet-assisted instruction program	- Lack of computer skills - Cost

Summary Table 3. Barriers to Use of Interactive Consumer Health IT (KQ 3)

Author, Year, Design, N	Condition and/or Population	Interactive Computer Technology (ICT)	Barriers
Cleland, 2007[67] Qualitative Study, N=12	Asthma	Electronic peak flow meter linked to a mobile phone with an interactive screen to record current asthma symptoms transmitted to and stored in a server	- Lack of familiarization with mobile phone technology - Failure of technology to work on several occasions -Problems with cable attachments and data head (incomplete transfer of information) - Absence of a good cell signal (inhibited data transmission/sent reminders to patients to send data, if they had recorded it previously-frustrated some to receive redundant reminders) - Sensitivity of Piko meter (suggests in study that unusually high readings indicate that pts 'spat rather than blew into the Piko meter')
Crosbie, 2006[68] Qualitative Study, N=20	Stroke	Stroke rehabilitation, user moves arms and hands in a virtual environment and interacts with familiar objects	- Cost - Side effects associated with technology (in the case of VE, healthy patients experience headaches, sweating, nausea, disorientation, and balance disturbance) - Delays
Cruz-Correia, 2007[30] Randomized cross-over study, N=21	Asthma	Web-based self-monitoring, tailored action plan; decision support	- Technical problems – 9/16 reported problems; Internet connection issues (9) , system errors (3), peak flow meter batteries (5), meter technical problems (2) - Difficult data input for monitoring systems - Poor graphic feedback
Delgado, 2003[31] Cohort, N=6	Congestive heart failure	Web-based, secure messaging, educational content	- Technical problems – system down for 24 hours during 3 months
Earnest, 2004[32] Randomized trial, N=107	Congestive heart failure	Web-based records, secure messaging, educational content	- Not comprehending medical jargon - Watered down or “sugar-coated” information
Feil, 2000[69] Qualitative Study, N=160	Diabetes Mellitus	D-Net intervention: peer social support and personalized dietary intervention	- Cost of computer/internet - Lack of computer/internet skills - Computer anxiety
Finkelstein, 1996[33] Qualitative Study, N=41	Post Lung Transplant patients	Electronic spirometer/diary (patient daily self-measurements of standard spirometry, vital signs, and symptoms recorded at home)	- Lack of computer/internet skills - Cost of computer/internet - Failure to replace mouthpieces weekly
Finkelstein, 1998[70] Qualitative Study, N=17	Asthma/underserved	Symptom diary and spirometry test	- Lack of computer/internet skills - Cost - Limited personal instruction
Friedman, 1997[71] Qualitative Study, N=516	Elderly/Chronically Ill	TLC: carries out automated, telephone-based health care encounters with patients in their homes	- Lack of human interaction

Summary Table 3. Barriers to Use of Interactive Consumer Health IT (KQ 3)

Author, Year, Design, N	Condition and/or Population	Interactive Computer Technology (ICT)	Barriers
Gerbert 2003[95] Randomized Trial, N=52	Smoking & Alcoholism	Brief motivational video risk assessment with tailored advice	- 71% would feel more comfortable with a "real" doctor.
Glasgow, 2003[34] Qualitative Study, N=320	Diabetes Mellitus	Computer assessed, analyzed, and presented feedback on patients' dietary patterns, barriers to and support for dietary self-management, and tailored dietary fat reduction goal	- Cost - Level of commitment - Lack of long-term weight loss intervention success
Gomez, 2002b[73] Cross Over, N=NR	HIV/AIDS	Web based self monitoring system for HIV/AIDS patient care	- No battery checking software - Low reliability of research system - Required technical personnel at hospital for support during trial - Required training users on when to call for technical support
Gustafson, 2001[74] Qualitative Study, NR	HIV/AIDS, breast cancer	Elderly, have/had cancer, not specific to one study!!	- Cost - Lack of internet/computer - Lack of computer skills
Jones, 2001[39] Randomized trial, N=112	Schizophrenia	Computer touch-screen, electronic record, feedback displays	- Some preferred the nurse because of a “personal touch,” empathy, and talking rather than reading - Bringing pts into the clinic for the touch screen computer was too costly for schizophrenia treatment
Kaufman, 2003b[75] Qualitative Study, N=25	Diabetes	IDEATel project; web-based diabetes diary (Diabetes Manager) that allows patients to track their own progress for five variables: BP, glucose, medications, exercise, and viewing Hgba1c; Videoconferencing, electronic transmission of glucose and blood pressure readings, secure email, web-based review of clinical data, access to web-based educational material	- Literacy and numeracy - Visibility - Psychomotor skills associated with keyboard/mouse use - Lack of computer skills - Numerous technical difficulties
Kenwright, 2004[97] Cohort, N=27	Phobia or Panic Disorder	FearFighter - Internet self-help system	- 3/10 would prefer face-to-face with doctor
Kerkenbush, 2003[76] Qualitative Study, NR	DM	Track blood glucose levels, dietary intake, and activity level	- APNs have to evaluate patients to identify ideal candidates for PDAs (excluding people who have little PDA experience) -Cost -Technological demands - The fact that PDAs operate on batteries and sometimes when they run down completely the entire memory is lost

Summary Table 3. Barriers to Use of Interactive Consumer Health IT (KQ 3)

Author, Year, Design, N	Condition and/or Population	Interactive Computer Technology (ICT)	Barriers
Kim, 2005[77] Qualitative Study, N=42	Diabetes Mellitus	Access a website via their mobile phone or Internet and input their blood glucose levels every day; patients were sent the optimal recommendations by both the mobile phone and the internet	- Lack of mobile phone technology skills - Cost
Kim, 2007[78] Qualitative Study, N=33	Diabetes Mellitus	Nurse short message service by mobile phone and internet on glycosylated hemoglobin (HbA1c) levels and adherence to diabetes control recommendations; patients input information and were sent weekly recommendations	- Lack of mobile phone/internet skills - Cost
Kosma, 2005[79] Qualitative Study, N=25	Physical Disability	Web-based physical activity motivational with and without discussion, weekly motivational messages	- Patient adherence/motivation - Lack of computer/internet skills
Kressig 2002[98] Cohort, N=34	Physican activity for elderly	computer system for exercise promotion (questionnaire with tailored recommendations)	- Age directly related to increased need for assistance.
LaPlante-Levesque, 2006[80] Qualitative Study, N=3	Impaired hearing/hearing loss	Email communication between a new hearing aid user and the audiologist or from the audiologist to the client	- Cost - Time
Leu, 2005[41] Randomized trial, N=50	Type I & II Diabetes	Wireless messaging, automated reminders	- 44% found messages annoying - Anticipating messages - Messages too overwhelming - Pager didn't work in all locations - Messages not programmable by patients - Security issues, was this HIPAA compliant
Liu, 2005[81] Qualitative Study, N=274	Type II Diabetes	POEM: Education management system: patient specific educational materials, medication data, and laboratory test results, as well as reminders with emails and short messages via cell phone	- Cost - Lack of computer/internet skills - Lack of cell phone
Lober, 2006[82] Qualitative Study, N=38	Elderly	Personal health records with areas for communication with health professional	- Lack of computer/internet - Lack of computer/internet skills - Literacy and numeracy - Legal restrictions to PHR
Ma, 2006[43] Cohort, N=12	Type II Diabetes	Information tailoring, question tailoring	- Redundancy of information or information they already knew - Well controlled DM - Lack of computer at home

Summary Table 3. Barriers to Use of Interactive Consumer Health IT (KQ 3)

Author, Year, Design, N	Condition and/or Population	Interactive Computer Technology (ICT)	Barriers
McDaniel, 2002[99] Cohort, N=110	Smoking; Low income women	Interactive smoking cessation software	- Participants with less than a high school eduction were less satisfied as were those not seriously thinking about quitting - Technology malfunctions and software errors
McKay, 2001[44] Randomized trial, N=78	Type II Diabetes who were sedentary	Web-based, tailored and graphic feedback, peer discussion	- Only 33% found the peer-to-peer support group helpful - Low number of people in support group, not enough for critical mass
Ralston, 2004[83] Qualitative Study, N=9	Diabetes Mellitus	Living with diabetes program: web-based disease management module to support care	- Lack of computer/internet skills - Lack of computer/internet - Unmet expectations of the program - program was Incompatible with daily activities
Reed, 2005[84] Qualitative Study, N=NR	Diabetes Mellitus	Not specified, website review; www.diabetes-insight.info	- Lack of computer/internet
Schärer, 2002[85] Qualitative Study, N=600	Bipolar Disorder	PDA; Patients encouraged to report most manic and depressive state not only in the presence of mood swings, information analyzed and sent to patient via email or paper	- Cost - Visibility (small font)
Sciamanna, 1999[101] Qualitative Study, N(Pilot)=29, N(Study B)=503	Smoking	Patients answer questions, these are analyzed and patient provided with tailored quit-smoking material, also physicians provided with information to help counsel patients	- Cost of internet/computer - Lack of computer/internet skills - Program requires personal responses from patient
Sciamanna, 2004[86] Cohort, N=150	Smoking	Tailored printed feedback (primary care setting) on smoking & physical activity for patients and physicians	- Lack of review/discussion of report by physician with patient
Shaw, 2000[87] Qualitative Study, N=12	Breast Cancer	CHESS support groups	- Lack of computer/internet skills - Lack of interest
Skeels, 2006[88] Qualitative Study, N=30	HIV/AIDS	CARE+; Tablet PC Counseling Tool for HIV+; medication adherence and secondary HIV prevention; observation & semi-structured interview after use Specifically designed to test barriers & drivers with HIV+ pts	- Visibility - Lack of human interaction/counseling - Unable to ask clarifying questions of questionnaire
Smaglik, 2008[89] Qualitative Study, N=36	HIV/AIDS	HIV CHESS support groups	- Lack of computer/internet skills
Taylor, 2006[107] RCT, N=114	Sleep apnea	HealthBuddy; CPAP adherence	- Telephonic delay between patient and practitioner
Turnin, 1992[108] RCT, N=105	Diabetes	Internet expert system for diabetes - Diabeto	- Cost
van den Brink, 2003[90] Qualitative Study, N=NR	Head and Neck Cancer	Not specified-summary of electronic information system	- Lack of computer/internet skills - Lack of interest in site content

Summary Table 3. Barriers to Use of Interactive Consumer Health IT (KQ 3)

Author, Year, Design, N	Condition and/or Population	Interactive Computer Technology (ICT)	Barriers
van den Brink, 2005[56] Prospective Study, N=36	Head and Neck Cancer	Patient-provider messaging; forum; monitoring; email alerts	- Technical difficulties - Lack of computer/internet skills - Program technology not integrated into most GPs tech system
van't Riet, 2001[91] Qualitative Study, N=14 families	Amblyopia	Interactive computer system that helps with communication between patients, their parents and caregiver	- Lack of computer/internet - Cost - Lack of time
Wilkie, 2001[58] Qualitative Study, N=41	Cancer	Cancer symptom control; Symptom report questionnaire; interactive tailored education	- Lack of computer skills - Not a comprehensive questionnaire, only about pain
Yeh, 2006[92] Qualitative Study, N=274	Diabetes Mellitus	POEM: Education management system: patient specific educational materials, medication data, and laboratory test results, as well as reminders with emails and short messages via cell phone	- Lack of computer/internet skills - Cost - Literacy
Zabinski, 2001[59] Pilot study, N=4	Eating Disorders	Women at risk of eating disorders; synchronous Internet relay chat; based on cognitive behavioral treatment; facilitated by a moderator	- Lack of body language/facial expression feedback - Unable to control distractions in home environment - Unable to control forwarding of messages
Zimmerman, 2004[93] Qualitative Study, N=52	CABG/Elderly (≥65 yrs)	CABG patients access web for daily information on recovery, provider can observe patients' progress at home	- Lack of computer/internet skills - Literacy/numeracy

Abbreviations

< X = less than X
≤ X or ≥ X = less than or equal to X or greater than or equal to X
> X = greater than X
APN = advanced practice nurse
BP = blood pressure
CABG = coronary artery bypass graft
CHESS = Comprehensive Health Enhancement Support System
CPAP = continuous positive airway pressure
DM = diabetes mellitus
GP = general practitioner
HgBA1c = glycosylated hemoglobin
HIPAA = Health Insurance Portability and Accountability Act
NR = not reported
PDA = personal digital assistant
PHR = personal health records
RCT = randomized controlled trial
TBD = to be determined
VE = virtual entertainment

Summary Table 4. Drivers and Facilitators of the Use of Interactive Consumer Health IT (KQ 4)

Author, Year, Design, N	Condition and/ or Population	Interactive Computer Technology (ICT)	Drivers
Andersson, 2002[94] RCT, N=44	Headaches	Therapist initiated telephone contact via the internet	Gradual introduction Attractive User involvement in development Familiar tools Controllability
Anhoj, 2004[63] Qualitative, N=231	Asthma	Website with tailored feedback and support	- Trustworthy and reliable technology - Perception that an electronic asthma diary helps manage the disease
Artinian, 2003[106] RCT, N=18	Congestive heart failure	Video cassette monitoring connected to telephone line	- Reminders
Bond, 2006[64] Qualitative Study, N=35 users; 52 surveyed	Diabetes	Tailored self-management instruction, chat/discussion, bulletin boards, advice, counseling, log of self-management activities, and information	- One-on-one instruction - Tailored program
Carroll, 2002[65] Qualitative Study, N=14	Type II Diabetes	Specifically usability testing; CV risk prevention; used in clinic; qualitative interviews comparing designs and interfaces.	- Patient enthusiasm in gaining knowledge - Empowering patient adherence to behavioral changes
Cathala, 2003[28] Cohort, N=140	Prostate cancer; post-op radical prostatectomy	Web-based monitoring with messaging	- People who already have Internet access are more likely to accept and even want to try the Web technology
Cavan, 2003[29] Cohort, N=16	Type I Diabetes	Web-based, feedback, patient decision support	- Increased confidence - Not in good control - Planning a long journey - Weather changes
Chen, 2006[66] Qualitative Study, N=77	Smoking (Cessation program)	Smoking cessation program (classroom), and Internet-assisted instruction program	- Quit smoking - Ease of use
Cleland, 2007[67] Qualitative Study, N=12	Asthma	Electronic peak flow meter linked to a mobile phone with an interactive screen to record current asthma symptoms transmitted to and stored in a server	- Intervention that uses a technological staple of society (thus, most pts were familiar with cell phone tech, and reported no problems) - Digital Piko meter also was though to reduce error, therefore yielding a more satisfactory result for both pts and clinicians
Crosbie, 2006[68] Qualitative Study, N=20	Stroke	Stroke rehabilitation, user moves arms and hands in a virtual environment and interacts with familiar objects	- Site of stroke that limits arm movement in the real world that can be remedied by VE - Low levels of interaction between pt and environment - Ineffective traditional paralysis therapy techniques - Very small percentage of time actually spent by pts practicing traditional therapy tasks

Summary Table 4. Drivers and Facilitators of the Use of Interactive Consumer Health IT (KQ 4)

Author, Year, Design, N	Condition and/ or Population	Interactive Computer Technology (ICT)	Drivers
Delgado, 2003[31] Cohort, N=6	Congestive heart failure	Web-based, secure messaging, educational content	- Technology available at any time needed
Earnest, 2005[32] Randomized trial, N=107	Congestive heart failure	Web-based records, secure messaging, educational content	- Perceived more control - Perceived better communication with doctor - Perceived increased participation in care - Perceived increase in efficiency of getting information
Feil, 2000[69] Qualitative Study, N=160	Diabetes Mellitus	D-Net intervention: peer social support and personalized dietary intervention	- Availability of access to intervention through home computer via the internet - Internet/computer competence
Finkelstein, 1996[33] Qualitative Study, N=41	Post Lung Transplant patients	Electronic spirometer/diary (patient daily self-measurements of standard spirometry, vital signs, and symptoms recorded at home)	- Daily self-reporting by transplant pts is critical for early detection of disease/illness
Finkelstein, 1998[70] Qualitative Study, N=17	Asthma/ underserved	Symptom diary and spirometry test	- Perceived sense of security - Importance of knowing that results were reviewed after test
Friedman, 1997[71] Qualitative Study, N=516	Elderly/Chronically Ill	TLC: carries out automated, telephone-based health care encounters with patients in their homes	- Increased awareness of disease - Relieves worries about the disease
Gerbert 2003[95] Randomized Trial, N=52	Smoking & Alcoholism	Brief motivational video risk assessment with tailored advice	- Convenience (right amount of time;5.7 / 7) - Privacy(5.95/ 7 pts) - Confidential (5.9/7pts) - Honest (6.94/7 pts) - Felt they learned something new(4.9/7pts
Glasgow, 2003[34] Qualitative Study, N=320	Diabetes Mellitus	Computer assessed, analyzed, and presented feedback on patients' dietary patterns, barriers to and support for dietary self-management, and tailored dietary fat reduction goal	- Empowerment of individual (goal setting) - Focus on behavioral changes vs. weight loss
Gomez 2002a[72] NR, N=NR	HIV/AIDS	Web based self monitoring system for HIV/AIDS patient care	- Anonymity - Access to experts / 2nd opinions - Perceived greater control over their situation - Perceived improved health
Gomez 2002b[73] NR, N=NR	HIV/AIDS	Web based self monitoring system for HIV/AIDS patient care	- Perceived improved glycemic control - Better communication with doctor, - Good DM education

Summary Table 4. Drivers and Facilitators of the Use of Interactive Consumer Health IT (KQ 4)

Author, Year, Design, N	Condition and/ or Population	Interactive Computer Technology (ICT)	Drivers
Gustafson, 2001[74] Qualitative Study, NR	HIV/AIDS, breast cancer	Elderly, have/had cancer, not specific to one study!!	- Accessibility of internet by many - Ability of internet to more information to those who didn't originally have access (underserved populations)
Holman, 1996[96] Randomized, cross-over, N=6	Diabetes	Hand held computer for self management and to make treatment recommendations	- No increased worry about DM - Monitoring data feedback
Jan, 2007[111] RCT, N=176	Asthma	Education, monitoring, self-management advice	- Fun - Reminders
Jones, 2001[39] Randomized trial, N=112	Schizophrenia	Computer touch-screen, electronic record, feedback displays	- Short
Kaufman, 2003[75] *Qualitative, N=25	Diabetes	Videoconferencing, vitals upload and review, education, email	- Field training program - Tutorial
Kenwright, 2005[112] Randomized trial, N=44	Obsessive compulsive disorder	Live help-line support during office hours	- Proactive, brief support by phone
Kerkenbush[76] 2003, Qualitative Study, NR	DM	Track blood glucose levels, dietary intake, and activity level	- Tracking data on their own empowers patients and allows healthcare providers to guide appropriate care recommendations
Kim, 2005[77] Qualitative Study, N=42	Diabetes Mellitus	Access a website via their mobile phone or Internet and input their blood glucose levels every day; patients were sent the optimal recommendations by both the mobile phone and the internet	- Cost and time effectiveness of mobile device
Kosma, 2005[79] Qualitative Study, N=25	Physical Disability	Web-based physical activity motivational with and without discussion, weekly motivational messages	- Increase health - Increase physical activity - Motivational
Kressig 2002[98] Cohort, N=34	Physican activity for elderly	computer system for exercise promotion (questionnaire with tailored recommendations)	- More computer experience related to shorter response times and less need for assistance
LaPlante-Levesque, 2006[80] Qualitative Study, N=3	Impaired hearing/hearing loss	Email communication between a new hearing aid user and the audiologist or from the audiologist to the client	- Enables people to give feedback on their hearing aids and allows manufacturers/audiologist make appropriate adjustments/recommendations

Summary Table 4. Drivers and Facilitators of the Use of Interactive Consumer Health IT (KQ 4)

Author, Year, Design, N	Condition and/ or Population	Interactive Computer Technology (ICT)	Drivers
Leu, 2005[41] Randomized trial, N=50	Type I & II Diabetes	Wireless messaging, automated reminders	- Perceived pager helped their health care to be better - Reminders useful when unusual life events occurred - Monitoring treatment changes - Personal accountability
Liu, 2005[81] Qualitative Study, N=274	Type II Diabetes	POEM: Education management system: patient specific educational materials, medication data, and laboratory test results, as well as reminders with emails and short messages via cell phone	- Ability to review medical information - Appointment reminders - Access to education materials
Lober, 2006[82] Qualitative Study, N=38	Elderly	Personal health records with areas for communication with health professional	- Empowering patients to keep track of PHR - Reassurance that PHR will remain intact electronically
Ma, 2006[43] Cohort, N=12	Type II Diabetes	Information tailoring, question tailoring	- Tailored information - Newly diagnosed patients found information more helpful
McDaniel, 2002[99] Cohort, N=110	Smoking; Low income women	Interactive smoking cessation software	- Minority participants were significantly more satisfied with the computer program as well as those with more than a high school education and those who were thinking about quitting in the next month
McKay, 2001[44] Randomized trial, N=78	Type II Diabetes who were sedentary	Web-based, tailored and graphic feedback, peer discussion	- Tailored action plan with personal feedback - Personal coach - Lesson: focus on keeping people engaged
Nguyen, 2005[113] NR, N=23	COPD	Web site with activities information	- Perceived increase access to information
Owen, 2005[46] Cohort, N=62	Breast cancer	Web-based self-guided trainings, bulletin board, discussion group, symptom management, educational information, email reminders	- Low perceived health status - More severe depressive and anxious symptoms - Newly or recently diagnosed
Piette, 1997[47] Cohort, N=65	Diabetes	Voice messaging	- Convenience - Fewer messages for younger patients (<55 years old)
Ralston, 2008[83] Qualitative Study, N=9	Diabetes Mellitus	Living with diabetes program: web-based disease management module to support care	- Empowerment of patient - Non-acute concerns uniquely valued - Enhanced sense of security about health/health care - Providing valuable feedback
Reed, 2005a[110] Qualitative Study, N=NR	Diabetes Mellitus	Not specified, website review; www.diabetes-insight.info	- Accessibility of information
Reed, 2005b[84] NR, NR	Diabetes	Website with static information, email support groups, video Web cast interviews, transcripts and articles	- Patient specific information about insulin therapies

Summary Table 4. Drivers and Facilitators of the Use of Interactive Consumer Health IT (KQ 4)

Author, Year, Design, N	Condition and/ or Population	Interactive Computer Technology (ICT)	Drivers
Rodgers, 2005[84] RCT, N=1705	Smoking	Tailored text messages	- Use of cell phones with younger individuals - Low cost - Distracting activities
Schärer, 2002[114] Qualitative Study, N=600	Bipolar Disorder	PDA; Patients encouraged to report most manic and depressive state not only in the presence of mood swings, information analyzed and sent to patient via email or paper	- Discrete - Not a 'stigmatizing' tool
Sciamanna, 1999[101] Qualitative Study, N(Pilot)=29, N(Study B)=503	Smoking	Patients answer questions, these are analyzed and patient provided with tailored quit-smoking material, also physicians provided with information to help counsel patients	- Tailored quit-smoking materials - Easy/fun to use
Sciamanna, 2004[86] Cohort, N=150	Smoking	Tailored printed feedback (primary care setting) on smoking & physical activity for patients and physicians	- Tailored printed feedback
Sciamanna, 2005[102] Quasi-experimental, N=121	Osteoarthritis	Web-tailored feedback and recommendations based on guidelines for osteoarthritis care	- Better care from doctors - Try/recommend website to others
Shaw, 2000[87] Qualitative Study, N=12	Breast Cancer	CHESS support groups	- Anonymity within the support group fostered equalized participation
Skeels, 2006[88] Qualitative Study, N=30	HIV/AIDS	CARE+; Tablet PC Counseling Tool for HIV+; medication adherence and secondary HIV prevention; observation & semi-structured interview after use Specifically designed to test barriers & drivers with HIV+ pts	- Computer as "objective" and "non-judgmental" - Privacy - Accessibility and convenience
Smaglik, 2008[89] Qualitative Study, N=36	HIV/AIDS	HIV CHESS support groups	- Availability of support group via the internet - Anonymity - Availability of information - Access to professionals who answer e-mails
Turnin, 1992[108] RCT, N=105	Diabetes	Internet expert system for diabetes - Diabeto	-24 hour home access - Free of charge
van den Brink, 2003[90] Qualitative Study, N=NR	Head and Neck Cancer	Not specified-summary of electronic information system	- Accessibility and availability of information

Summary Table 4. Drivers and Facilitators of the Use of Interactive Consumer Health IT (KQ 4)

Author, Year, Design, N	Condition and/ or Population	Interactive Computer Technology (ICT)	Drivers
van der Brink, 2005[56] Prospective Study, N=36	Head and Neck Cancer	Patient-provider messaging; forum; monitoring; email alerts	- Sense of security - Enable communication between healthcare providers and patients
van't Riet, 2001[91] Qualitative Study, N=14 families	Amblyopia	Interactive computer system that helps with communication between patients, their parents and caregiver	- Ability to access information and support from home
Wilkie, 2001[58] Qualitative Study, N=41	Cancer	Cancer symptom control; Symptom report questionnaire; interactive tailored education	- Enabling communication - Beneficial for the novice patient
Yeh, 2006[92] Qualitative Study, N=274	Diabetes Mellitus	POEM: Education management system: patient specific educational materials, medication data, and laboratory test results, as well as reminders with emails and short messages via cell phone	- Ability to review medical information - Appointment reminders - Access to education materials
Zabinski, 2001[59] Pilot study, N=4	Eating Disorders	Women at risk of eating disorders; synchronous Internet relay chat; based on cognitive behavioral treatment; facilitated by a moderator	- Chat room forum - Low cost
Zimmerman, 2004[93] Qualitative Study, N=52	CABG/Elderly (≥65 yrs)	CABG patients access web for daily information on recovery, provider can observe patients' progress at home	- Empowerment of patients to manage symptoms

Abbreviations

CABG = coronary artery bypass graft
CHESS = Comprehensive Health Enhancement Support System
COPD = chronic obstructive pulmonary disease
CV = cardiovascular
DM = diabetes mellitus
NR = not reported
PDA = personal digital assistant
PHR = personal health records
RCT = randomized controlled trial
TBD = to be determined
VE = virtual entertainment

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Andrade, 2005[117] RCT, N=64	HIV/AIDS, initial Rx and failed Rx, good and poor memory; 42% female, 88% African American	Rx reminder device; reports to clinician; monthly counseling; auto-adherence monitor	monthly counseling; auto- adherence monitor	24 week; Baltimore; (1999-2002)	Rx adherence 80% v 65% (NS) but in memory impaired subgroup 77% v 57% (p=.001); CD4 301 v 250 (NS); HV RNA decrease 1 log 72% v 41% (p=0.02); undetectable HIV RNA 34% v 38% (NS)	Fair
Araki, 2006[118] RCT, N=36	Alcoholic factory workers (GGTP high on screen); age 44 yrs	tailored email counseling	tailored face to face counseling; no counselling	2 mos, 2 sessions; Tokyo	alcohol consumption and GGTP decreased, knowledge and attitude scores increased significantly in face to face group; nonsignificant or no change in email group or controls	Fair
Artinian, 2003[106] RCT, N=18	Heart Failure, 1 of 18 female, age ~ 68 yrs; LVEF<40, 61% African American	daily monitoring; reminding, daily clinician review and adjustment; (videocassette size device with meds and phone connection)	digital scale; BP monitor, logs, incentive pmts, educ booklet, HF clinic visits, pharmacist review meds	3 mos, Virginia	both groups improved self-care, medication adherence, quality of life; neither changed 6 min walk, NYHA class; technical problems: 'most pts did not follow our instructions"; 4/9 hated it, 5/9 loved it	Fair
Barnason, 2003[119] RCT, N=18	post CABG HF 24 Males 71 yrs (65-85 yrs) LVEF<40 NYHA I, II	daily monitoring Sx, standardized advice acc to Sx,reviewed by RN, education, encouragement; no human co-intervention (Health Buddy); telephone attachment with 4 buttons (Health Buddy)	17 predischarge education re CABG, CAD RFs, exercise	3, Midwestern hospitals larger study of 180 CABG patients	SELF EFFICACY 43.2 50.1 50.8 vs 43 45.7 47.4 CV RF MOD salt, exercise, stress adherence greater in TX; others not; MOS SF36 overall improvement across all scales, but baseline differences cloud the picture	Fair
Barrera, 2002[120] RCT, N=160	DM 2, 75 males; 59 yrs no internet access, has phone, speak English (of 650 sent letters)	www personal self mgmt coach (with data monitoring and review) vs www social support vs www coach plus support vs education only	none	3, primary care Eugene Oregon	DM Support Scale CTRL 0.10 (1.14) CCH 0.90 (1.46) SS 1.39 (1.44) SS+CCH 1.20 (1.49) ISEL items CTRL −0.08 (0.52) CCH 0.08 (0.68) SS 0.45 (0.82) SS + CCH 0.19 (0.74)	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Block, 2004[122] RCT, N=481	Midlife, low income women; 48.4% African American; 75% overwt	CDROM + reminder calls; CDROM alone	stress management CDROM	2 mos; California	fruit & vegetable intake increase 1.32/day (p=0.016) v 1.2/day (p=0.52) v 0.71/day in controls; greater effect in less educated; stress reduction CDROM also increased fruit & vegetable intake	Fair
Chan, 2003[144] Case series, N=10	Asthma children; 50% F, ~ 7 Y,	web based daily PEF, Sx; education, video monitor 2x/wk by case mgr; case mgr email or phone re PEF, Sx, technique, mgmt plan	paper based daily monitor PEF, Sx, office based education at 2, 6, 12, 24 weeks	6 mos, Hawaii	inhaler technique and peak flows increased in both groups	Good
Cho, 2006[123] RCT, N=120	DM2 53 yrs (62%) MHbA1c 7.6 BMI 23 webaccess, > 30 years old, no HF, ESLD, Ckd, insulin pump, prior webprogram	>2x per week monitoring BG, weight; EHR (lab, Hx) access; feedback; daily review by clinic, MD message biweekly; weekly reminder to logon, w/ quarterly clinic visit	education diet, self management; glucometer, paper record quarterly visit, recommendation to monitor at least 3x a week	30 mo Taiwan	HBA1c 6.7 v 7.5 HFI .47 v .78 (fluctuation index) ~20% 2-3 logins/mo ~50% >3 logins/week NS trend to lower HbA1c in 80% + adherence to monitoring 1586 recommendations by staff to patients (45.3 per person), regimen modificaiton least frequent	Good
Christensen, 2004[124] RCT, N=525	Depressed adults, 71% female, age ~36 yrs	weekly contact, web based education vs. web based cognitive behavioral therapy with assessments	weekly contact about lifestyle, health habits	6 weeks, Canberra	depression symptoms and depression literacy improved with both interventions compared to untreated controls;	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Cruz-Correia, 2007[30] RCT, crossover, N=19	asthma 29 yrs (16-65) no bad comorbidity, have internet none doing self-monitoring	monitoring, graphic feedback, tailored reminding, education vs paper diary, paper action plan	none	NR Asthma clinic Porto, Portugal	Technical/Usability connection problems (9), system errors (3), wording (2), peakflow meter (5); problems w/ paper (5) Time to complete same www vs ppr HIT Satisfaction high overall satisfaction with both ppr and www; small preference for www viewing data Health Behavior: higher monitoring adherence with paper (clearest effect in study)	Fair
Delgado, 2003[31] Case series, N=16	CHF, 10 males 53.3 yrs (±12.5) NYHA 7II, 9III CHF and internet access and >6 months life expectancy	www daily monitoring, display, education, daily communication	none	3, University HF clinic Toronto	HIT Satisfaction high mean scores on ease of use etc HIT Use one 24 hr breakdown Morb/Util 2 hospitalized QOL 59.75 to 49.87 p=0.09 relationships, working around home, side effects improved	Fair
Ewald, 2006[147] Case Series, N=49	Hypertensive adults, 43% female, age ~58	BP monitor twice daily, physician-patient communication, medication reminding	none	9 weeks, Germany	greater BP reduction correlated with more frequent BP monitoring. No controls	Fair
Finkelstein, 1996[33] Case series, N=NR	lung transplant	monitoring	none	NR	HIT Use	Good

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Franklin, 2006[125] RCT, N=92	DM 1 49 males 12.7, 14.1, 12.6 yrs (Conv Ins, Conv Ins + INT, Int Ins +INT, respectively) (range=8-18 yrs) Diagnosis >1 yr No social problems, learning difficulties, or needle phobias	daily scheduled individualized text message reminders; text message education; cellphone	none	Tayside, UK	HbA1c: no change w/ INT; Self Efficacy DM: 56.0 vs 62.1; self rpt adherence: 70.4 vs 77.2; DM Knowledge Score: no change w/ INT; DM Social Support more from team, not from family/friends DKA no change Hypoglyc req assist no change BMI: no change Visits: not compared HIT Satisfaction: 80% 'it helped' 97% like frequency of msg 90% would keep using	Fair
Gerbert, 2003[95] Case series, N=52	smokers, problem drinkers, 51% women, 77% nonwhite	1.5 - 3 min tailored advice OR 3-5 min motivational intervention	pamphlets	immediate	favorable views of video doctor, but 72% would prefer real doctor; intention to quit smoking or reduce drinking after viewing	Fair
Glasgow, 2000[148] Case Series, (RCT for components), N=320	DM 2 59 yrs 43.5 % male	Single use dietary goal setting intervention with touch screen in office computer asst goal setting (all groups); followup phone calls; 3 ring binder of community resources	none	3 and 6, Primary care Denver, CO Eugene, OR	HbA1c, weight, chol, lipid ration all no change self efficacy no change diet behaviors improved	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Glasgow, 2003[34] Case series (RCT for components), N=320	DM 2 59 years DM for 8 years 83% minimal www exp independent, English, phone,	TSM: professional coach online 2x/wk, online resources, Q&A, optional diet data entry and display; PS: online peer support forum, newsletters,	PC in home, periodic online assessment with automated dietary change goals, DM self mgmt website, DM information	12, Primary care Denver, CO Eugene, OR	Behaviors diet better, DM care better, exercise not Biological chol better, HbA1c not: 7.44-7.55, Psychosocial DM support better CES MDD better HIT use drops off in 3 mo, higher in peer support group	Fair
Green, 2008[127] RCT, N=778	HTN 48% male age 59.1 yrs 25% some post bacc; 90% retired or employed, 87% white, 7% smoke Inclusion: BP > 140, on Rx, no DM or KD, use PC, email, web access	biweekly pharmacist adjustment, BP monitoring, webaccess EHR	training in BP monitoring and web EHR (I1), or HTN education and web EHR (CTRL)	12 mo HMO in Seattle, WA	SBP C, I1, I2:146.5, 144.2, I2: 139.1; DBP 86, 84.9, 82.7; BP CNTRL 0.29, 0.34, 0.51; BMI 32.5, 32.5, 31.6; phone calls C/I1/I2: 4, 3.8, 7.5; visits specialist less C2, primary care, urgent care, ED, 'not different' professional initiated email threads C/I1/I2: 4.6, 7.4, 22.3; patient initiated email threads 1.8, 2.7, 4.2; ASA use C/I1/I2 0.53; HTN Rxs 1.69, 1.94, 2.16 HRQoL Gen 66.7, 66.7, 66.6; Phys 88.1, 77.7,, 81.0; Emot 71.5, 72.1, 71.7	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Guendelman, 2002[128] RCT, N=134	Asthma 73% mod or severe 12 yrs 57 male 10 white, 90% public asst	home phone device daily monitoring (sx, activity, med use, peak flow), feedback, information, no change in regimen between visits	asthma diary	inner city hospital clinic	Missed school last 6 week CTRL .44 - .22 INT .52 - .15 Peakflow red CTRL 20/32 26/52 INT 22/36 – 19/57 Activity limit CTRL .72 - .47 INT .67 - .32 cough/wheeze, sleep trouble no different UTIL, fewer urgent calls, no other diff HRBINT, more adherent to medications and to monitoring (.89 v .65)	Fair
Gustafson, 1999[129] RCT, N=107	HIV/AIDS 90% male	information (FAQ, library, resource guide, dictionary); expert consultation, peer support forum, stories, assessment, decision aids, action plan PC	97	3 to 6 months implementation with 2-3 month follow-up (total 5 to 9 months) Madison, Milwaukee	QoL improved on social support and participation in care, but not other scales; Utilization: fewer hospitalzations and hospital days, more phone calls to clinic among intervention patients	Fair
Jones, 2001[39] Cohort, N=112	Schizophrenia > 65 yrs, recent education uncertain Dx, acutely ill, persistent defaulter	5 session personalised computer education1-3-1 hybrid education	5 session psychiatric nurse education	community psychiatric clinic in Glasgow	NS higher satisfaction with nurse sessions in all categories; Psych outcomes improved in patients completing sessions in all three groups, NS difference by group	Fair
Joseph, 2007[130] RCT, N=314	Symptomatic Asthma 46% male 15.2 years urban, 98% African American, high school, 49% medicaid	4 sessions tailored webbased asthma education; referral coordinator interaction based on input	4 sessions timed access to generic asthma website; referral coordinator avoids interaction	6 mo INT 12 mo follow-up school computers in Detroit	SX/FXN fewer days/nites, Sx fewer days missed school, restr activity UTIL fewer hospitals, trend to fewer ED visits and more MD visits, more obtained controller Rx, HRB trend greater control and adherence, greater rescue med availability, QOL no change	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Kenwright, 2004[97] Cohort, N=27	Panic disorder and phobias, 40% female, ~37 years	Self help CBT online	Self help CBT in office	16 weeks, London	both groups improved on phobia and work and social adjustment scales	Fair
Kim, 2006a[131] RCT, N=167	DM2 55 yrs 53% male over 21, FBS under 240, A1c under 10, no complications, no insulin	general information, assessment tool, screening instrument, exercise test individualized physical activity prescription, five stage-matched interventions, a question-and-answer board, weekly nurse phone feedback, update, revision; TTM info available on web	general information, assessment tool, screening instrument, exercise test individualized physical activity prescription, five stage-matched interventions, a question-and-answer board, weekly nurse phone feedback, update, revision; TTM info available in print, (C1) standard DM information (C2)	12 weeks University clinic in South Korea	HbA1c 7.00 – 7.4 (INT), 7.51 – 7.0 (PRINT), 7.87 – 8.3 (UC); FBS 162 – 147, 154 – 138, 157 – 161; Activity 17 – 27 mets/week, 15 – 28 mets/week, 14 – 15 mets/week	Fair
Kim, 2007[115] RCT, N=51	DM2, 47 yrs, 57% female	monitor and view CBG, Rx doses, events; weekly RN review, adjustment, education, reinforcment.	1 or 2 office based specialty visits	12 weeks University clinic in South Korea	improved HbA1c (8.1 to 6.9 vs 7.6 to 7.7 in controls, improved postprandial glucose	Fair
Kwon, 2004[132] RCT, N=110	DM2 54 years 67% males A1c 7.3, BMI 24, webaccess, over 30, no HF or ESLD, Ckd, insulin pump, prior webprogram	3x per week monitoring BG, weight, etc; EHR (lab, Hx) access; feedback; daily review by MD; MD, RN, dietician recommendations; weekly reminder to logon, with quarterly clinic visit	monthly clinic visit, same recommendation to monitor at least 3x a week	12 weeks in Taiwan	HBA1c 7.59 - 6.94 INT; 7.19 - 7.62 CTRL HDL increased INT; BG monitor 72 INT, 38 CTRL / 12 weeks; 23/50 got reminded to login (7 days w/o); Login 42±32/ 12 weeks	Fair
La Porta, 2007a[153] Cross sectional, N=2525	Cancer 24% male more often learned of service online all ages, IM users	instant messaging with cancer information specialist	telephone cancer information service	NR	IM users a little more knowledge increase, new information received, discussed or plan to discuss with doctor	N/A

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
LaFramboise, 2003[133] RCT, N=103	Heart Failure	monitoring, review by RN, tailored advice, education, encouragement; telephone advice if needed; with OR without home visit	telephone care OR home visit	2 mo	self efficacy increased with home visits and HIT, not phone care; 6 min walk test, HRQoL, and depression improved in all groups	Fair
Leu, 2005[41] RCT, N=50	DM1/2 51 yrs uncontrolled DM1, DM2 (A1c 8-9)	automated text pager/email reminders about BG, Rx, eat, exercise, appointments, labs; clinician replies to requests	could page investigator	~ 5 mo UW clinics in Seattle	HbA1c CTRL 8.5 – 7.9 INT 8.5 – 8.2 BP > 130 CTRL 17 – 16 of 21 INT 16 – 8 of 21 ATT minimal differences INT liked pager	Fair
Levetan, 2002[134] RCT, N=128	Diabetic adults, 67.% female, age ~58 yrs, 86% African American	computer generated goals poster, wallet card, monthly postcards, a phone call, and report to physician	usual diabetes care	6 mo, Washington DC	HbA1c 8.85 -> 7.78 INTRV HbA1c 8.39 -> 7.78 CTRL; At 6 mo no difference in weight, BP, or lipids	Fair
Lorig, 2006[42] RCT, N=958	Chronic disease (heart, lung, DM2) 29% male 57.5 yr 15+ yrs of education, 88% white INCL: internet, e-mail EXCL: cancer	peer moderated web-based education: (diet, exercise, meds, communication, cognitive behavioral training, self-management), forums, reference book Chronic Disease Self-Management Program (CDSMP) 3/wk x 6 wk	usual care	12 mo	Health; no diff global health, illness intrusiveness, disability; better health distress, pain, dyspnea, (fatigue); no diff self-efficacy HRB; no diff aerobics, stress mgmt, MD comm; better stretch UTIL; no diff MD, ED, hospital visits	Fair
McDaniel, 2002[99] Cross-sectional, N=100	Smokers, low income women, age ~42 yrs, 23% African American	interactive video with tailored advice	none	1 week followup	79% reported at least one, 50% two or more behavioral changes such as cutting down, discuss with family, etc.; overall decrease in favorable attitudes toward smoking	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
McKay, 2001[44] RCT, N=68	DM2, sedentary 47% male 52.3% yrs 50% bacc deg, 62% employed EXCL <40	personalized goal setting, feedback, strategies, online monitoring, forum online coach biweekly prompts 8 week	generic internet information	8 weeks US, Canada	USE higher in INT v CTRL, fell sharply EXINT had no effect; both groups increased walking & vigorous exercise	Fair
McPherson, 2006[100] RCT, N=101	Asthmatic children, age 7-14 yrs	CDROM interactive asthma and self management education, role playing, tailored goal setting	asthma booklet	6 mo, United Kingdom	At 1 mo: greater asthma knowledge, no difference in flow rates; At 6 mo: fewer courses of steroids and school absences, but not only a trend in intention to treat analysis	Fair
Noel, 2004[135] RCT, N=104	CHF, COPD, DM frail, elderly veterans 3% female, ~71 yrs	monitoring signs and symptoms, messaging, clinician advice and case management	home health care and case menagment	6 mo, Connecticut	fewer hospital days and urgent care, lower HbA1c with telecare; no change in cogntion or quality of life;	Fair
Owen, 2005[46] RCT, crossover, N=62	breast cancer 100% female 52 yrs	self guided coping skills trainig, email reminders, library, peer forum, resources, art/poetry		academic center in Southeast US	no difference in HRQOL, psychological well being, physical fxn; subgroup analysis: worst at baseline showed benefit	Fair
Pike, 2007[48] RCT, N=6451	30% male 41 yrs 21 ciggarettes/day 6 prior attempts to quit, smokers visiting American Cancer Society website, frequent internet users	5 independent smoking cessation sites	internet accessible booklets	4 mo US	54% follow-up (3500) 7 day prev 23.6% abstinence all sites, v 22.3% CTRLS less than 5 slips 11% both	Fair
Rasmussen, 2005[49] RCT, N=300	Asthma 25% mod, 25% severe, 5% mild 101 male 30 yrs	daily monitoring (web or touch tone) peak flow, action plan; CDSS for MD; MD email or phone adjustment; 1 mo steroids for severe	CTRL-1 patient given peak flow meter, action plan, instruction Rx adjustment CTRL-2 told to contact GP with spirometer results;	6 mo in Denmark	Sx improved: 64 INT .40 C1 .35 C2 Asthma QoL improved: .33, .18, .19 FEV1 .32, .13, .09 HAVE PLAN .88, .66, .06 ADHERE .32-.87, .25-.79, .36-.54 VISITS .037, .021, .013 per mo; ED/Hosp 2, 1, 1	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Reid, 2007[50] RCT, N=100	Smoking CAD 54 yrs 61% males 91% 12+ years education, 80% ACS, 80% 1st smoke in 30 min from awake adults, recent ACS, PCI, card cath	pre discharge smoking cessation then IVR at 3, 14, 30 days, then nurse phone counseling 3 x 20 min on quit request	pre discharge smoking cessation only	12 mos hospital in Ottawa	7day abstinence 23 INT, 17 CTRL (NS)	Fair
Robertson, 2006[149] Case series, N=144	MDD 54% male webaccess, willingness, cognitive intact	weekly then biweekly then monthly monitoring w/ feedback, education, online CBT, e-consultation, med list, information, strategies, clinician review, automated or case manager reminding	none	12 mo Perth, AU	adherence higher with case manager than with automated reminding' depresssion severity reduced in 72 completing 8 weeks	Fair
Rodgers, 2005[114] RCT, N=1705	Smokers 42% male 25 yrs over 15, have mobilephone	set quit date, regular, personalised (person but not state specific) text messages providing smoking cessation advice, support, and distraction; quit buddy, quit quiz, quit messages on request	txt message thanks every 2 weeks, incentive to continue to follow-up measurements leading to higher complete participation rate	6 mo New Zealand	self report quit: 239 v 109 at 6 weeks;cotinue quit 17/83 v 6/42	Good
Rogers, 2001[136] RCT, N=121	Hypertension, 50% female, age ~61 yrs	BP monitoring 3x/wk; fax weekly reports to patient, physician, physician adjustment by phone and/or visit	usual care	8 weeks, Syracuse, NY	SBP, DBP, mean BP improved at 6 mo; adjusted odds ratio for control of BP 2.6 - 2.8; marked benefit in African Americans (10% subgroup); more treatment adjustments in intervention group	Good

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Ross, 2004[51] RCT, N=107	Heart failure 56 yrs 77% males NYHA II, over 18, webuser, not health proffessional	webaccess to EHR labs, notes; email to providers		HF clinic in Colorado	No difference self efficacy, health status, Improved adherence, UTIL more ED visits, no diff hospitals (22 v 21) visits (325 v 324) or deaths (6 v 6); INT 287 calls, 63 msgs; CTRL 267 msgs	Good
Sciamanna, 2005[102] RCT, N=121	osteoarthritis in the knee 48 yrs 23% male 89% white, 25% 4+years, college 65% regular webuser 88% surgery and md visit for knee surgery limited by OA	webbased assessment w/ recommendations for care	same, but measured satisfaction before assmt	specialty website	no difference in satisfaction with prior care after using site and receiving ~8 suggestions	Fair
Shaw, 2007[53] Cross-sectional, N=231	Breast cancer 52 yrs 100% female < 250% poverty, not homeless, literate	information (FAQ, library, resource guide, dictionary); expert consultation, peer support forum, stories, assessment, decision aids, action plan, PC, CHESS training	none	4 mo Detroit, MI/Madison, WI	perceived information competence correlated with information and interactive services use, not with communicaiton expert	Fair
Shegog, 2001[138] RCT, N=71	Asthmatic children, 8-13 yrs, 35% female, 59% nonwhite	CDROM interactive asthma and self management education, role playing	not described	3 sessions, 3 weeks, Houston	Some knowledge measures higher in intervention group, self-efficacy possibly higher in intervention group	Fair
Southard, 2003[139] RCT, N=104	CAD or CHF 62 yrs 96% white 50% retired 25% college degree	weekly monitoring surgery and signs, feedback, case manager and dietician led education, risk factor managementt, online forum; phone and mail incentive gifts for participation	usual care	6 mo	wt loss (3#) INT v 0 CTRL, both improved activity, BP, chol, HDL, LDL, depression, fat intake	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Author, Year Design, N	Patients	Intervention(s)	Comparison Group(s)	Duration, Setting	Outcomes	Quality Rating
Strecher, 2006[116] RCT, N=3971	smokers 44% male 37 yrs 23 cigarettes/day smoke 1st in 30 min of awakening with set date, email, purchased patch	tailored webbased smoking education, newsletters, supportive messages by email, and support person, tailored account to initial questionnaire	generic web based smoking intervention, not tailored to initial questionnaire, no newsletters, no support person	12 weeks UK	10 week abstinence strongest moderators: tobacco related illness, children in household, alcohol consumption;also no adult smoker and less severe smoking	Fair
Taylor, 2006[107] RCT, N=114	45 yrs 88% male OSA, new Dx, no prior CPAP	monitoring symptoms, CPAP use; education; contact from sleep medicine clinic by phone if high risk		stratified age, severity, 30 days specialty clinic Walter Reed	no difference days CPAP use, hours CPAP use functional status, satisfaction	Fair
Turnin, 1992[108] RCT crossover, N=105	Diabetic adults, 42% female, age ~45 yrs, ~ 70% on IDDM	monitoring, dietary analysis, expert system advice, email, education	crossover condition not described	12 mo, Toulouse, FR	DM knowledge increased proportional to system use; most diet behaviors improved,body weight was unchanged; HbA1c improved 11.0 -> 9.9 in the second subgroup.	Fair
Winzelberg, 2003[141] RCT, N=72	breast cancer 36% some grad school 80% white not suicidal, in CA, English speaking	Web-based MH professional actively moderated structured breast cancer social support group, personal journal, others' stories	wait list control	12 weeks Palo Alto	INT improved CES-D (MDD), PCLC (PTSD), PSS (stress)	Fair
Yon, 2007[152] Case series, N=176	obesity 13% male BMI 25-39, over 18 yrs, web access not pregnant, moving, major illness, unable to meet weekly	PDA dietary monitoring, part of 24 week weight loss program, weekly email encouragement monitoring	historical controls using paper based monitoring, weekly encouragement	24 weeks Vermont	no difference in wt loss, monitoring, diet compliance; PDA less complaint with exercise goals; actual data not given; weight loss correlated with monitoring, attendance, adherence to diet, exercise	Fair
Zimmerman, 2004[93] RCT, N=45	CABG	daily monitoring symptoms, daily review and scripted response	predischarge teaching, followup phone calls at 2, 4, and 6 weeks	6 weeks,	no significant difference in physical functioning or symptom scores	Fair

Summary Table 5. Studies of Effectiveness of Interactive Consumer Health IT (KQ 5)

Abbreviations

ASA = aspirin
BG = blood glucose
BP = blood pressure
CBT = computer based test
CDSS = clinical decision support system
CHESS = Comprehensive Health Enhancement Support System
CHF = chronic heart failure
chol = cholesterol
COPD = chronic obstructive pulmonary disease
CTRL = control
DBP = diastolic blood pressure
diff = difference
DM = Diabetes Mellitus
Dx = diagnosis
ED = emergency department
EHR = electronic health records
ESLD = end stage liver disease
EXCL = exclusion
f/u = follow-up
fxn = function
HbA1c = glycosylated hemoglobin
HF = heart failure
hosps = hospitals
HTN = hypertension
INCL = inclusion
INT = intervention
KD = kidney disease
M = male
MD = doctor
MDD = Major Depressive Disorder
mgmt = management
mo(s) = month(s)
msg = message
OA = osteoarthritis
OSA = sleep apnea
PDA = personal digital assistant
QoL = quality of life
Rx = prescription
SPB = systolic blood pressure
sx = symptoms
txt = text
UTIL = utilized
wk(s) = week(s)
wt = weight
yr=year(s)

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
African Americans				
Artinian, 2003[106] RCT, N= 18	65 % Black (11 pts) 35% White (6 pts)	Congestive heart failure	video cassette (Med - Monitor) that sat in a cradle connected to a telephone line	Majority (56%) loved it Lifestyle change seen in 67% BP more stable by remembering meds; need less nitroglycerine Improved self care behaviors and QOL Some technical difficulties reported
Brennen, 2001[157] RCT, N= 140	12% African American 86% Caucasian	CABG	Computerized, internet-based information and support system that provides extension and enhancement of traditional nursing services	For one week snapshot: Group 1 used the HeartCare system a total of 451 times, an average of 64 accesses per day
Gerbert, 2003[95] RCT, N=52	48% African American; 12%Latino; low income	Smoking & Alcoholism	Brief motivational video risk assessment with tailored advice	Convenience (right amount of time;5.7 / 7); privacy(5.95/ 7 pts); confidential (5.9/7pts); honest (6.94/7 pts); ease of use (6.8 /7 pts); satisfaction (5.7 /7pts) 71% would feel more comfortable with a "real" doctor.
Guendelman, 2002[128] RCT, N= 134	Gp 1: 79% African American 8% Caucasian Gp 2: 74% African American 12% Caucasian	Asthma	Interactive communication device with question and response tasks. Questions provided by the nurse to the patient for their respones	Reduction in the number of urgent calls (p= 0.05), ED visits (p= 0.21), hospitalizations, (0.96) Reduction in limitation of activity (p=0.03) Decrease in the number of people having trouble sleeping, (p= 0.83) Reduction in number of subjects that missed school
Joseph, 2007[130] RCT, N= 314	>98% students were African American	Asthma	Web based program focusing on controller medication adherence, rescue inhaler availability, smoking cessation/reduction.	Decrease in symptom days, symptom nights, school days missed/30 days, Decreased days of restricted activity Decrease in days having to change plans Decreased Hospitalizations (p= 0.01) and ED visits/12 months, p= (0.08) Positive behavior in medication adherence (p= 0.09) and rescue inhaler activity (p=0.01) Trend towards better quality of life

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
African Americans				
La Porta, 2007a[153] Survey, N= 2485	11% African American 75% Caucasian 6% Hispanic	Cancer and Smoking	Cancer Information Service and LiveHelp provide cancer patients and family members with real time information and advice	73% reported their knowledge had increased after using the service 95% said they were very satisfied or satisfied 88% said service met or exceeded expectations 67% said they felt more confident in their ability to seek cancer information following the service 60% of those who used the service for themselves (not a family member) and were dx w/cancer, felt more confident in their ability to actively participate in treatment decisions Of those actively smoking at time of using service, at survey completion: 14% had quit, 35% had cut back, 45% plan to quit or cut back in future
La Porta, 2007b[158] Survey, N= 2485	11% African American 75% Caucasian 6% Hispanic	Cancer and Smoking	Cancer Information Service (CIS)and LiveHelp provide cancer patients and family members with real time information and advice	Live help group was more likely to gain cancer-related knowledge compared to CIS telephone group (P<0.001) 61% in Live help grp and 59% in CIS grp were very satisfied, 39% in Live help and 35% in CIS grp were satisfied 38% in Live Help and 29% in CIS said the system exceeded expections, 56% in Live Help and 59% in CIS said system met expectations
Meigs, 2003[159] RCT, N= 598	Grp 1 vs Grp 2 Black: 19.2% vs 18.9% White: 71% vs 71.1% Other: 9.8% vs 10.0%	Type 2 Diabetes	web based decision support tool, displaying interactive patient specific clinical data, treatment advice, and links to other web based care resources	Positive change seen in all glycemic control outcomes except Mean HbA1c (% Hb) Positive change seen in all cholesterol control outcomes Positive change seen in all BP control outcomes except the Mean systolic BP (mmHg) Increase in the number of subjects having at least one eye examination by an eye care professional and one foot exam in the last 12 months
Nguyen, 2005*[113] Between group, N= 23	6% African-American (1) 13% White (13) 6% Native American (1) 6% Other (1)	Chronic Obstructive Pulmonary disease	web site to help individuals with COPD by logging onto website at least 3 times/week, 2 weekly chat sessions, online bulletin board and email support, individualized exercise plans	No significant differences in physiologic outcomes.

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
African Americans				
Piette, 1997*[47] Prospective study, N= 65	9.2% Black 61.5% White 18.5% Hispanic 10.8% Asian/Pacific Islander	Diabetes	AVM system using specialised computer technology to telephone patients, communicate messages, and collect information	AVM system with multiple phone line with half time nurse will cost 10% of the human calling system Program cost for second year is 2% of human calling system (assuming progam paid for itself in first yr) Almost all of the subjects reported that AVM was useful and would like to receive AVM. Almost all had no difficulty responding to the system 37.5% - 85.6% listened to 2 + preventive messages 72.2-90.9 % thought AVM would make them more satisfied with VA care
Sciamanna, 2004*[86] Cohort, N= 150	4.1% Black (6) 83.1% White (123) 11.4% Hispanic (17) 1.4% Other (2)	chronic illness	computer assessment on smoking and physical activity with tailored printed feedback	12% of patients asked for help using computer; 81.1% patients felt computer easy to use Satisfaction with provider visit significantly related to having a chronic conditon, being a nonsmoker, and having a provider who reviewed the report with the patient
Sciamanna, 2005[102] Quasi experimental, N= 121	6.6% Black 86.8% White 2.5% American Indian 3.3% Hispanic 5% Other	osteoarthritis of the knee	computer assessment on OA, satisfaction with care; computer personalized feedback about OA quality of care and treatment recommendations	website ratings-23.1% excellent, 52.9% very good, 24% good; 97.5 % said website was easy to use Majority thought that Website could help get better care, help understand and manage osteoarthritis and help talk to doctor
Shaw, 2007*[53] RCT, N= 231	35.9% African American (83) 62.3% Caucasian (144) 1.7% Other minorities	Metastatic Breast Cancer	CHESS: Web-based information, discussion group, ask an expert, and interactive services (tailored action plan, decision aids, health tracking	Positive change in information competence Use of all four components of ICT Use over 4 months by category Mean use discussion 506.2 min Mean use information 35.5 min Mean use ask an expert 28 min Mean interactive service 27.9 min

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
African Americans				
Taylor, 2006[107] RCT, N= 114	UC vs Exp 40% vs 42% African American 60% vs 49% Caucasian 0% vs 5% Hispanic 0% vs 5% Asian	Obstructive sleep apnea	OSAS library with customized information; Daily questions on sleep and CPAP use, responses monitored and categorized into low/medium/high risk, sleep specialist call patient after 3 days of high-risk responses	83% found HealthBuddy very easy to use; 2 out of 3 reported it a positive experience; 83% had no difficulty using it; 75% wer likely or very likely to continue using it. 69% satisfied with Health Buddy, 71% satisfied with communication with clinicians; Mean hours of CPAP use (hrs): Usual care 4.22, Exp 4.29, p=.87 CPAP mean proportion (hrs):UC 50.1%, exp 46.9%, p=.61; Functional status, Usual care 2.27, exp group 2.03, p=.76
Winzelberg, 2002[141] RCT, N= 72	4% African American 80% Caucasian 4% Asian 6% Hispanic/Latina 6% Other	Breast cancer	12 week, structured, web based support group moderated by a mental health professional	Group experience evaluation (% reporting a lot or a great deal) getting support and encouragement: 65 helping others: 56 learning that problems are not unique: 56 develop new friendships: 63 get advice: 55 express true feelings: 65
Rural				
Estabrooks, 2005[146] RCT, N= 422	Urban as well as rural	Type 2 Diabetes	Computer CD-ROM with Goal setting, Tailored action plan, assessments of dietary intake and physical activity, hard copy of pts personal action plan	Decreased fat consumtion increased veggie and fruit consumption Increased moderate/vigorous activity
Ferrer-Roca, 2004[60] Case series, N= 172 (Gp 1 (DM): 12 Gp 2 (website review only): 160)	Rural Islanders	Diabetes	Website with patient and doctor interfaces for inputting data and sending advice	Out of those who entered the trial to test the system 86% would recommend the site Majority (71%) thought the system was easy 33% did not find the system useful and efficient 50% had difficulties in accessing the system Ambiguous results on HIT satisfaction Out of those who reveiwed the website 40% would recommend the site Majority (92%) thought the system was easy 12%did not find the system useful and efficient 88% had difficulties in accessing the system

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
Rural				
Gustafson, 1998*[36] Cohort, N=38	28[76%] of 27 potentially eligible urban vs. 10 [71%] of 14 rural	Breast Cancer	CHESS: computerized information and problem-solving, Q & A, ask an expert, health profile, peer discussion group, personal stories, decision aids	Use over 10 weeks: Mean 6.8 uses/week/subject 100% used discussion group, ask an expert, Q & A, health profile 71% of uses for social support, 16% of uses for information
Gustafson, 2001[74] RCT, N = 295	Urban, small city and rural areas	Breat cancer	Computer based patient support system providing information, decision-making and emotional support	Increased participation and level of comfort Increased confidence in doctors Increased information competence Decreased unmet information need (5 month Follow up) Increased partici[ation and behavioral involvement Better quality of life
Hill, 2006[156] RCT, N= 120	Ranch, Farm or Small town (Rural- lived 25 miles outside an urbanized area (a city of 12,500 or more),having to travel almost 57 miles one way)	Diabetes, Rheumatoid conditions, heart disease, cancer, multiple sclerosis	Online, asynchronous, peer-led support group and health teaching units using WebCT	Trend toward increasing self esteem, (p=0.016) Increase in feeling of empowerment, (p=0.016) Increased seld efficacy (p=0.107) Decreased feelings of depression, loneliness and stress (p= 0.342, 0.206, 0.343 respt) High levels of social support, (p=0.038)
Kaufman, 2003*[75] usability cognitive walkthrough and field observation, N= 14 NYC, 11 upstate (but really 2 case studies)	rural upstate NY and hispanic NYC	Diabetes Mellitus	videoconferencing, BP & BG uploading and review, education, email	Usability issues system barriers- problematic widgets, small fonts, bad spacing, complext tasks, screen transitions, system stability Cognitive/Skill barriers-mouse-keyboard skill, mental model, literacy, numeracy. Also anxiety, self-efficacy, motivation
Shaw, 2007*[53] RCT, N= 231	Detroit cohort: unknown. Wisconsin cohort: rural.	Metastatic Breast Cancer	CHESS: Web-based information, discussion group, ask an expert, and interactive services (tailored action plan, decision aids, health tracking	Positive change in information competence Use of all four components of ICT Use over 4 months by category Mean use discussion 506.2 min Mean use information 35.5 min Mean use ask an expert 28 min Mean interactive service 27.9 min

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
Rural				
Smith, 2000[54] RCT, N= 30	Rural-at least 25 miles away from 6 major cities of Montana	Diabetes	web based computer intervention on general health and info on diabetes with Conversation area, mailbox, health chat area and resource rack	Time spent using the HIT decreasing over study period Psychosocial adjustment to illness scale lower in the computer group as compared to the non computer group Raw mean scores of quality of life and support lower in the computer group
Woodruff, 2001[151] pre post cohort study, N= 26	Rural alternative schools	Smoking	chat room, facilitated by tobacco counselor, using Active World	38.9% self reported not smoking
Underserved				
Finkelstein, 1996[33] Qualitative Study, N=41	Reside in low-income inner city area, 2/3 had never used a computer, almost 50% had never used a computer or an ATM, >50% born outside US and English was their 2nd language, age range was on older side (most >40 yrs, and 1/3 >50 yrs),	Asthma/under served	Symptom diary and spirometry test	Not complicated at all, very easy to use
Lober, 2006*[82] N=38	Low-income elderly and disabled, mean age 69 years (range 49-92 years), 82% Female, 18% Male, many had chronic diseases	Many chronic illnesses	Personal health records with areas for communication with health professional	Empowering patients to keep track of PHR, reassurance that if a natural disaster hits, their PHR will remain intact since they are not paper-form - 93% of providers found the Personal Health Information System useful when treating patients
McDaniel, 2002[99] Cohort, N=110	35% did NOT have HS diploma	Smoking	Interactive smoking cessation software	Technology malfunctions; software errors; 60.2 / 70pts; minority participants more satisfied
Sciamanna 2004*[86] Cohort N= 150	Public health clinics 1 provider at 10 clinic sites;	63.3% had some chronic illness	computer assessment on smoking and physical activity with tailored printed feedback	12% of patients asked for help using computer; 81.1% patients felt computer easy to use Satisfaction with provider visit significantly related to having a chronic conditon, being a nonsmoker, and having a provider who reviewed the report with the patient

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
Elderly				
Barnason, 2003[119] RCT w/ repeated measures, N= 35	Age range 65 -85 years	Coronary Artery disease	Health buddy:small device attached to patient's telephone. Provides asssessment, strategies, education, and positive reinforcement	Significantly higher self efficacy scores, adjusted physical functioning mean scores, adjusted general health functioning mean scores, mental health functioning and validity functioning in intervention group, Significant time effect [F(1,29)=11.25, P <.002] on the role emotional functioning and pain subscale [F(1,29)=11.25, P <.002] Fewer subjects reported the use of salt when cooking and eating at 4 weeks, 6 weeks, and 3 months postoperatively. Significantly higher exercise adherence (t = 3.09, P < .01) and stress control
Baranson, 2006[120] randomized, experitmental two-group repeated measures design, N= 50	Average age- 73.3 years	Coronary Artery disease	Health Buddy-12 weeks of a desktop telehealth device with daily interventions with recovery assessment, strategies to manage problems, education and positive reinforcement	Improvement seen in physical and mental health outcomes at 6 wks and 3 months after bypass (Physical- F=9.42, p<0.01; Mental- F= 7.97, p< 0.01) Decreased number of emergency room visits in the intervention grp (p= 0.15) More number of non routine provider visits in the intervention grp(Mean =2.8) as compared to the conrol (mean=2.61) Nursing visit average higher in the experimental group as compared to control group
Feil, 2000[69] Qualitative Study, N=160	Ages 40-75 years	Type 2 Diabetes	D-Net intervention: peer social support and personalized dietary intervention	Computer was initial barrier to program participants
Gustafson, 1998*[36] Cohort, N=38	Mean age- 71.8 , SD 6.06	Breast Cancer	CHESS: computerized information and problem-solving, Q & A, ask an expert, health profile, peer discussion group, personal stories, decision aids	Use over 10 weeks: Mean 6.8 uses/week/subject 100% used discussion group, ask an expert, Q & A, health profile 71% of uses for social support, 16% of uses for information
Holbrook, 2007[162] Randomised trial (no control), N= 98	$\geq$ 65 years	Not specified	Decision board, decision booklet with audiotape , or interactive computer program with either pie graphs or pictograms	Higher post intervention scores on the Atrial Fibrillation Information Questionnaire (p<0.01) 96% of participants felt that the information in the decision aids helped them make their treatment decision Mean difference scores by format and graphic presentation similar in corresponding groups

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
Elderly				
Jones, 1999[38] RCT, N= 525	>60 examined as variable	Cancer	Personalized computer based information i.e. Cancer information tailored by data in EHR vs not tailored vs printed booklets	NS change depression and cancer adjustment scores; 84% improved anxiety scores, especially PINF (tailores), especially but also BKLT (booklets); subgroups examined Physician assessed 'above avg knowledge' 35% GINF(non tailored), 25% PINF, 20% BKLT. [note that in general, docs assessed pt knowledge below average] 12 min (1-44) 1st use; 71% no repeat use: 20/169 PINF, 4/155 GINF 80% would prefer 10 min w/ professional (71% PINF, 80% GINF, 90% BKLT); overall 40% satisfied; satisfaction with information higher in PINF
Kaufman, 2003*[75] usability cognitive walkthrough and field observation, N= 14 NYC, 11 upstate (but really 2 case studies)	Age-69.6±6 (NYC); 73.7±8 upstate	Diabetes Mellitus	videoconferencing, BP & BG uploading and review, education, email	Usability issues system barriers- problematic widgets, small fonts, bad spacing, complext tasks, screen transitions, system stability Cognitive/Skill barriers-mouse-keyboard skill, mental model, literacy, numeracy. Also anxiety, self-efficacy, motivation
Kressig, 2002[98] Cohort, N=34	≥60 years	Physical activity for elderly	computer system for exercise promotion (questionnaire with tailored recommendations)	Most problems had to do with survey issues, not computer. 22% questions were mouse related. Ease of use 4.6/5 pts; 21.45/24pts on acceptability of recommendation.
Lee, 2007[62] Quasi-experimental, N= 274	Elderly examined as subgroup	Type 2 DM	Web-based system for managing patients' care of their diabetes	Significant reduction in fasting blood glucose levels (p= 0.001), total cholesterol levels p=0.012 and HbA1c % (p=0.001) Subjects in "College or University" logged into system more often than those in "Illiterate" or "Elementary school/Junior high school" (P=0.007 and P=0.012, respectively) Subjects in the age category of <29 years logged than those in 50-59, 60-69, and 70-79 (P=0.011, P=0.000, P=0.000, respectively) Those in the age category of 40-49 years logged more often than those in the age category of 60-69 and 70-79 (P=0.012 and P=0.040, respectively)

Summary Table 6. Specific Findings for Populations of Interest

Author, Year, Design, N	Population description	Condition	Interactive Computer Technology (ICT)	Findings
Elderly				
Lober, 2006*[82] N=38	Low-income elderly and disabled, mean age 69 years (range 49-92 years), 82% Female, 18% Male, many had chronic diseases	Many chronic illnesses	Personal health records with areas for communication with health professional	Empowering patients to keep track of PHR, reassurance that if a natural disaster hits, their PHR will remain intact since they are not paper-form - 93% of providers found the Personal Health Information System useful when treating patients
Nguyen, 2003[45] Non randomized trial, N= 16	Mean age = 69.1 (grp 2) range- 55-82	Dyspnoea	nurse facilitated and peer supported internet based dyspnoea self management program	FEV1/FVC: 41 +/- 7%; Improvements noted for Dyspnoea (effect size=0.86) Endurance exercie 0.27 for the overall sample Improvement in self efficacy for managing dyspnoea = 0.94 First month registered most logins (330) compared to 104 in the final month
Nguyen, 2005*[113] Between groups, N= 23	Age- 69.1 +/- 7.0 (55-82)	Chronic Obstructive Pulmonary disease	web site to help individuals with COPD by logging onto website at least 3 times/week, 2 weekly chat sessions, online bulletin board and email support, individualized exercise plans	No significant differences in physiologic outcomes.
Piette, 1997*[47] Prospective study, N= 65	9.2% Black 61.5% White 18.5% Hispanic 10.8% Asian/Pacific Islander	Diabetes	AVM system using specialised computer technology to telephone patients, communicate messages, and collect information	AVM system with multiple phone line with half time nurse will cost 10% of the human calling system Program cost for second year is 2% of human calling system (assuming progam paid for itself in first yr) Almost all of the subjects reported that AVM was useful and would like to receive AVM. Almost all had no difficulty responding to the system 37.5% - 85.6% listened to 2 + preventive messages 72.2-90.9 % thought AVM would make them more satisfied with VA care

*Study appears in more than one category on this table

APPENDIX A. TECHNICAL EXPERT PANEL MEMBERS

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AARP Board Member and a Senior Fellow at the University of California, San Francisco, Center for the Health Professions

Warren Jones, MD
Executive Director, Mississippi Institute for the Improvement of Geographical Minority Health; Distinguished Professor of Health Policy and Senior Health Policy Advisor at the University of Mississippi Medical Center

Tom Landauer, PhD
Professor in the Department of Psychology of the University of Colorado, Founder of Knowledge Analysis Technologies (now Pearson Knowledge Technologies)

Anna M. Nápoles-Springer, PhD
Assistant Adjunct Professor, Department of Medicine, University of California at San Francisco

John Santa, MD, MPH
Adjunct Associate Professor in the Center for Evidence-based Policy at Oregon Health and Science University

APPENDIX B. SEARCH STRATEGIES

MEDLINE (1950 to November Week 2 2007)

1 exp Chronic Disease/ (173377)
2 exp Cardiovascular Diseases/ (1438368)
3 exp Lung Diseases, Obstructive/ (130454)
4 exp Diabetes Mellitus/ (220904)
5 exp Arthritis/ (157266)
6 exp Neurodegenerative Diseases/ (145561)
7 exp Cognition Disorders/ (33934)
8 exp Mental Retardation/ (67825)
9 exp Memory Disorders/ (14524)
10 exp Spinal Cord Diseases/ (75315)
11 exp Sensation Disorders/ (115283)
12 exp Dyskinesias/ (39533)
13 exp gait disorders, neurologic/ (1434)
14 exp Movement Disorders/ (68290)
15 exp paralysis/ (58765)
16 exp neuromuscular diseases/ (191261)
17 exp communication disorders/ (41578)
18 exp developmental disabilities/ (9477)
19 exp Mental Disorders/ (684932)
20 exp Neoplasms/ (1911694)
21 exp Disabled Persons/ (34321)
22 exp Nervous System Diseases/ (1539072)
23 exp hiv infections/ (169604)
24 exp Palliative Care/ (27918)
25 exp terminal care/ (31467)
26 exp home care/ (32404)
27 exp self care/ (26229)
28 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 (5437291)
29 exp Aged/ (1674702)
30 exp Health Services for the Aged/ (11511)
31 Minority Groups/ (7142)
32 exp Ethnic Groups/ (74714)
33 exp Urban Population/ (33470)
34 Urban Health Services/ (1769)
35 Urban Health/ (11071)
36 exp Rural Health/ (18287)
37 exp Rural Health Services/ (5217)
38 exp Rural Population/ (26232)
39 exp Socioeconomic Factors/ (237725)
40 exp "Emigration and Immigration"/ (19800)
41 exp "Transients and Migrants"/ (6397)
42 exp Homeless Persons/ (4401)

43 exp vulnerable populations/ (2562)
44 exp Complementary Therapies/ (124194)
45 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 (2103285)
46 exp Information Systems/ (98874)
47 exp Telemedicine/ (8789)
48 exp Computer Systems/ (103462)
49 exp Telemetry/ (5208)
50 exp Telecommunications/ (33833)
51 exp computer assisted instruction/ (6068)
52 exp User-Computer Interface/ (14124)
53 exp video games/ (534)
54 exp computer literacy/ (1012)
55 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 (221934)
56 attitude/ or attitude to computers/ or exp attitude to health/ (215232)
57 exp Health Behavior/ (58229)
58 exp Health Education/ (102644)
59 exp Consumer Participation/ (22463)
60 exp Access to Information/ (1956)
61 56 or 57 or 58 or 59 or 60 (315151)
62 28 and 55 and 61 (4166)
63 45 and 55 and 61 (3288)
64 62 or 63 (6051)
65 limit 64 to english language (5756)
66 limit 65 to yr="2005 - 2008" (1751)
67 limit 65 to yr="2001 - 2004" (1819)
68 from 67 keep 1-1819 (1819)

America Association of Retired Persons Ageline (1978 to December 2007)

1 ((Health$ or patient$ or medicin$ or medical$) adj5 (Behav$ or educat$ or promot$ or enhanc$ or assess$ or evaluat$ or participat$ or informat$ or access$ or instruct$ or monitor$ or "use" or uses or using or user$ or utiliz$)).mp. [mp=abstract, descriptors, identifiers, title] (18699)
2 ((Computer$ or Information$ or internet or telephon$ or telecommun$ or communicat$) adj5 (technol$ or system$ or access$ or literac$ or interact$ or "use" or uses or using or user$ or utiliz$)).mp. [mp=abstract, descriptors, identifiers, title] (3131)
3 telemedic$.mp. [mp=abstract, descriptors, identifiers, title] (141)
4 1 and 2 (899)
5 3 or 4 (984)
6 limit 5 to yr="1990 - 2008" (743)
7 from 6 keep 1-743 (743)

PsycINFO (1806 to February Week 4 2008)

1 exp Chronic Illness/ (12434)

APPENDIX B. SEARCH STRATEGIES (continued)

2 exp Cardiovascular Disorders/ (21984)
3 exp Lung Disorders/ (1501)
4 exp Diabetes Mellitus/ (2029)
5 exp Arthritis/ (2244)
6 exp Neurodegenerative Diseases/ (24809)
7 exp Cognitive Ability/ (49657)
8 exp Mental Retardation/ (34481)
9 exp Memory Disorders/ (6470)
10 exp Sense organ disorders/ (12090)
11 exp Movement Disorders/ (12584)
12 exp paralysis/ (3316)
13 exp neuromuscular diseases/ (0)
14 exp communication disorders/ (34610)
15 exp developmental disabilities/ (7651)
16 exp Mental Disorders/ (307576)
17 exp Neoplasms/ (17431)
18 exp Disabilities/ (37156)
19 exp Nervous System Disorders/ (117832)
20 exp hiv/ (20142)
21 exp Palliative Care/ (3092)
22 exp terminal care/ (0)
23 exp home care/ (2706)
24 exp self care/ (2581)
25 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 (559924)
26 exp Aged/ (1662)
27 exp elder care/ (1877)
28 Minority Groups/ (6897)
29 exp Ethnic Groups/ (64791)
30 exp Urban environments/ (11755)
31 exp Rural Environments/ (7802)
32 exp socioeconomic status/ (26347)
33 exp Sociocultural factors/ (61600)
34 exp psychosocial factors/ (20491)
35 exp Immigration/ (7012)
36 exp human migration/ (4334)
37 exp Homeless/ (3740)
38 exp disadvantaged/ (4831)
39 exp poverty/ (3162)
40 exp at risk populations/ (21985)
41 exp alternative medicine/ (3589)
42 exp holistic health/ (1015)
43 exp "medicinal herbs and plants"/ (742)
44 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 (203244)
45 exp Information Systems/ (11332)

46 exp Telemedicine/ (819)
47 exp Computers/ (8211)
48 exp computer applications/ (36570)
49 exp Telemetry/ (85)
50 exp computer assisted instruction/ (8563)
51 exp Human Computer Interaction/ (3852)
52 exp video games/ (1146)
53 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 (52851)
54 exp attitudes/ (199020)
55 exp Health Behavior/ (10516)
56 exp Health Education/ (9901)
57 exp Client Participation/ (826)
58 exp information literacy/ (53)
59 exp digital divide/ (102)
60 54 or 55 or 56 or 57 or 58 or 59 (214695)
61 25 and 53 and 60 (321)
62 44 and 53 and 60 (270)
63 61 or 62 (562)
64 limit 63 to yr="1990 - 2008" (521)
65 from 64 keep 1-521 (521)

CINAHL - Cumulative Index to Nursing & Allied Health Literature (1982 to February Week 4 2008)

1 exp Chronic Disease/ (13105)
2 exp Cardiovascular Diseases/ (109186)
3 exp Lung Diseases, Obstructive/ (15894)
4 exp Diabetes Mellitus/ (30301)
5 exp Arthritis/ (11830)
6 exp Neurodegenerative Diseases/ (14138)
7 exp Cognition Disorders/ (5017)
8 exp Mental Retardation/ (6988)
9 exp Memory Disorders/ (1631)
10 exp Spinal Cord Diseases/ (2715)
11 exp Sensation Disorders/ (12372)
12 exp Dyskinesias/ (1982)
13 exp Movement Disorders/ (5096)
14 exp paralysis/ (5061)
15 exp neuromuscular diseases/ (16050)
16 exp communication disorders/ (9672)
17 exp developmental disabilities/ (1961)
18 exp Mental Disorders/ (113649)
19 exp Neoplasms/ (77516)
20 exp Disabled/ (14893)
21 exp Nervous System Diseases/ (150650)
22 exp hiv infections/ (27143)

APPENDIX B. SEARCH STRATEGIES (continued)

23 exp Palliative Care/ (7652)
24 exp terminal care/ (18364)
25 exp home health care/ (20414)
26 exp self care/ (11961)
27 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 (491273)
28 exp Aged/ (160564)
29 exp Health Services for the Aged/ (2866)
30 Minority Groups/ (3560)
31 exp Ethnic Groups/ (35621)
32 exp Urban Areas/ (5715)
33 Urban Health Services/ (300)
34 Urban Health/ (1069)
35 exp Rural Health/ (1943)
36 exp Rural Health Services/ (2130)
37 exp Rural Areas/ (6210)
38 exp Socioeconomic Factors/ (83125)
39 exp "Emigration and Immigration"/ (1717)
40 exp "Transients and Migrants"/ (676)
41 exp Homeless Persons/ (1341)
42 exp vulnerable populations/ (975)
43 exp Complementary Therapies/ (52130)
44 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 (316072)
45 exp Information Systems/ (32862)
46 computer systems/ or computer hardware/ or computer peripherals/ or computer processor/ or computer types/ or interactive voice response systems/ or software/ or communications software/ or computer graphics/ or multimedia/ (9023)
47 electronic bulletin boards/ or electronic mail/ or internet/ or wireless communications/ (11359)
48 exp Telemedicine/ (1864)
49 exp Telemetry/ (434)
50 exp computer assisted instruction/ (2868)
51 exp User-Computer Interface/ (1682)
52 exp video games/ (224)
53 exp computer literacy/ (527)
54 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 (54149)
55 attitude/ or attitude to abortion/ or attitude to adoption/ or attitude to aging/ or attitude to change/ or attitude to computers/ or exp attitude to death/ or attitude to disability/ or exp attitude to health/ or exp attitude to illness/ or attitude to life/ or attitude to obesity/ or attitude to pregnancy/ or attitude to risk/ or exp attitude to sexuality/ or consumer attitudes/ or cultural bias/ or cultural sensitivity/ or exp family attitudes/ or gender bias/ or patient attitudes/ or exp personal satisfaction/ or exp social attitudes/ or uncertainty/ (81195)
56 exp Health Behavior/ (22660)
57 exp Health Education/ (46582)
58 exp Consumer Participation/ (4961)

59 exp Access to Information/ (5087)
60 55 or 56 or 57 or 58 or 59 (136133)
61 27 and 54 and 60 (1444)
62 44 and 54 and 60 (1117)
63 61 or 62 (2094)
64 limit 63 to english language (2065)
65 limit 64 to yr="1990 - 2008" (2052)
66 limit 65 to yr="1990 - 2003" (832)
67 limit 65 to yr="2004 - 2008" (1220)
68 from 67 keep 1-1220 (1220)

EBM Reviews - Cochrane Database of Systematic Reviews (1st Quarter 2008)

1 ((health$ or patient$ or home or homes or ((self or selves) adj2 (help$ or care or caring or cares))) adj5 (internet$ or telemedic$ or telehealth$ or web-base$ or (information$ adj2 (technol$ or system$ or computer$)))).mp. (73)
2 from 1 keep 1-73 (73)

EBM Reviews - Cochrane Central Register of Controlled Trials (1st Quarter 2008)

1 ((health$ or patient$ or home or homes or ((self or selves) adj2 (help$ or care or caring or cares))) adj5 (internet$ or telemedic$ or telehealth$ or web-base$ or (information$ adj2 (technol$ or system$ or computer$)))).mp. (498)
2 from 1 keep 1-498 (498)

APPENDIX C. INCLUSION/EXCLUSION CRITERIA

Abstract Level

In or Out	Reason
Include	Outcome data likely; ALL DESIGNS Elderly (E) or chronically ill (CI) or medically underserved (MU)* or possible analysis as a subpopulation AND Appropriate Health information technology*
	Review or meta-analysis with relevant information as specified above
	Foreign language, *meets include criteria and may have data, for use later*
	Uncertain (pull paper): May be relevant, can't tell from abstract
Background	Retrieve for use in introduction or discussion
Exclude	Wrong population (e.g., not elderly, underserved, or chronically ill, no subpopulation analysis)
	Wrong intervention/technology: see definition below
	No data by design (e.g., opinion, letter, editorial)
	No data by other parameter (e.g., description of technology only)
	Foreign language, *no data*
	No relevance to evidence report key questions
	Related to topic but does not meet inclusion criteria, unspecified

Paper Level

Population

Task Order Interest	Potential Categories	Description
elderly	elderly	over 65 years of age
	functionally elderly	by life experience or health concerns; need clarity/inter-observer agreement
chronically ill or disabled	chronic condition	over 1 year + benefits from ongoing monitoring or treatment
	impairment	impairment in body function or structure
	activity limitation	difficulty in executing activities
	participation restriction	problems experienced in participating in life situations
medically underserved	medically underserved population (MUP) or medically underserved area (MUA)	study uses Bureau of Health Professions/Health Resources and Service Administration designated MUP or MUA
	medically underserved area	region where individuals are inhibited in their ability to receive services
	medically underserved group	population which is inhibited in its ability to receive services

Technology

The most challenging part of classifying the literature relating to the barriers and drivers of health information IT by the elderly, chronically ill and underserved has been in classifying the types of technology – both for the purposes of deciding which types to include in our review and also in our summarization and discussion of the results. Our inclusion / exclusion criteria are:

APPENDIX C. INCLUSION/EXCLUSION CRITERIA (continued)

Include: Health information technology program where:

- Patient interacts with the technology,
- Computer / technology processes the information in some way, **and**
- Patient receives information in return and has access to patient-specific information.

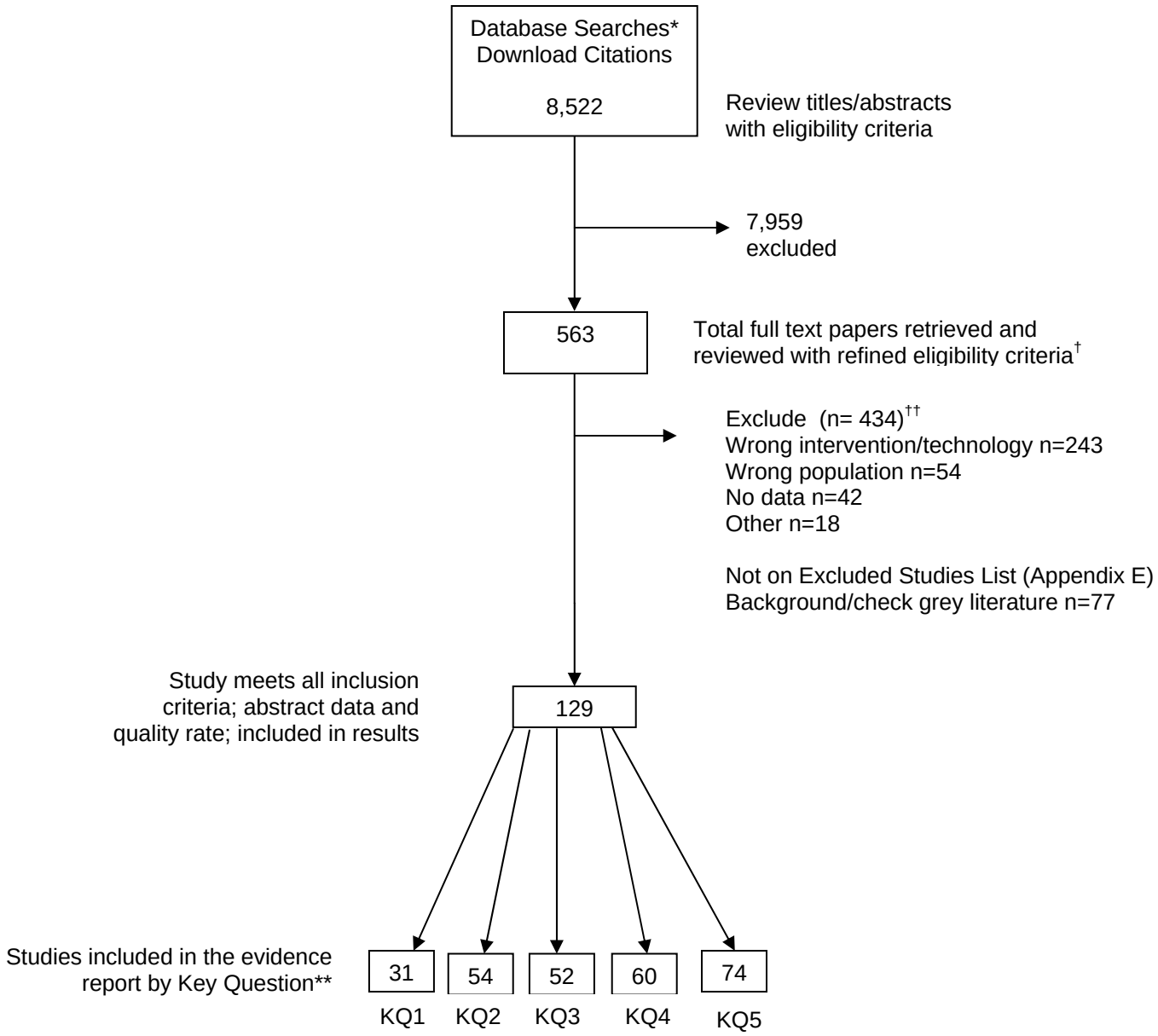
Examples: tailored health advice; personal medical record/access; risk assessment tools, health calculators, predictive tools; interactive online support or chat groups; health games that adapt to the patient (more than simple "next page"); programs or sites with storage, indexing, retrieval, display, or advanced features (summarization and decision support).

Exclude: Health information technology program where:

- Limited or no patient or consumer driven involvement or
- Web browsing of general health information databases) or
- Patient / clinician communication without computer information support (simple videoconferencing or phone) or
- Systems where the patient interacts but doesn't receive patient-specific information back (e.g., survey – no feedback)
- Systems primarily or entirely for health professionals or caregivers

Examples: Passive monitoring; direct video or phone conferencing; general web-based content; WebMD, Medline Plus, etc.; .Education, information based only programs; surveys without feedback; frequently asked question sites; where a tele-visit replaces the face-to-face interaction with a clinician; video interaction

APPENDIX D. LITERATURE SEARCH TREE



* includes Medline, Cinahl, Psychinfo, ERIC, Ageline, Cochrane (See Appendix B for search strategies)
† see Appendix C for details on inclusion/exclusion criteria
††Studies may be excluded for more than one reason
**Many studies are included in more than one Key Question

Appendix E. Excluded Studies List

EXCLUDE CODE
E: Other
E1: Wrong Population
E2: No Data
E3: Wrong Intervention/Technology

1. *Use the Internet to reach more patients with your demand management programs.* Healthcare Demand & Disease Management, 1997. **3**(5): p. 75-7. *Exclude Code*: E1

2. *Elderly patients embrace touch-screen technology.* Telemedicine & Virtual Reality, 1998. **3**(12): p. 144. *Exclude Code*: E3

3. *Online advice on problem drinking could fulfill unmet need: success of services depends on proper targeting.* Alcoholism & Drug Abuse Weekly, 2006. **18**(13): p. 5-7. *Exclude Code*: E2

4. *Telehealth helps hospital cut readmissions by 75%.* Healthcare Benchmarks & Quality Improvement, 2007. **14**(8): p. 92-4. *Exclude Code*: E2

5. Abroms, L.C., et al., *The STRENGTH Ezine: an application of e-mail for health promotion in adolescent girls.* American Journal of Health Promotion, 2004. **19**(1): p. 28-32. *Exclude Code*: E1

6. Adams, W.G., et al., *TLC-Asthma: an integrated information system for patient-centered monitoring, case management, and point-of-care decision support.* AMIA, 2003. **Annual Symposium Proceedings/AMIA Symposium.**: p. 1-5. *Exclude Code*: E

7. Adamsen, L. and J.M. Rasmussen, *Exploring and encouraging through social interaction: a qualitative study of nurses' participation in self-help groups for cancer patients.* Cancer Nursing, 2003. **26**(1): p. 28-36. *Exclude Code*: E3

8. Adkins, J.W., et al., *Home-based behavioral health intervention: Use of a telehealth model to address poor adherence to type-1 diabetes medical regimens.* Telemedicine Journal & E-Health, 2006. **12**(3): p. 370-2. *Exclude Code*: E3

9. Adler, K.G., *Web portals in primary care: an evaluation of patient readiness and willingness to pay for online services.* Journal of Medical Internet Research, 2006. **8**(4): p. e26. *Exclude Code*: E3

10. Agnew, T., *User friendly at any age.* Nursing Older People, 2006. **18**(8): p. 8-9. *Exclude Code*: E2

11. Agre, P., *Interactive computer technology.* Cancer Practice, 1994. **2**(1): p. 74-6. *Exclude Code*: E

12. Agrell, H., S. Dahlberg, and A.F. Jerant, *Patients' perceptions regarding home telecare.* Telemedicine Journal & E-Health, 2000. **6**(4): p. 409-15. *Exclude Code*: E3

13. Ahmed, M., F. Bayog, and C.M. Boisvert, *Computer-facilitated therapy for inpatients with schizophrenia.* Psychiatric Services, 1997. **48**(10): p. 1334-5. *Exclude Code*: E1

14. Ahring, K.K., et al., *Telephone modem access improves diabetes control in those with insulin-requiring diabetes.* Diabetes Care, 1992. **15**(8): p. 971-5. *Exclude Code*: E3

15. Alemi, F., et al., *Electronic self-help and support groups.* Medical Care, 1996. **34**(10 Suppl): p. OS32-44. *Exclude Code*: E

16. Alemi, F., et al., *Automated monitoring of outcomes: application to treatment of drug abuse.* Medical Decision Making, 1994. **14**(2): p. 180-7. *Exclude Code*: E3

17. Alemi, F., et al., *Educating patients at home. Community Health Rap.* Medical Care, 1996. **34**(10 Suppl): p. OS21-31. *Exclude Code*: E3

Appendix E. Excluded Studies List (continued)

18. Allen, A. and J. Hayes, *Patient satisfaction with telemedicine in a rural clinic.* American Journal of Public Health, 1994. **84**(10): p. 1693. *Exclude Code*: E3

19. Allen, D.N., et al., *Teaching memory strategies to persons with multiple sclerosis.* Journal of Rehabilitation Research & Development, 1998. **35**(4): p. 405-10. *Exclude Code*: E3

20. Alonso, A., *A new model for home care for COPD.* Studies in Health Technology & Informatics, 2004. **103**: p. 368-73. *Exclude Code*: E3

21. Als, A.B., *The desk-top computer as a magic box: patterns of behaviour connected with the desk-top computer; GPs' and patients' perceptions.* Family Practice, 1997. **14**(1): p. 17-23. *Exclude Code*: E3

22. Alterman, A.I. and T.G. Baughman, *Videotape versus computer interactive education in alcoholic and nonalcoholic controls.* Alcoholism: Clinical & Experimental Research, 1991. **15**(1): p. 39-44. *Exclude Code*: E3

23. Alwan, M., et al., *Impact of monitoring technology in assisted living: outcome pilot.* IEEE Transactions on Information Technology in Biomedicine, 2006. **10**(1): p. 192-8. *Exclude Code*: E3

24. Anderson, E.S., et al., *A computerized social cognitive intervention for nutrition behavior: direct and mediated effects on fat, fiber, fruits, and vegetables, self-efficacy, and outcome expectations among food shoppers.* Annals of Behavioral Medicine, 2001. **23**(2): p. 88-100. *Exclude Code*: E1

25. Andreassen, H.K., et al., *Patients who use e-mediated communication with their doctor: new constructions of trust in the patient-doctor relationship.* Qualitative health research, 2006. **16**(2): p. 238-48. *Exclude Code*: E1

26. Andrews, G., *ClimateGP - web based patient education.* Australian Family Physician, 2007. **36**(5): p. 371-2. *Exclude Code*: E3

27. Anhoj, J. and C. Moldrup, *Feasibility of collecting diary data from asthma patients through mobile phones and SMS (short message service): response rate analysis and focus group evaluation from a pilot study.* Journal of Medical Internet Research, 2004. **6**(4): p. e42. *Exclude Code*: E

28. Anogianakis, G., S. Maglavera, and A. Pomportsis, *ATTRACT--applications in telemedicine taking rapid advantage of cable television network evolution.* Studies in Health Technology & Informatics, 1998. **50**: p. 60-6. *Exclude Code*: E3

29. Ansari, M., et al., *Improving guideline adherence: a randomized trial evaluating strategies to increase beta-blocker use in heart failure.* Circulation, 2003. **107**(22): p. 2799-804. *Exclude Code*: E3

30. Aoki, N., et al., *Edutainment tools for initial education of type-1 diabetes mellitus: initial diabetes education with fun.* Medinfo, 2004. **11**(Pt 2): p. 855-9. *Exclude Code*: E3

31. Aoki, N., et al., *INSULOT: a cellular phone-based edutainment learning tool for children with type 1 diabetes.* Diabetes Care, 2005. **28**(3): p. 760. *Exclude Code*: E3

32. Aoki, N., et al., *u-SHARE: web-based decision support/risk communication tool for healthcare consumers with unruptured intracranial aneurysms.* Medinfo, 2007. **12**(Pt 2): p. 1012-6. *Exclude Code*: E3

33. Artinian, N.T., et al., *Effects of nurse-managed telemonitoring on blood pressure at 12-month follow-up among urban African Americans.* Nursing research, 2007. **56**(5): p. 312-22. *Exclude Code*: E3

34. Artinian, N.T., et al., *Effects of nurse-*

Appendix E. Excluded Studies List (continued)

managed telemonitoring on blood pressure at 12-month follow-up among urban African Americans. Nursing Research, 2007. **56**(5): p. 312-22. *Exclude Code*: E3

35. Artinian, N.T., et al., *Effects of nurse-managed telemonitoring on blood pressure at 12-month follow-up among urban African Americans.* Nursing Research, 2007. **56**(5): p. 312-22. *Exclude Code*: E3

36. Artinian, N.T., O.G. Washington, and T.N. Templin, *Effects of home telemonitoring and community-based monitoring on blood pressure control in urban African Americans: a pilot study.* Heart & Lung, 2001. **30**(3): p. 191-9. *Exclude Code*: E3

37. Atkinson, N.L., et al., *Assessment of the nutrition and physical activity education needs of low-income, rural mothers: can technology play a role?* Journal of Community Health, 2007. **32**(4): p. 245-67. *Exclude Code*: E3

38. Baba, M., D. Seckin, and S. Kapdali, *A comparison of teledermatology using store-and-forward methodology alone, and in combination with Web camera videoconferencing.* Journal of Telemedicine & Telecare, 2005. **11**(7): p. 354-60. *Exclude Code*: E3

39. Baehring, T.U., et al., *Using the World Wide Web--a new approach to risk identification of diabetes mellitus.* International Journal of Medical Informatics, 1997. **46**(1): p. 31-9. *Exclude Code*: E3

40. Baker, L., et al., *Use of the Internet and e-mail for health care information: results from a national survey.* JAMA, 2003. **289**(18): p. 2400-6. *Exclude Code*: E1

41. Bakken, S., et al., *Development, validation, and use of English and Spanish versions of the telemedicine satisfaction and usefulness questionnaire.* Journal of the American Medical Informatics Association, 2006. **13**(6): p. 660-7. *Exclude Code*: E3

42. Balas, E.A., et al., *Electronic communication with patients. Evaluation of distance medicine technology.* JAMA, 1997. **278**(2): p. 152-9. *Exclude Code*: E3

43. Baranowski, T., et al., *The Fun, Food, and Fitness Project (FFFP): the Baylor GEMS pilot study.* Ethnicity & disease, 2003. **13**(1 Suppl 1): p. S30-9. *Exclude Code*: E3

44. Barber, J.G., *Computer-assisted drug prevention.* Journal of Substance Abuse Treatment, 1990. **7**(2): p. 125-31. *Exclude Code*: E2

45. Barnes, N., et al., *Liverpool Telecare Pilot: case studies.* Informatics in Primary Care, 2006. **14**(3): p. 197-202. *Exclude Code*: E3

46. Barnett, T.E., et al., *The effectiveness of a care coordination home telehealth program for veterans with diabetes mellitus: a 2-year follow-up.* American Journal of Managed Care, 2006. **12**(8): p. 467-474. *Exclude Code*: E3

47. Baron, J., et al., *Effect of assessment method on the discrepancy between judgments of health disorders people have and do not have: a web study.* Medical Decision Making, 2003. **23**(5): p. 422-34. *Exclude Code*: E1

48. Bartholomew, L., et al., *Watch, Discover, Think, and Act: Evaluation of computer-assisted instruction to improve asthma self-management in inner-city children.* Patient Education and Counseling, 2000. **39**(2-3): p. 269-280. *Exclude Code*: E2

49. Bartholomew, L.K., et al., *Watch, Discover, Think, and Act: evaluation of computer-assisted instruction to improve asthma self-management in inner-city children.* Patient Education & Counseling, 2000. **39**(2-3): p. 269-80. *Exclude Code*: E2

50. Bartholomew, L.K., et al., *Watch,*

Appendix E. Excluded Studies List (continued)

Discover, Think, and Act: a model for patient education program development. Patient Education & Counseling, 2000. **39**(2-3): p. 253-68. *Exclude Code*: E2

51. Basch, E., et al., *Patient online self-reporting of toxicity symptoms during chemotherapy.* Journal of Clinical Oncology, 2005. **23**(15): p. 3552-61. *Exclude Code*: E3

52. Basch, E., et al., *Evaluation of an online platform for cancer patient self-reporting of chemotherapy toxicities.* Journal of the American Medical Informatics Association, 2007. **14**(3): p. 264-8. *Exclude Code*: E3

53. Bastian, L.A., et al., *Evaluating participants' use of a hormone replacement therapy decision-making intervention.* Patient Education & Counseling, 2002. **48**(3): p. 283-91. *Exclude Code*: E3

54. Baum, L.S., *Internet parent support groups for primary caregivers of a child with special health care needs.* Pediatric Nursing. **30**(5): p. 381-8. *Exclude Code*: E3

55. Beale, I.L., et al., *Improvement in cancer-related knowledge following use of a psychoeducational video game for adolescents and young adults with cancer.* Journal of Adolescent Health, 2007. **41**(3): p. 263-70. *Exclude Code*: E3

56. Beaudin, J.S., S.S. Intille, and M.E. Morris, *To track or not to track: user reactions to concepts in longitudinal health monitoring.* Journal of Medical Internet Research, 2006. **8**(4): p. e29. *Exclude Code*: E1

57. Bechtel-Blackwell, D.A., *Computer-assisted self-interview and nutrition education in pregnant teens.* Clinical Nursing Research, 2002. **11**(4): p. 450-62. *Exclude Code*: E1

58. Beck, H., et al., *Computer skills in patients with movement disorders.* Parkinsonism & Related Disorders, 2005. **11**(7): p. 421-6. *Exclude Code*: E3

59. Benatar, D., et al., *Outcomes of chronic heart failure.* Archives of internal medicine, 2003. **163**(3): p. 347-52. *Exclude Code*: E3

60. Bendixen, R.M., K. Horn, and C. Levy, *Using telerehabilitation to support elders with chronic illness in their homes.* Topics in Geriatric Rehabilitation, 2007. **23**(1): p. 47-51. *Exclude Code*: E3

61. Bensink, M., et al., *Investigating the cost-effectiveness of videotelephone based support for newly diagnosed paediatric oncology patients and their families: design of a randomised controlled trial.* BMC Health Services Research, 2007. **7**: p. 38. *Exclude Code*: E3

62. Berry, D.L., et al., *Actual use and perceived usefulness of a web-based, decision support program for men with prostate cancer.* Studies in Health Technology & Informatics, 2006. **122**: p. 781-2. *Exclude Code*: E3

63. Bielli, E., et al., *A Wireless Health Outcomes Monitoring System (WHOMS): development and field testing with cancer patients using mobile phones.* BMC Medical Informatics & Decision Making, 2004. **4**: p. 7. *Exclude Code*: E3

64. Biermann, E., et al., *Are there time and cost savings by using telemanagement for patients on intensified insulin therapy? A randomised, controlled trial.* Computer Methods & Programs in Biomedicine, 2002. **69**(2): p. 137-46. *Exclude Code*: E3

65. Bik-Multanowski, M., et al., *Use of handheld computers for assessment of prefrontal cortex function in patients with phenylketonuria.* Molecular Genetics & Metabolism, 2005. **86 Suppl 1**: p. S142-4. *Exclude Code*: E3

66. Birkmann, C., R.C. Dumitru, and H.U. Prokosch, *Evaluation of health-related Internet use in Germany.* Methods of Information in Medicine, 2006. **45**(4): p.

Appendix E. Excluded Studies List (continued)

367-76. *Exclude Code*: E1

67. Block, G., et al., *An interactive CD-ROM for nutrition screening and counseling.* American Journal of Public Health, 2000. **90**(5): p. 781-5. *Exclude Code*: E

68. Bock, B., et al., *Acceptability of computer assessments among ethnically diverse, low-income smokers.* American Journal of Health Promotion, 1999. **13**(5): p. 299-304. *Exclude Code*: E3

69. Boisen, E., et al., *Copability, coping, and learning as focal concepts in the evaluation of computerised diabetes disease management.* International Journal of Medical Informatics, 2003. **70**(2-3): p. 353-63. *Exclude Code*: E2

70. Boissy, P., K. Jacobs, and S.H. Roy, *Usability of a barcode scanning system as a means of data entry on a PDA for self-report health outcome questionnaires: a pilot study in individuals over 60 years of age.* BMC Medical Informatics & Decision Making, 2006. **6**: p. 42. *Exclude Code*: E3

71. Bosworth, H.B., et al., *Hypertension Intervention Nurse Telemedicine Study (HINTS): testing a multifactorial tailored behavioral/educational and a medication management intervention for blood pressure control.* American Heart Journal, 2007. **153**(6): p. 918-24. *Exclude Code*: E3

72. Bowen, A.M., K. Horvath, and M.L. Williams, *A randomized control trial of Internet-delivered HIV prevention targeting rural MSM.* Health Education Research, 2007. **22**(1): p. 120-7. *Exclude Code*: E3

73. Bratan, T., et al., *Evaluation of the practical feasibility and acceptability of home monitoring in residential homes.* Journal of Telemedicine & Telecare, 2005. **11 Suppl 1**: p. 29-31. *Exclude Code*: E3

74. Brenner, B., *Is the provision of laboratory results via the Internet acceptable to patients? A survey of private patients in a large, specialist gynaecology practice.* New Zealand Medical Journal, 2003. **116**(1187): p. U711. *Exclude Code*: E1

75. Brown, C.L., N. Tangsinmankong, and P.J. Emmanuel, *Improving care of HIV-infected patients in the outpatient setting with patient data flow sheets.* Journal of the Association of Nurses in AIDS Care, 2002. **13**(4): p. 58-63. *Exclude Code*: E3

76. Brown, S.J., et al., *Educational video game for juvenile diabetes: results of a controlled trial.* Medical Informatics, 1997. **22**(1): p. 77-89. *Exclude Code*: E3

77. Bruning Brown, J., et al., *An evaluation of an Internet-delivered eating disorder prevention program for adolescents and their parents.* Journal of Adolescent Health, 2004. **35**(4): p. 290-6. *Exclude Code*: E1

78. Bulmer, P.J., et al., *A randomized trial comparing the effectiveness and preference of a touch-screen computer system with a leaflet for providing women with information on urinary symptoms suggestive of detrusor instability.* BJU International, 2001. **88**(6): p. 532-5. *Exclude Code*: E3

79. Burkhart, P.V., et al., *Testing an intervention to promote children's adherence to asthma self-management.* Journal of Nursing Scholarship, 2007. **39**(2): p. 133-40. *Exclude Code*: E

80. Bush, N., et al., *Development, feasibility and compliance of a web-based system for very frequent QOL and symptom home self-assessment after hematopoietic stem cell transplantation.* Quality of Life Research, 2005. **14**(1): p. 77-93. *Exclude Code*: E3

81. Butler, S.F., et al., *Working it out: development and testing of a multimedia, vocational education program.* Substance Use & Misuse, 2004. **39**(13-14): p. 2525-58. *Exclude Code*: E3

Appendix E. Excluded Studies List (continued)

82. Campbell, E., et al., *Encouraging underscreened women to have cervical cancer screening: the effectiveness of a computer strategy.* Preventive Medicine, 1997. **26**(6): p. 801-7. *Exclude Code*: E1

83. Campbell, M.K., et al., *Randomized trial of a tailored nutrition education CD-ROM program for women receiving food assistance.* Journal of Nutrition Education and Behavior, 2004. **36**(2): p. 58-66. *Exclude Code*: E3

84. Carlbring, P., et al., *Remote treatment of panic disorder: a randomized trial of internet-based cognitive behavior therapy supplemented with telephone calls.* The American journal of psychiatry, 2006. **163**(12): p. 2119-25. *Exclude Code*: E3

85. Carlbring, P., et al., *Treatment of social phobia: randomised trial of internet-delivered cognitive-behavioural therapy with telephone support.* British Journal of Psychiatry, 2007. **190**: p. 123-8. *Exclude Code*: E3

86. Carlbring, P., et al., *Treatment of panic disorder via the Internet: A randomized trial of a self-help program.* Behavior Therapy, 2001. **32**(4): p. 751-764. *Exclude Code*: E3

87. Carpenter, K.M., et al., *Teaching brief interventions for smoking cessation via an interactive computer-based tutorial.* Journal of Health Psychology, 2003. **8**(1): p. 149-60. *Exclude Code*: E3

88. Chen, H.H. and M.L. Yeh, *Developing and evaluating a smoking cessation program combined with an Internet-assisted instruction program for adolescents with smoking.* Patient education and counseling, 2006. **61**(3): p. 411-8. *Exclude Code*: E

89. Cherry, J.C., et al., *Diabetes disease management program for an indigent population empowered by telemedicine technology.* Diabetes Technology & Therapeutics, 2002. **4**(6): p. 783-91. *Exclude Code*: E3

90. Chou, M., et al., *Exploring the self-learning experiences of patients with depression participating in a multimedia education program.* Journal of Nursing Research, 2004. **12**(4): p. 297-305. *Exclude Code*: E3

91. Christensen, D.B., et al., *Assessing compliance to antihypertensive medications using computer-based pharmacy records.* Medical Care, 1997. **35**(11): p. 1164-70. *Exclude Code*: E3

92. Christenson, M.A., *Assessing an elder's need for assistance: one technological tool.* Generations, 1995. **19**(1): p. 54-55. *Exclude Code*: E2

93. Chung, M. and M. Akahoshi, *Reducing home nursing visit costs using a remote access infusion pump system.* Journal of Intravenous Nursing, 1999. **22**(6): p. 309-14. *Exclude Code*: E3

94. Clemensen, J., S.B. Larsen, and N. Ejskjaer, *Telemedical treatment at home of diabetic foot ulcers.* Journal of Telemedicine & Telecare, 2005. **11 Suppl 2**: p. S14-6. *Exclude Code*: E3

95. Crosbie, J.H., et al., *Virtual reality in the rehabilitation of the upper limb after stroke: the user's perspective.* Cyberpsychology & Behavior, 2006. **9**(2): p. 137-41. *Exclude Code*: E3

96. Cunningham, J.A., K. Humphreys, and A. Koski-Jannes, *Providing personalized assessment feedback for problem drinking on the Internet: a pilot project.* Journal of Studies on Alcohol, 2000. **61**(6): p. 794-8. *Exclude Code*: E1

97. Cunningham, J.A., et al., *Internet and paper self-help materials for problem drinking: is there an additive effect?* Addictive Behaviors, 2005. **30**(8): p. 1517-23. *Exclude Code*: E1

98. Cunningham, J.A., P. Selby, and T. van Mierlo, *Integrated online services for smokers and drinkers? Use of the check your drinking assessment screener by participants of the Stop Smoking Center.* Nicotine & Tobacco Research, 2006. **8**

Appendix E. Excluded Studies List (continued)

Suppl 1: p. S21-5. *Exclude Code*: E2

99. Cytryn, K.N. and V.L. Patel, *Reasoning about diabetes and its relationship to the use of telecommunication technology by patients and physicians.* International Journal of Medical Informatics, 1998. **51**(2-3): p. 137-51. *Exclude Code*: E

100. Dale, J., S. Connor, and K. Tolley, *An evaluation of the west Surrey telemedicine monitoring project.* Journal of Telemedicine & Telecare, 2003. **9 Suppl 1**: p. S39-41. *Exclude Code*: E3

101. Datto, C.J., et al., *The pilot study of a telephone disease management program for depression.* General Hospital Psychiatry, 2003. **25**(3): p. 169-77. *Exclude Code*: E3

102. De Bourdeaudhuij, I., et al., *Evaluation of an interactive computer-tailored nutrition intervention in a real-life setting.* Annals of Behavioral Medicine, 2007. **33**(1): p. 39-48. *Exclude Code*: E

103. de Lusignan, S., et al., *A pilot study of radiotelemetry for continuous cardiopulmonary monitoring of patients at home.* Journal of Telemedicine & Telecare, 2000. **6 Suppl 1**: p. S119-22. *Exclude Code*: E3

104. DeLenardo, C., *Web-based tools steer patient-focused care: portal technology empowers patients to track and improve outcomes.* Holistic Nursing Practice, 2005. **19**(2): p. 90-2. *Exclude Code*: E2

105. Delgado, M. and J. Santiago, *HIV/AIDS in a Puerto Rican/Dominican community: a collaborative project with a botanical shop.* Social Work, 1998. **43**(2): p. 183-6. *Exclude Code*: E3

106. Delic, D., O. Polasek, and J. Kern, *Internet health-information seekers in Croatia--who, what, and why?* Medical Informatics & the Internet in Medicine, 2006. **31**(4): p. 267-73. *Exclude Code*: E3

107. DePalma, A., *Prostate Cancer Shared Decision: a CD-ROM educational and decision-assisting tool for men with prostate cancer.* Seminars in Urologic Oncology, 2000. **18**(3): p. 178-81. *Exclude Code*: E2

108. Diamond, B.J., et al., *Telerehabilitation, cognition and user-accessibility.* Neurorehabilitation, 2003. **18**(2): p. 171-7. *Exclude Code*: E3

109. Diefenbach, M.A. and B.P. Butz, *A multimedia interactive education system for prostate cancer patients: development and preliminary evaluation.* Journal of Medical Internet Research, 2004. **6**(1): p. e3. *Exclude Code*: E3

110. Dobscha, S.K., et al., *Measuring depression and pain with home health monitors.* Telemedicine Journal & E-Health, 2006. **12**(6): p. 702-6. *Exclude Code*: E3

111. Donald, S., et al., *Evaluation of use of cellphones to aid compliance with drug therapy for HIV patients.* AIDS Care, 2007. **19**(5): p. 605-7. *Exclude Code*: E

112. Dragone, M.A., et al., *Development and evaluation of an interactive CD-ROM for children with leukemia and their families.* Patient Education & Counseling, 2002. **46**(4): p. 297-307. *Exclude Code*: E3

113. Duff, A., et al., *Betterland: an interactive cd-rom guide for children with cystic fibrosis.* Paediatric Nursing, 2006. **18**(7): p. 30-3. *Exclude Code*: E2

114. Dunbar, P.J., et al., *A two-way messaging system to enhance antiretroviral adherence.* Journal of the American Medical Informatics Association, 2003. **10**(1): p. 11-5. *Exclude Code*: E3

115. Edworthy, S.M. and G.M. Devins, *Improving medication adherence through patient education distinguishing between appropriate and inappropriate utilization. Patient Education Study Group.* Journal of Rheumatology, 1999. **26**(8): p. 1793-801. *Exclude Code*: E3

116. Eisermann, U., I. Haase, and B. Kladny,

Appendix E. Excluded Studies List (continued)

Computer-aided multimedia training in orthopedic rehabilitation. American Journal of Physical Medicine & Rehabilitation, 2004. **83**(9): p. 670-80. *Exclude Code*: E3

117. Emery, J., et al., *The GRAIDS Trial: a cluster randomised controlled trial of computer decision support for the management of familial cancer risk in primary care.* British Journal of Cancer, 2007. **97**(4): p. 486-93. *Exclude Code*: E1

118. Engelbrecht, R., et al., *DIABCARD--an application of a portable medical record for persons with diabetes.* Medical Informatics, 1996. **21**(4): p. 273-82. *Exclude Code*: E3

119. Eriksson, J., A. Ek, and G. Johansson, *Design and evaluation of a software prototype for participatory planning of environmental adaptations.* IEEE Transactions on Rehabilitation Engineering, 2000. **8**(1): p. 94-106. *Exclude Code*: E3

120. Finkel, S., et al., *E-care: a telecommunications technology intervention for family caregivers of dementia patients.* American Journal of Geriatric Psychiatry, 2007. **15**(5): p. 443-448. *Exclude Code*: E1

121. Finkelstein, J., M.R. Cabrera, and G. Hripcsak, *Internet-based home asthma telemonitoring: can patients handle the technology?* Chest, 2000. **117**(1): p. 148-55. *Exclude Code*: E

122. Fortney, J.C., et al., *Design and implementation of the telemedicine-enhanced antidepressant management study.* General hospital psychiatry, 2006. **28**(1): p. 18-26. *Exclude Code*: E3

123. Franck, L.S. and M. Jones, *Computer-taught coping techniques for venepuncture: preliminary findings from usability testing with children, parents and staff.* Journal of Child Health Care, 2003. **7**(1): p. 41-54. *Exclude Code*: E3

124. Friedman, R.H., et al., *A telecommunications system to manage patients with chronic disease.* Medinfo, 1998. **9 Pt 2**: p. 1330-4. *Exclude Code*: E2

125. Frosch, D.L., R.M. Kaplan, and V.J. Felitti, *A randomized controlled trial comparing internet and video to facilitate patient education for men considering the prostate specific antigen test.* Journal of General Internal Medicine, 2003. **18**(10): p. 781-7. *Exclude Code*: E3

126. Gerber, B.S., et al., *Implementation of computer multimedia for diabetes prevention in African-American women.* AMIA, 2005. **Annual Symposium Proceedings/AMIA Symposium.**: p. 962. *Exclude Code*: E3

127. Giallauria, F., et al., *Efficacy of telecardiology in improving the results of cardiac rehabilitation after acute myocardial infarction.* Monaldi Archives for Chest Disease, 2006. **66**(1): p. 8-12. *Exclude Code*: E3

128. Glasgow, R.E., et al., *Long-term effects and costs of brief behavioural dietary intervention for patients with diabetes delivered from the medical office.* Patient Education & Counseling, 1997. **32**(3): p. 175-84. *Exclude Code*: E3

129. Glazebrook, C., et al., *Impact of a multimedia intervention "Skinsafe" on patients' knowledge and protective behaviors.* Preventive Medicine, 2006. **42**(6): p. 449-54. *Exclude Code*: E1

130. Goldfield, G.S. and A. Boachie, *Delivery of family therapy in the treatment of anorexia nervosa using telehealth.* Telemedicine Journal & E-Health, 2003. **9**(1): p. 111-4. *Exclude Code*: E3

131. Gomez, E.J., et al., *Telemedicine as a tool for intensive management of diabetes: the DIABTel experience.* Computer Methods & Programs in Biomedicine, 2002. **69**(2): p. 163-77. *Exclude Code*: E3

132. Graham, A.L., et al., *Characteristics of smokers reached and recruited to an*

Appendix E. Excluded Studies List (continued)

internet smoking cessation trial: a case of denominators. Nicotine & Tobacco Research, 2006. **8 Suppl 1**: p. S43-8. *Exclude Code*: E3

133. Grant, R.W., et al., *Design and implementation of a web-based patient portal linked to an ambulatory care electronic health record: patient gateway for diabetes collaborative care.* Diabetes Technology & Therapeutics, 2006. **8**(5): p. 576-86. *Exclude Code*: E2

134. Gray, J., et al., *Baby CareLink: development and implementation of a WWW-based system for neonatal home telemedicine.* Proceedings / AMIA, 1998. **Annual Symposium.**: p. 351-5. *Exclude Code*: E1

135. Gray, J.E., et al., *Baby CareLink: using the internet and telemedicine to improve care for high-risk infants.* Pediatrics, 2000. **106**(6): p. 1318-24. *Exclude Code*: E1

136. Gustafson, D.H., et al., *CHESS: 10 years of research and development in consumer health informatics for broad populations, including the underserved.* International Journal of Medical Informatics, 2002. **65**(3): p. 169-77. *Exclude Code*: E2

137. Hahn, E.A., et al., *The talking touchscreen: a new approach to outcomes assessment in low literacy.* Psycho-Oncology, 2004. **13**(2): p. 86-95. *Exclude Code*: E3

138. Han, H.R. and A.E. Belcher, *Computer-mediated support group use among parents of children with cancer--an exploratory study.* Computers in Nursing, 2001. **19**(1): p. 27-33. *Exclude Code*: E1

139. Hebert, M.A. and B. Korabek, *Stakeholder readiness for telehomecare: implications for implementation.* Telemedicine Journal & E-Health, 2004. **10**(1): p. 85-92. *Exclude Code*: E3

140. Hebert, M.A., M.J. Paquin, and S. Iversen, *Predicting success: stakeholder readiness for home telecare diabetic support.* Journal of Telemedicine & Telecare, 2002. **8 Suppl 3**: p. S3:33-6. *Exclude Code*: E3

141. Heiberg, T., et al., *Daily health status registration (patient diary) in patients with rheumatoid arthritis: a comparison between personal digital assistant and paper-pencil format.* Arthritis & Rheumatism, 2007. **57**(3): p. 454-60. *Exclude Code*: E3

142. Heidgerken, A.D., et al., *Telehealth intervention for adolescents with type 1 diabetes.* Journal of Pediatrics, 2006. **148**(5): p. 707-8. *Exclude Code*: E3

143. Heisler, M., et al., *"I am not alone": the feasibility and acceptability of interactive voice response-facilitated telephone peer support among older adults with heart failure.* Congestive Heart Failure, 2007. **13**(3): p. 149-57. *Exclude Code*: E3

144. Hill, W., C. Weinert, and S. Cudney, *Influence of a computer intervention on the psychological status of chronically ill rural women: preliminary results.* Nursing Research, 2006. **55**(1): p. 34-42. *Exclude Code*: E3

145. Hill, W.G. and C. Weinert, *An evaluation of an online intervention to provide social support and health education.* CIN: Computers, Informatics, Nursing, 2004. **22**(5): p. 282-8. *Exclude Code*: E1

146. Hoffmann, T., et al., *Randomised trial of a computer-generated tailored written education package for patients following stroke.* Age & Ageing, 2007. **36**(3): p. 280-6. *Exclude Code*: E3

147. Hoffmann, T., T. Russell, and K. McKenna, *Producing computer-generated tailored written information for stroke patients and their carers: system development and preliminary evaluation.* International Journal of Medical Informatics, 2004. **73**(11-12): p. 751-8. *Exclude Code*: E3

Appendix E. Excluded Studies List (continued)

148. Hofmann, M., et al., *Interactive computer-based cognitive training in patients with Alzheimer's disease.* Journal of Psychiatric Research, 1996. **30**(6): p. 493-501. *Exclude Code*: E3

149. Holbrook, A., et al., *Influence of decision aids on patient preferences for anticoagulant therapy: a randomized trial.* CMAJ Canadian Medical Association Journal, 2007. **176**(11): p. 1583-7. *Exclude Code*: E3

150. Hong, O., et al., *Efficacy of a computer-based hearing test and tailored hearing protection intervention.* International Journal of Behavioral Medicine, 2006. **13**(4): p. 304-14. *Exclude Code*: E3

151. Hudson, L.R., et al., *Remote physiological monitoring: clinical, financial, and behavioral outcomes in a heart failure population.* Disease Management, 2005. **8**(6): p. 372-81. *Exclude Code*: E3

152. Hunkeler, E.M., et al., *Efficacy of nurse telehealth care and peer support in augmenting treatment of depression in primary care.* Archives of Family Medicine, 2000. **9**(8): p. 700-8. *Exclude Code*: E3

153. Huss, K., et al., *Computer game for inner-city children does not improve asthma outcomes.* Journal of Pediatric Health Care, 2003. **17**(2): p. 72-8. *Exclude Code*: E3

154. Illyes, M., T. Mengden, and A. Tisler, *The virtual hypertension clinic.* Blood Pressure Monitoring, 2002. **7**(1): p. 67-8. *Exclude Code*: E2

155. Im, E.-O. and W. Chee, *Evaluation of the decision support computer program for cancer pain management.* Oncology Nursing Forum Online, 2006. **33**(5): p. 977-82. *Exclude Code*: E3

156. James, S.D. and R.E. Thomas, *Problems in community healthcare information systems: a case study.* Health Informatics Journal, 1999. **5**(3): p. 146-53. *Exclude Code*: E2

157. Jantz, C., J. Anderson, and S.M. Gould, *Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants.* Journal of Nutrition Education and Behavior, 2002. **34**(5): p. 252-60. *Exclude Code*: E3

158. Jenkins, R.L. and M. McSweeney, *Assessing elderly patients with congestive heart failure via in-home interactive telecommunication.* Journal of Gerontological Nursing, 2001. **27**(1): p. 21-7. *Exclude Code*: E3

159. Jerant, A.F., R. Azari, and T.S. Nesbitt, *Reducing the cost of frequent hospital admissions for congestive heart failure: a randomized trial of a home telecare intervention.* Medical Care, 2001. **39**(11): p. 1234-1245. *Exclude Code*: E3

160. Jibaja-Weiss, M.L., et al., *Entertainment education for informed breast cancer treatment decisions in low-literate women: development and initial evaluation of a patient decision aid.* Journal of Cancer Education, 2006. **21**(3): p. 133-9. *Exclude Code*: E3

161. Johnson, M.J., et al., *The development and evaluation of alternative communication strategies to facilitate interactions with Somali refugees in primary care: a preliminary study.* Informatics in Primary Care, 2006. **14**(3): p. 183-9. *Exclude Code*: E3

162. Johnston, B., et al., *Outcomes of the Kaiser Permanente Tele-Home Health Research Project.* Archives of Family Medicine, 2000. **9**(1): p. 40-5. *Exclude Code*: E3

163. Kaminer, Y., et al., *An interactive voice response (IVR) system for adolescents with alcohol use disorders: a pilot study.* American Journal on Addictions, 2006. **15 Suppl 1**: p. 122-5. *Exclude Code*: E3

164. Kaplan, B., R. Farzanfar, and R.H. Friedman, *Personal relationships with an intelligent interactive telephone*

Appendix E. Excluded Studies List (continued)

health behavior advisor system: a multimethod study using surveys and ethnographic interviews. International Journal of Medical Informatics, 2003. **71**(1): p. 33-41. *Exclude Code*: E1

165. Karagiannis, G.E., et al., *Health and lifestyle management via interactive TV in patients with severe chronic cardiovascular diseases.* Journal of Telemedicine & Telecare, 2006. **12 Suppl 1**: p. 17-9. *Exclude Code*: E3

166. Karp, W.B., et al., *Use of telemedicine for children with special health care needs.* Pediatrics, 2000. **105**(4 part 1): p. 843-7. *Exclude Code*: E3

167. Katz, N., et al., *Interactive virtual environment training for safe street crossing of right hemisphere stroke patients with unilateral spatial neglect.* Disability & Rehabilitation, 2005. **27**(20): p. 1235-43. *Exclude Code*: E3

168. Kaufman, D.R., et al., *A cognitive framework for understanding barriers to the productive use of a diabetes home telemedicine system.* AMIA, 2003. **Annual Symposium Proceedings/AMIA Symposium.**: p. 356-60. *Exclude Code*: E2

169. Kearney, N., et al., *Utilising handheld computers to monitor and support patients receiving chemotherapy: results of a UK-based feasibility study.* Supportive Care in Cancer, 2006. **14**(7): p. 742-52. *Exclude Code*: E3

170. Keaton, L., et al., *An E-rehabilitation team helps caregivers deal with stroke.* Internet Journal of Allied Health Sciences & Practice, 2004. **2**(4): p. 17p. *Exclude Code*: E1

171. Keener, R.E., *Tracking HIV treatment: technology and drugs make AIDS a manageable disease.* Health Management Technology, 2000. **21**(10): p. 48, 50-1. *Exclude Code*: E3

172. Kerr, C., et al., *Internet interventions for long-term conditions: patient and caregiver quality criteria.* Journal of Medical Internet Research, 2006. **8**(3): p. e13. *Exclude Code*: E

173. Keulers, B.J., et al., *Can face-to-face patient education be replaced by computer-based patient education? A randomised trial.* Patient Education and Counseling, 2007. **67**(1-2): p. 176-82. *Exclude Code*: E3

174. Kim, H.-S., Y.-S. Yoo, and H.-S. Shim, *Effects of an Internet-based intervention on plasma glucose levels in patients with type 2 diabetes.* Journal of Nursing Care Quality, 2005. **20**(4): p. 335-40. *Exclude Code*: E3

175. Kinsella, A., *Managing technology. Telehealthcare under PPS: tools to make it work.* Home Healthcare Nurse, 2001. **19**(9): p. 579-81. *Exclude Code*: E2

176. Kinzie, M.B., J.B. Schorling, and M. Siegel, *Prenatal alcohol education for low-income women with interactive multimedia.* Patient Education and Counseling, 1993. **21**(1/2): p. 51-60. *Exclude Code*: E3

177. Kleinpell, R.M. and B. Avitall, *Integrating telehealth as a strategy for patient management after discharge for cardiac surgery: results of a pilot study.* Journal of Cardiovascular Nursing, 2007. **22**(1): p. 38-42. *Exclude Code*: E3

178. Kreisel, K., *Evaluation of a computer-based nutrition education tool.* Public Health Nutrition, 2004. **7**(2): p. 271-7. *Exclude Code*: E1

179. Krishna, S., et al., *Internet-enabled interactive multimedia asthma education program: a randomized trial.* Pediatrics, 2003. **111**(3): p. 503-10. *Exclude Code*: E3

180. Krishna, S., et al., *Internet-enabled interactive multimedia asthma education program: a randomized trial.* Pediatrics, 2003. **111**(3): p. 503-10. *Exclude Code*: E3

181. Kukafka, R., et al., *Web-based tailoring*

Appendix E. Excluded Studies List (continued)

and its effect on self-efficacy: results from the MI-HEART randomized controlled trial. Proceedings / AMIA, 2002. **Annual Symposium.**: p. 410-4. *Exclude Code*: E1

182. Kully, D., *Telehealth in speech pathology: applications to the treatment of stuttering.* Journal of Telemedicine & Telecare, 2000. **6 Suppl 2**: p. S39-41. *Exclude Code*: E3

183. Laron, Z., et al., *Four years experience with the microcomputer system "Diacon" in the treatment and education of diabetes.* Hormone & Metabolic Research - Supplement, 1990. **24**: p. 129-40. *Exclude Code*: E3

184. Latessa, R.A., et al., *Changing practices in the use of pneumococcal vaccine.* Family Medicine, 2000. **32**(3): p. 196-200. *Exclude Code*: E3

185. Lawton, D.F., *Older Adults Eager To Explore Cyberspace*. 2001. *Exclude Code*: E3

186. Leahy, A., et al., *Computerised biofeedback games: a new method for teaching stress management and its use in irritable bowel syndrome.* Journal of the Royal College of Physicians of London, 1998. **32**(6): p. 552-6. *Exclude Code*: E3

187. Lee, J.H., et al., *A telemedicine system as a care modality for dementia patients in Korea.* Alzheimer Disease & Associated Disorders, 2000. **14**(2): p. 94-101. *Exclude Code*: E3

188. Lehmann, E.D., *Spontaneous comments from users of the AIDA interactive educational diabetes simulator.* Diabetes Educator. **26**(4): p. 633-8. *Exclude Code*: E3

189. Lehmann, E.D., *Preliminary experience with the Internet release of AIDA--an interactive educational diabetes simulator.* Computer Methods & Programs in Biomedicine, 1998. **56**(2): p. 109-32. *Exclude Code*: E3

190. Lehmann, E.D., *Experience with the Internet release of AIDA v4.0--http://www.diabetic.org.uk.aida.htm--an interactive educational diabetes simulator.* Diabetes Technology & Therapeutics, 1999. **1**(1): p. 41-54. *Exclude Code*: E3

191. Lehmann, E.D., *The freeware AIDA interactive educational diabetes simulator--http://www.2aida.org--(1). A download survey for AIDA v4.0.* Medical Science Monitor, 2001. **7**(3): p. 504-15. *Exclude Code*: E3

192. Lehmann, E.D., *Why are people downloading the freeware AIDA diabetes computing software program: a pilot study.* Diabetes Technology & Therapeutics, 2002. **4**(6): p. 793-808. *Exclude Code*: E3

193. Lehmann, E.D., *Who is downloading the freeware AIDA v43 interactive educational diabetes simulator? An audit of 2437 downloads.* Diabetes Technology & Therapeutics, 2002. **4**(4): p. 467-77. *Exclude Code*: E3

194. Lehmann, E.D., *Who is downloading the free AIDA v4.3a interactive educational diabetes computer software? A 1-year survey of 3864 downloads.* Diabetes Technology & Therapeutics, 2003. **5**(5): p. 879-90. *Exclude Code*: E3

195. Lehmann, E.D., *Why people download the freeware AIDA v4.3a diabetes software program: a proof-of-concept semi-automated analysis.* Diabetes Technology & Therapeutics, 2003. **5**(3): p. 477-90. *Exclude Code*: E3

196. Lehmann, E.D., *Research use of the AIDA www.2aida.org diabetes software simulation program: a review-part 1. decision support testing and neural network training.* Diabetes Technology & Therapeutics, 2003. **5**(3): p. 425-38. *Exclude Code*: E2

197. Lehmann, E.D., *Usage of the www.2aida.org AIDA diabetes software Website: a pilot study.* Diabetes Technology & Therapeutics, 2003. **5**(1):

Appendix E. Excluded Studies List (continued)

p. 75-89. *Exclude Code*: E3

198. Lehmann, E.D., *British Diabetic Association review of the AIDA v4 diabetes software simulator program.* Diabetes Technology & Therapeutics, 2004. **6**(1): p. 87-96. *Exclude Code*: E3

199. Lehmann, E.D. and T. Deutsch, *An interactive, educational model for insulin dosage and dietary adjustment in type I diabetes mellitus.* Proceedings - the Annual Symposium on Computer Applications in Medical Care, 1992: p. 205-9. *Exclude Code*: E3

200. Levetan, C.S., et al., *Impact of computer-generated personalized goals on HbA(1c).* Diabetes Care, 2002. **25**(1): p. 2-8. *Exclude Code*: E3

201. Lewis, D., J. Cooper, and S. Gunawardena, *Caring Connection: Internet resources for family caregivers of children with cancer.* AMIA, 2006. **Annual Symposium Proceedings/AMIA Symposium.**: p. 1007. *Exclude Code*: E1

202. Lillis, K., *Electronically enhanced therapy: behavioral health plan rolls out online, interactive "coaching" series for members.* Health Management Technology, 2004. **25**(8): p. 42. *Exclude Code*: E2

203. Lin, Z., J. Effken, and Y. Li, *Designing and evaluating a Web-based, tailored breast cancer education program.* CIN: Computers, Informatics, Nursing, 2006. **24**(5): p. 300. *Exclude Code*: E

204. Linke, S., et al., *Internet-based interactive health intervention for the promotion of sensible drinking: patterns of use and potential impact on members of the general public.* Journal of Medical Internet Research, 2007. **9**(2): p. e10. *Exclude Code*: E1

205. Linne, A.B. and H. Liedholm, *Effects of an interactive CD-program on 6 months readmission rate in patients with heart failure - a randomised, controlled trial [NCT00311194].* BMC Cardiovascular Disorders, 2006. **6**: p. 30. *Exclude Code*: E3

206. Lo, R., et al., *The development and evaluation of a computer-aided diabetes education program.* Australian Journal of Advanced Nursing, 1996. **13**(4): p. 19-27. *Exclude Code*: E3

207. Long, J.D., et al., *Pilot using world wide Web to prevent diabetes in adolescents.* Clinical Nursing Research, 2006. **15**(1): p. 67-79. *Exclude Code*: E

208. Lopez, A.M., et al., *Increasing access to care via tele-health: the Arizona experience.* Journal of Ambulatory Care Management, 2005. **28**(1): p. 16-23. *Exclude Code*: E3

209. Lovell, K., et al., *Telephone administered cognitive behaviour therapy for treatment of obsessive compulsive disorder: randomised controlled non-inferiority trial.* BMJ, 2006. **333**(7574): p. 883-6. *Exclude Code*: E3

210. Lowe, P., H. Hearnshaw, and F. Griffiths, *Attitudes of young people with diabetes to an Internet-based virtual clinic.* Journal of Telemedicine & Telecare, 2005. **11 Suppl 1**: p. 59-60. *Exclude Code*: E3

211. Maaske, L., *A study of interactivity in educational patient hypermedia.* Journal of Biocommunication, 1999. **26**(3): p. 2-11. *Exclude Code*: E3

212. Mackenzie, S.L.C., et al., *Patient and staff perspectives on the use of a computer counseling tool for HIV and sexually transmitted infection risk reduction.* Journal of Adolescent Health, 2007. **40**(6): p. 572.e9-16. *Exclude Code*: E3

213. Mahoney, D.F., et al., *Effects of a multimedia project on users' knowledge about normal forgetting and serious memory loss.* Journal of the American Medical Informatics Association, 2002. **9**(4): p. 383-94. *Exclude Code*: E3

214. Malasanos, T.H., et al., *School nurse,*

Appendix E. Excluded Studies List (continued)

family and provider connectivity in the FITE diabetes project. Journal of Telemedicine & Telecare, 2005. **11 Suppl 1**: p. 76-8. *Exclude Code*: E3

215. Marco, C.A. and G.L. Larkin, *Public education regarding resuscitation: effects of a multimedia intervention.* Annals of Emergency Medicine, 2003. **42**(2): p. 256-60. *Exclude Code*: E3

216. Markman, M., et al., *Profile of ovarian cancer patients seeking information from a web-based decision support program.* Journal of Women's Health, 2006. **15**(3): p. 312-8. *Exclude Code*: E3

217. Matheson, D. and C. Achterberg, *Ecologic study of children's use of a computer nutrition education program.* Journal of Nutrition Education, 2001. **33**(1): p. 2-9. *Exclude Code*: E1

218. Matthew, A.G., et al., *Serial personal digital assistant data capture of health-related quality of life: a randomized controlled trial in a prostate cancer clinic.* Health & Quality of Life Outcomes, 2007. **5**: p. 38. *Exclude Code*: E3

219. McGrew, K.B. and C.A. Quinn, *Examining the effectiveness of telephone assessment and care planning for homecare services.* Generations, 1997. **21**(1): p. 66-67. *Exclude Code*: E3

220. Meneghini, L.F., et al., *An electronic case manager for diabetes control.* Diabetes Care, 1998. **21**(4): p. 591-6. *Exclude Code*: E3

221. Mengden, T., et al., *Telemonitoring of blood pressure self measurement in the OLMETEL study... Proceedings from the "European Society of Hypertension Working Group on Blood Pressure Monitoring Scientific Workshop: What's New in Blood Pressure Measurement?"; held June 2004 in Paris, France.* Blood Pressure Monitoring, 2004. **9**(6): p. 321-5. *Exclude Code*: E3

222. Mermelstein, R. and L. Turner, *Web-based support as an adjunct to group-based smoking cessation for adolescents.* Nicotine & Tobacco Research, 2006. **8 Suppl 1**: p. S69-76. *Exclude Code*: E3

223. Meyerhoff, C., F. Bischof, and E.F. Pfeiffer, *Long-term experiences with a computerized diabetes management and glucose monitoring system in insulin-dependent diabetic patients.* Diabetes Research & Clinical Practice, 1994. **24**(1): p. 1-7. *Exclude Code*: E3

224. Miloud, G.L., *Response to: Heartcare: an Internet-based information and support system for patient home recovery after coronary artery bypass graft (CABG) surgery by P. Flatley Brennan, S.M. Moore, G. Bjornsdottir, J. Jones, C. Visovsky and M. Rogers (2001) Journal Of Advanced Nursing 35, 699-708.* Journal of Advanced Nursing, 2002. **38**(4): p. 425; author reply 425-6. *Exclude Code*: E

225. Molenaar, S., et al., *Exploring the black box of a decision aid: what information do patients select from an interactive Cd-Rom on treatment options in breast cancer?* Patient Education & Counseling, 2007. **65**(1): p. 122-30. *Exclude Code*: E3

226. Molenaar, S., et al., *Decision support for patients with early-stage breast cancer: effects of an interactive breast cancer CDROM on treatment decision, satisfaction, and quality of life.* Journal of Clinical Oncology, 2001. **19**(6): p. 1676-87. *Exclude Code*: E3

227. Morlion, B., et al., *Internet-based home monitoring of pulmonary function after lung transplantation.* American Journal of Respiratory & Critical Care Medicine, 2002. **165**(5): p. 694-7. *Exclude Code*: E3

228. Mullan, B., et al., *Home monitoring for lung transplant candidates.* Progress in Transplantation, 2003. **13**(3): p. 176-82. *Exclude Code*: E3

229. Murtagh, M.J., et al., *Qualitative methods in a randomised controlled*

Appendix E. Excluded Studies List (continued)

trial: the role of an integrated qualitative process evaluation in providing evidence to discontinue the intervention in one arm of a trial of a decision support tool. Quality & Safety in Health Care, 2007. **16**(3): p. 224-9. *Exclude Code*: E3

230. Nakajima, K., et al., *Low-cost, email-based system for self blood pressure monitoring at home.* Journal of Telemedicine & Telecare, 2006. **12**(4): p. 203-7. *Exclude Code*: E3

231. Nakamura, K., T. Takano, and C. Akao, *Effectiveness of videophones in home healthcare for the elderly.* Medical Care, 1999. **37**(2): p. 117-125. *Exclude Code*: E3

232. Neafsey, P.J., et al., *An interactive technology approach to educate older adults about drug interactions arising from over-the-counter self-medication practices.* Public Health Nursing, 2002. **19**(4): p. 255-62. *Exclude Code*: E3

233. Nebel, I.-T., et al., *Evaluation of a computer based interactive diabetes education program designed to train the estimation of the energy or carbohydrate contents of foods.* Patient Education & Counseling, 2002. **46**(1): p. 55-9. *Exclude Code*: E3

234. Nebel, I.-T., et al., *Comparative analysis of conventional and an adaptive computer-based hypoglycaemia education programs.* Patient Education & Counseling, 2004. **53**(3): p. 315-8. *Exclude Code*: E3

235. Neville, R., et al., *Mobile phone text messaging can help young people manage asthma.* BMJ, 2002. **325**(7364): p. 600. *Exclude Code*: E3

236. Neville, R., et al., *E-mail consultations in general practice.* British Journal of General Practice, 2004. **54**(504): p. 546. *Exclude Code*: E

237. Neville, R.G., et al., *Email consultations in general practice.* Informatics in Primary Care, 2004. **12**(4): p. 207-14. *Exclude Code*: E1

238. Nijeweme-d'Hollosy, W.O., et al., *Tele-treatment of patients with amyotrophic lateral sclerosis (ALS).* Journal of Telemedicine & Telecare, 2006. **12 Suppl 1**: p. 31-4. *Exclude Code*: E3

239. Oberleitner, R. and S. Laxminarayan, *Information technology and behavioral medicine: impact on autism treatment & research.* Studies in Health Technology & Informatics, 2004. **103**: p. 215-22. *Exclude Code*: E2

240. Ogawa, H., et al., *A web-based care-requiring client and Home Helper mutual support system.* Biomedical Sciences Instrumentation, 2005. **41**: p. 159-62. *Exclude Code*: E

241. O'Grady, L.A., *Consumer e-health education in HIV/AIDS: a pilot study of a web-based video workshop.* BMC Medical Informatics & Decision Making, 2006. **6**: p. 10. *Exclude Code*: E1

242. Osman, L.M., et al., *Reducing hospital admission through computer supported education for asthma patients.* BMJ, 1994. **308**(6928): p. 568-71. *Exclude Code*: E3

243. Owens, B.H. and K.C. Robbins, *CHESS: comprehensive health enhancement support system for women with breast cancer.* Plastic Surgical Nursing. **16**(3): p. 172-5. *Exclude Code*: E2

244. Page, S.J. and P. Levine, *Modified constraint-induced therapy extension: using remote technologies to improve function.* Archives of Physical Medicine & Rehabilitation, 2007. **88**(7): p. 922-7. *Exclude Code*: E3

245. Palermo, T.M., D. Valenzuela, and P.P. Stork, *A randomized trial of electronic versus paper pain diaries in children: impact on compliance, accuracy, and acceptability.* Pain, 2004. **107**(3): p. 213-9. *Exclude Code*: E3

246. Papadaki, A. and J.A. Scott, *The Mediterranean Eating in Scotland*

Appendix E. Excluded Studies List (continued)

Experience project: evaluation of an Internet-based intervention promoting the Mediterranean diet. British Journal of Nutrition, 2005. **94**(2): p. 290-8. *Exclude Code*: E

247. Papakonstantinou, E., et al., *Assessment of perceptions of nutrition knowledge and disease using a group interactive system: the PERCEPTION ANALYZER.* Journal of the American Dietetic Association, 2002. **102**(11): p. 1663-8. *Exclude Code*: E1

248. Peters, A.L. and M.B. Davidson, *Application of a diabetes managed care program. The feasibility of using nurses and a computer system to provide effective care.* Diabetes Care, 1998. **21**(7): p. 1037-43. *Exclude Code*: E3

249. Petersen, M., *What are blood counts? A computer-assisted program for pediatric patients.* Pediatric Nursing, 1996. **22**(1): p. 21-5; quiz 26-7. *Exclude Code*: E3

250. Phelps-Fredette, S., *Cardiology patient page. Learn, take action, and live: a guide to using online tools to prevent and manage heart disease and stroke.* Circulation, 2005. **112**(20): p. e318-9. *Exclude Code*: E2

251. Pierce, L.L., V. Steiner, and A.L. Govoni, *In-home online support for caregivers of survivors of stroke: a feasibility study.* CIN: Computers, Informatics, Nursing, 2002. **20**(4): p. 157-64. *Exclude Code*: E1

252. Pierce, L.L., et al., *Internet-based support for rural caregivers of persons with stroke shows promise.* Rehabilitation Nursing. **29**(3): p. 95-9. *Exclude Code*: E1

253. Plougmann, S., O.K. Hejlesen, and D.A. Cavan, *DiasNet--a diabetes advisory system for communication and education via the internet.* International Journal of Medical Informatics, 2001. **64**(2-3): p. 319-30. *Exclude Code*: E2

254. Port, K., K. Palm, and M. Viigimaa, *Daily usage and efficiency of remote home monitoring in hypertensive patients over a one-year period.* Journal of Telemedicine & Telecare, 2005. **11 Suppl 1**: p. 34-6. *Exclude Code*: E3

255. Porter, S.C., et al., *The asthma kiosk: a patient-centered technology for collaborative decision support in the emergency department.* Journal of the American Medical Informatics Association, 2004. **11**(6): p. 458-67. *Exclude Code*: E

256. Porter, S.C., et al., *Impact of patient-centered decision support on quality of asthma care in the emergency department.* Pediatrics, 2006. **117**(1): p. e33-42. *Exclude Code*: E3

257. Porter, S.C., et al., *Parents as direct contributors to the medical record: validation of their electronic input.* Annals of Emergency Medicine, 2000. **35**(4): p. 346-52. *Exclude Code*: E1

258. Pyper, C., et al., *Access to electronic health records in primary care-a survey of patients' views.* Medical Science Monitor, 2004. **10**(11): p. SR17-22. *Exclude Code*: E1

259. Redsell, S.A., et al., *Multimedia versus written information for nocturnal enuresis education: a cluster randomized controlled trial.* Child: Care, Health & Development, 2003. **29**(2): p. 121-9. *Exclude Code*: E3

260. Reis, J., B. McGinty, and S. Jones, *An e-learning caregiving program for prostate cancer patients and family members.* Journal of Medical Systems, 2003. **27**(1): p. 1-12. *Exclude Code*: E3

261. Rice, V.H., et al., *Exemplary program development: hypermedia interactive smoking cessation intervention program for pregnant women... including commentary by Budin WC.* Journal of Perinatal Education, 1997. **6**(3): p. 47-61. *Exclude Code*: E3

262. Riley, E.D., et al., *Use of audio computer-assisted self-interviews to assess tuberculosis-related risk*

Appendix E. Excluded Studies List (continued)

behaviors. American Journal of Respiratory & Critical Care Medicine, 2001. **164**(1): p. 82-5. *Exclude Code*: E3

263. Riva, A., R. Bellazzi, and M. Stefanelli, *A Web-based system for the intelligent management of diabetic patients.* MD Computing, 1997. **14**(5): p. 360-4. *Exclude Code*: E2

264. Robbins, K.C., *CHESS: the Comprehensive Health Enhancement Support System. A computer based program for patients and families.* Connecticut Nursing News, 1999. **72**(1): p. 14. *Exclude Code*: E2

265. Rogers, A. and N. Mead, *More than technology and access: primary care patients' views on the use and non-use of health information in the Internet age.* Health and Social Care in the Community, 2004. **12**(2): p. 102-10. *Exclude Code*: E3

266. Rosen, J., et al., *Educating the families of nursing home residents: a pilot study using a computer-based system.* Journal of the American Medical Directors Association, 2003. **4**(3): p. 128-34. *Exclude Code*: E1

267. Roumie, C.L., et al., *A three-part intervention to change the use of hormone replacement therapy in response to new evidence.* Annals of Internal Medicine, 2004. **141**(2): p. 118-25. *Exclude Code*: E1

268. Rutscher, A., E. Salzsieder, and U. Fischer, *KADIS: model-aided education in type I diabetes. Karlsburg Diabetes Management System.* Computer Methods & Programs in Biomedicine, 1994. **41**(3-4): p. 205-15. *Exclude Code*: E

269. Sabati, N., et al., *Facilitators and barriers to adherence with home monitoring using electronic spirometry.* AACN Clinical Issues, 2001. **12**(2): p. 178-85. *Exclude Code*: E3

270. Sanchez-Franco, M.J., *Exploring the influence of gender on the web usage via partial least squares.* Behaviour & Information Technology, 2006. **25**(1): p. 19-36. *Exclude Code*: E3

271. Scherr, D., et al., *Mobile phone-based surveillance of cardiac patients at home.* Journal of Telemedicine & Telecare, 2006. **12**(5): p. 255-61. *Exclude Code*: E3

272. Schinke, S.P., et al., *Feasibility of interactive videodisc technology to teach minority youth about preventing HIV infection.* Public Health Reports, 1992. **107**(3): p. 323-30. *Exclude Code*: E3

273. Schrot, R.J., et al., *A computerized model for home glucose monitoring proficiency testing: efficacy of an innovative testing program.* Diabetes Educator, 1999. **25**(1): p. 48-55. *Exclude Code*: E3

274. Sciamanna, C.N., et al., *Effects of a Website designed to improve the management of migraines.* Headache, 2006. **46**(1): p. 92-100. *Exclude Code*: E3

275. Sciamanna, C.N., et al., *Visit satisfaction and tailored health behavior communications in primary care.* American Journal of Preventive Medicine, 2004. **26**(5): p. 426-30. *Exclude Code*: E3

276. Sequist, T.D., et al., *A randomized trial of electronic clinical reminders to improve quality of care for diabetes and coronary artery disease.* Journal of the American Medical Informatics Association, 2005. **12**(4): p. 431-7. *Exclude Code*: E3

277. Sevick, M.A., et al., *A preliminary study of PDA-based dietary self-monitoring in hemodialysis patients.* Journal of Renal Nutrition, 2005. **15**(3): p. 304-11. *Exclude Code*: E3

278. Shah, N.B., et al., *Prevention of hospitalizations for heart failure with an interactive home monitoring program.* American Heart Journal, 1998. **135**(3): p. 373-8. *Exclude Code*: E3

Appendix E. Excluded Studies List (continued)

279. Shames, R.S., et al., *Effectiveness of a multicomponent self-management program in at-risk, school-aged children with asthma.* Annals of Allergy, Asthma, & Immunology, 2004. **92**(6): p. 611-8. *Exclude Code*: E3

280. Shaw, B., et al., *How Underserved Breast Cancer Patients Use and Benefit From eHealth Programs: Implications for Closing the Digital Divide.* American Behavioral Scientist, 2006. **49**(6): p. 823-834. *Exclude Code*: E2

281. Sims, T.L., et al., *Multimedia quality of life assessment: advances with FLAIR.* AMIA, 2005. **Annual Symposium Proceedings/AMIA Symposium.**: p. 694-8. *Exclude Code*: E3

282. Sixsmith, A.J., *An evaluation of an intelligent home monitoring system.* Journal of Telemedicine & Telecare, 2000. **6**(2): p. 63-72. *Exclude Code*: E3

283. Slootmaker, S.M., et al., *Promoting physical activity using an activity monitor and a tailored web-based advice: design of a randomized controlled trial [ISRCTN93896459].* BMC Public Health, 2005. **5**: p. 134. *Exclude Code*: E2

284. Soghikian, K., et al., *Home blood pressure monitoring. Effect on use of medical services and medical care costs.* Medical Care, 1992. **30**(9): p. 855-65. *Exclude Code*: E3

285. Starren, J., et al., *Columbia University's Informatics for Diabetes Education and Telemedicine (IDEATel) project: technical implementation.* Journal of the American Medical Informatics Association, 2002. **9**(1): p. 25-36. *Exclude Code*: E3

286. Steel, S., et al., *A feasibility study of remote monitoring of asthmatic patients.* Journal of Telemedicine & Telecare, 2002. **8**(5): p. 290-6. *Exclude Code*: E3

287. Steier, J., et al., *Optical feedback training of inhalation with Autohaler and Turbuhaler in COPD patients.* Lung, 2003. **181**(4): p. 183-92. *Exclude Code*: E3

288. Stillman, J.K., et al., *Telepaediatrics and diabetic retinopathy screening of young people with diabetes in Queensland.* Journal of Telemedicine & Telecare, 2004. **10 Suppl 1**: p. 92-4. *Exclude Code*: E3

289. Stricklin, M.L.V., S. Jones, and S.A. Niles, *HOME TALK/healthy talk: improving patients' health status with telephone technology.* Home Healthcare Nurse, 2000. **18**(1): p. 53-62. *Exclude Code*: E3

290. Stromberg, A., et al., *Interactive education on CD-ROM-a new tool in the education of heart failure patients.* Patient Education & Counseling, 2002. **46**(1): p. 75-81. *Exclude Code*: E3

291. Sun, P., et al., *Internet accessibility and usage among urban adolescents in Southern California: implications for web-based health research.* Cyberpsychology & Behavior, 2005. **8**(5): p. 441-53. *Exclude Code*: E

292. Suzuki, L.K. and I.L. Beale, *Personal Web home pages of adolescents with cancer: self-presentation, information dissemination, and interpersonal connection.* Journal of Pediatric Oncology Nursing, 2006. **23**(3): p. 152-61. *Exclude Code*: E3

293. Sweeney, N.M., D. Glaser, and C. Tedeschi, *The eating and physical activity habits of inner-city adolescents.* Journal of Pediatric Health Care, 2007. **21**(1): p. 13-21. *Exclude Code*: E3

294. Tam, S., et al., *Evaluating the efficacy of tele-cognitive rehabilitation for functional performance in three case studies.* Occupational Therapy International, 2003. **10**(1): p. 20-38. *Exclude Code*: E3

295. Tang, P.C., et al., *PAMFOnline: integrating EHealth with an electronic medical record system.* AMIA, 2003. **Annual Symposium Proceedings/AMIA Symposium.**: p. 644-8. *Exclude Code*: E1

Appendix E. Excluded Studies List (continued)

296. Tessaro, I., et al., *Effectiveness of a nutrition intervention with rural low-income women.* American Journal of Health Behavior, 2007. **31**(1): p. 35-43. *Exclude Code*: E3

297. Thomson, R.G., et al., *A patient decision aid to support shared decision-making on anti-thrombotic treatment of patients with atrial fibrillation: randomised controlled trial.* Quality & Safety in Health Care, 2007. **16**(3): p. 216-23. *Exclude Code*: E3

298. Tomuro, K., *Oral home telecare tutorials for the community-dwelling elderly.* Journal of Medical & Dental Sciences, 2004. **51**(3): p. 165-71. *Exclude Code*: E3

299. Tudiver, F., et al., *Primary care providers' perceptions of home diabetes telemedicine care in the IDEATel project.* Journal of Rural Health, 2007. **23**(1): p. 55-61. *Exclude Code*: E1

300. Van Biervliet, A. and T.R. Gest, *A multimedia guide to spinal cord injury: empowerment through self instruction.* Medinfo, 1995. **8 Pt 2**: p. 1701. *Exclude Code*: E3

301. Van Diest, S.L., et al., *Sex therapy through the internet for men with sexual dysfunctions: a pilot study.* Journal of Sex & Marital Therapy, 2007. **33**(2): p. 115-33. *Exclude Code*: E3

302. van Eijken, M., et al., *Interventions to improve medication compliance in older patients living in the community: a systematic review of the literature.* Drugs & Aging, 2003. **20**(3): p. 229-40. *Exclude Code*: E

303. van Lankveld, W.G.J.M., A.M. Derks, and F.H.J. van den Hoogen, *Disease related use of the internet in chronically ill adults: current and expected use.* Annals of the Rheumatic Diseases, 2006. **65**(1): p. 121-3. *Exclude Code*: E2

304. Verheijden, M., et al., *Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial.* Journal of Medical Internet Research, 2004. **6**(4): p. e44. *Exclude Code*: E

305. Verheijden, M.W., et al., *Rates and determinants of repeated participation in a web-based behavior change program for healthy body weight and healthy lifestyle.* Journal of Medical Internet Research, 2007. **9**(1): p. e1. *Exclude Code*: E1

306. Walker, H., *Computer-based education for patients with psychosis.* Nursing Standard, 2006. **20**(30): p. 49-56. *Exclude Code*: E3

307. Waller, A., et al., *Participatory design of a text message scheduling system to support young people with diabetes.* Health Informatics Journal, 2006. **12**(4): p. 304-18. *Exclude Code*: E3

308. Wangberg, S.C., E. Arsand, and N. Andersson, *Diabetes education via mobile text messaging.* Journal of Telemedicine & Telecare, 2006. **12 Suppl 1**: p. 55-6. *Exclude Code*: E

309. Weber, B., et al., *Computerized self-assessment in psychiatric in-patients: acceptability, feasibility and influence of computer attitude.* Acta Psychiatrica Scandinavica, 1998. **98**(2): p. 140-5. *Exclude Code*: E1

310. Weinert, C., S. Cudney, and C. Winters, *Social support in cyberspace: the next generation.* CIN: Computers, Informatics, Nursing, 2005. **23**(1): p. 7-15. *Exclude Code*: E

311. Welch, J., S. Dowell, and C.S. Johnson, *Feasibility of using a personal digital assistant to self-monitor diet and fluid intake: a pilot study.* Nephrology Nursing Journal: Journal of the American Nephrology Nurses' Association, 2007. **34**(1): p. 43-8; quiz 49. *Exclude Code*: E

312. Wells, M., et al., *Online mental health treatment: concerns and considerations.* Cyberpsychology & Behavior, 2007.

Appendix E. Excluded Studies List (continued)

10(3): p. 453-9. *Exclude Code*: E1

313. Westlake, C., et al., *Evaluation of a Web-based education and counseling pilot program for older heart failure patients.* Progress in Cardiovascular Nursing, 2007. **22**(1): p. 20-6. *Exclude Code*: E

314. White, C., V. Sheedy, and N. Lawrence, *Patterns of computer usage among medical practitioners in rural and remote Queensland.* Australian Journal of Rural Health, 2002. **10**(3): p. 137-46. *Exclude Code*: E1

315. White, M.J., et al., *Implementing a computer-assisted telephone interview (CATI) system to increase colorectal cancer screening: a process evaluation.* Patient Education & Counseling, 2006. **61**(3): p. 419-28. *Exclude Code*: E1

316. Whitlock, W.L., et al., *Telemedicine improved diabetic management.* Military Medicine, 2000. **165**(8): p. 579-84. *Exclude Code*: E3

317. Whittaker, S.L., et al., *Success factors in the long-term sustainability of a telediabetes programme.* Journal of Telemedicine & Telecare, 2004. **10**(2): p. 84-8. *Exclude Code*: E3

318. Whitten, P., B. Collins, and F. Mair, *Nurse and patient reactions to a developmental home telecare system.* Journal of Telemedicine & Telecare, 1998. **4**(3): p. 152-60. *Exclude Code*: E3

319. Whitten, P., G. Doolittle, and M. Mackert, *Telehospice in Michigan: use and patient acceptance.* American Journal of Hospice & Palliative Care, 2004. **21**(3): p. 191-5. *Exclude Code*: E3

320. Whitten, P., et al., *Telehospice carries end-of-life care over the lines.* Nursing Management, 2003. **34**(11): p. 36-9. *Exclude Code*: E3

321. Whitten, P. and E. Kuwahara, *A multi-phase telepsychiatry programme in Michigan: organizational factors affecting utilization and user perceptions.* Journal of Telemedicine & Telecare, 2004. **10**(5): p. 254-61. *Exclude Code*: E3

322. Whitten, P. and B. Love, *Patient and provider satisfaction with the use of telemedicine: overview and rationale for cautious enthusiasm.* Journal of Postgraduate Medicine, 2005. **51**(4): p. 294-300. *Exclude Code*: E2

323. Whitten, P., F. Mair, and B. Collins, *Home telenursing in Kansas: patients' perceptions of uses and benefits.* Journal of Telemedicine & Telecare, 1997. **3 Suppl 1**: p. 67-9. *Exclude Code*: E3

324. Whitten, P. and M. Mickus, *Home telecare for COPD/CHF patients: outcomes and perceptions.* Journal of Telemedicine & Telecare, 2007. **13**(2): p. 69-73. *Exclude Code*: E3

325. Whitten, P.S. and F. Mair, *Telemedicine and patient satisfaction: current status and future directions.* Telemedicine Journal & E-Health, 2000. **6**(4): p. 417-23. *Exclude Code*: E2

326. Wiecha, J.M. and W.G. Adams, *BostonBreathes: improving pediatric asthma care with a home-based interactive website for patient education, monitoring, and clinical teamwork.* AMIA, 2006. **Annual Symposium Proceedings/AMIA Symposium.**: p. 1144. *Exclude Code*: E2

327. Wilkie, D.J., et al., *Usability of a computerized PAINReportIt in the general public with pain and people with cancer pain.* Journal of Pain and Symptom Management, 2003. **25**(3): p. 213-24. *Exclude Code*: E3

328. Williams, C., et al., *Efficacy of a drug prevention CD-ROM intervention for adolescents.* Substance Use & Misuse, 2005. **40**(6): p. 869-78. *Exclude Code*: E1

329. Williams, P., D. Nicholas, and P. Huntington, *Non use of health information kiosks examined in an*

Appendix E. Excluded Studies List (continued)

information needs context. Health Information & Libraries Journal, 2003. **20**(2): p. 95-103. *Exclude Code*: E1

330. Williams, T., et al., *Patient satisfaction with store-and-forward teledermatology.* Journal of Telemedicine & Telecare, 2001. **7 Suppl 1**: p. 45-6. *Exclude Code*: E3

331. Williams, T.L., et al., *Patient satisfaction with teledermatology is related to perceived quality of life.* British Journal of Dermatology, 2001. **145**(6): p. 911-7. *Exclude Code*: E3

332. Wilson, A., et al., *Investigating patients' and general practitioners' views of computerised decision support software for the assessment and management of cardiovascular risk.* Informatics in Primary Care, 2007. **15**(1): p. 33-44. *Exclude Code*: E1

333. Wilson, A.E. and P.D. Home, *A dataset to allow exchange of information for monitoring continuing diabetes care. The Diabetes Audit Working Group.* Diabetic Medicine, 1993. **10**(4): p. 378-90. *Exclude Code*: E2

334. Wilson, P.N., N. Foreman, and D. Stanton, *Virtual reality, disability and rehabilitation.* Disability & Rehabilitation, 1997. **19**(6): p. 213-20. *Exclude Code*: E2

335. Winkelman, W.J., K.J. Leonard, and P.G. Rossos, *Patient-perceived usefulness of online electronic medical records: employing grounded theory in the development of information and communication technologies for use by patients living with chronic illness.* Journal of the American Medical Informatics Association, 2005. **12**(3): p. 306-14. *Exclude Code*: E3

336. Wise, M., et al., *Internet telehealth for pediatric asthma case management: integrating computerized and case manager features for tailoring a Web-based asthma education program.* Health Promotion Practice, 2007. **8**(3): p. 282-91. *Exclude Code*: E

337. Wolf, J.M., et al., *Access and use of the internet in a hand surgery population.* Hand Surgery, 2004. **9**(1): p. 29-33. *Exclude Code*: E1

338. Wolf, S.L., et al., *Reducing frailty and falls in older persons: an investigation of Tai Chi and computerized balance training. Atlanta FICSIT Group. Frailty and Injuries: Cooperative Studies of Intervention Techniques.* Journal of the American Geriatrics Society, 1996. **44**(5): p. 489-97. *Exclude Code*: E3

339. Woodall, W.G., et al., *Effect of emailed messages on return use of a nutrition education website and subsequent changes in dietary behavior.* Journal of Medical Internet Research, 2007. **9**(3): p. e27. *Exclude Code*: E3

340. Woods, K.F., et al., *Sickle cell disease telemedicine network for rural outreach.* Journal of Telemedicine & Telecare, 2000. **6**(5): p. 285-90. *Exclude Code*: E3

341. Woods, K.F., et al., *Sickle cell telemedicine and standard clinical encounters: a comparison of patient satisfaction.* Telemedicine Journal, 1999. **5**(4): p. 349-56. *Exclude Code*: E3

342. Wright, P., et al., *Text entry on handheld computers by older users.* Ergonomics, 2000. **43**(6): p. 702-16. *Exclude Code*: E3

343. Wright, P., S. Belt, and C. John, *Helping people assess the health risks from lifestyle choices: comparing a computer decision aid with customized printed alternative.* Communication & Medicine, 2004. **1**(2): p. 183-92. *Exclude Code*: E1

344. Wright, P., et al., *Enhancing an appointment diary on a pocket computer for use by people after brain injury.* International Journal of Rehabilitation Research, 2001. **24**(4): p. 299-308. *Exclude Code*: E

345. Wu, A.W., et al., *A randomized trial of the impact of a programmable medication reminder device on quality of life in patients with AIDS.* AIDS Patient

Appendix E. Excluded Studies List (continued)

Care & Stds, 2006. **20**(11): p. 773-81. *Exclude Code*: E3

346. Wu, S.-J., et al., *Integrating hospital medical care data with pharmaceutical education materials for diabetes self management.* Studies in Health Technology & Informatics, 2006. **122**: p. 660-3. *Exclude Code*: E

347. Wydra, E.W., *The effectiveness of a self-care management interactive multimedia module.* Oncology Nursing Forum, 2001. **28**(9): p. 1399-407. *Exclude Code*: E3

348. Wylie-Rosett, J., et al., *Computerized weight loss intervention optimizes staff time: the clinical and cost results of a controlled clinical trial conducted in a managed care setting.* Journal of the American Dietetic Association, 2001. **101**(10): p. 1155-62; quiz 1163-4. *Exclude Code*: E

349. Xavier, A., et al., *Cognition, interaction and ageing: an Internet workshops exploratory study.* Studies in Health Technology & Informatics, 2004. **103**: p. 289-95. *Exclude Code*: E3

350. Yager, J., *Clinical computing: monitoring patients with eating disorders by using e-mail as an adjunct to clinical activities.* Psychiatric Services, 2003. **54**(12): p. 1586-8. *Exclude Code*: E2

351. Yon, B.A., et al., *The use of a personal digital assistant for dietary self-monitoring does not improve the validity of self-reports of energy intake.* Journal of the American Dietetic Association, 2006. **106**(8): p. 1256-9. *Exclude Code*: E3

352. Young, R.J., et al., *Pro-active call center treatment support (PACCTS) to improve glucose control in type 2 diabetes: a randomized controlled trial.* Diabetes Care, 2005. **28**(2): p. 278-82. *Exclude Code*: E3

353. Young, T.L. and C. Ireson, *Effectiveness of school-based telehealth care in urban and rural elementary schools.* Pediatrics, 2003. **112**(5): p. 1088-94. *Exclude Code*: E3

354. Yousef, J. and A.N. Lars, *Validation of a real-time wireless telemedicine system, using bluetooth protocol and a mobile phone, for remote monitoring patient in medical practice.* European Journal of Medical Research, 2005. **10**(6): p. 254-62. *Exclude Code*: E3

355. Yueh, B., et al., *Randomized trial of amplification strategies.* Archives of Otolaryngology-Head & Neck Surgery, 2001. **127**(10): p. 1197-204. *Exclude Code*: E3

356. Zaylor, C., *Clinical outcomes in telepsychiatry.* Journal of Telemedicine & Telecare, 1999. **5 Suppl 1**: p. S59-60. *Exclude Code*: E3

357. Zaylor, C., P. Whitten, and C. Kingsley, *Telemedicine services to a county jail.* Journal of Telemedicine & Telecare, 2000. **6 Suppl 1**: p. S93-5. *Exclude Code*: E3

APPENDIX F. QUALITY ASSESSMENT CRITERIA

Study Design	United States Preventive Services Task Force quality rating criteria[1]
Systematic reviews and meta-analyses	• Comprehensiveness of sources considered/search strategy used • Standard appraisal of included studies • Validity of conclusions • Recency and relevance are especially important for systematic reviews
Case-control studies	• Accurate ascertainment of cases • Nonbiased selection of cases/controls with exclusion criteria applied equally to both • Response rate • Diagnostic testing procedures applied equally to each group • Measurement of exposure accurate and applied equally to each group • Appropriate attention to potential confounding variables
Randomized controlled trials (RCTs)	• Initial assembly of comparable groups employs adequate randomization, including first concealment and whether potential confounders were distributed equally among groups • Maintenance of comparable groups (includes attrition, crossovers, adherence, contamination) • Important differential loss to followup or overall high loss to followup • Measurements are equal, reliable, and valid (includes masking of outcome assessment) • Clear definition of the interventions • All important outcomes considered
Cohort studies	• Initial assembly of comparable groups employs consideration of potential confounders with either restriction or measurement for adjustment in the analysis; consideration of inception cohorts • Maintenance of comparable groups (includes attrition, crossovers, adherence, contamination) • Important differential loss to followup or overall high loss to followup • Measurements are equal, reliable, and valid (includes masking of outcome assessment) • Clear definition of the interventions • All important outcomes considered
Diagnostic accuracy studies	• Screening test relevant, available for primary care, adequately described • Study uses a credible reference standard, performed regardless of test results • Reference standard interpreted independently of screening test • Handles indeterminate result in a reasonable manner • Spectrum of patients included in study • Sample size • Administration of reliable screening test

APPENDIX F. QUALITY ASSESSMENT CRITERIA (continued)

CRD's Guidance for those Carrying Out or Commissioning Reviews

Quality criteria for assessment of experimental studies[2]

1. Was the assignment to the treatment groups really random?
    - Adequate approaches to sequence generation
        - Computer-generated random numbers
        - Random numbers tables
    - Inadequate approaches to sequence generation
        - Use of alternation, case record numbers, birth dates or week days
2. Was the treatment allocation concealed?
    - Adequate approaches to concealment of randomization
        - Centralized or pharmacy-controlled randomization
        - Serially-numbered identical containers
        - On-site computer based system with a randomization sequence that is not
    - readable until allocation
        - Other approaches with robust methods to prevent foreknowledge of the allocation
    - sequence to clinicians and patients
    - Inadequate approaches to concealment of randomization
        - Use of alternation, case record numbers, birth dates or week days
        - Open random numbers lists
        - Serially numbered envelopes (even sealed opaque envelopes can be subject to
    - manipulation)
3. Were the groups similar at baseline in terms of prognostic factors?
4. Were the eligibility criteria specified?
5. Were outcome assessors blinded to the treatment allocation?
6. Was the care provider blinded?
7. Was the patient blinded?
8. Were the point estimates and measure of variability presented for the primary outcome measure?
9. Did the analyses include an intention to treat analysis

Some quality criteria for assessment of observational studies

Cohort studies

- Is there sufficient description of the groups and the distribution of prognostic factors?
- Are the groups assembled at a similar point in their disease progression?
- Is the intervention/treatment reliably ascertained?
- Were the groups comparable on all important confounding factors?
- Was there adequate adjustment for the effects of these confounding variables?
- Was a dose-response relationship between intervention and outcome demonstrated?
- Was outcome assessment blind to exposure status?
- Was follow-up long enough for the outcomes to occur?
- What proportion of the cohort was followed-up?
- Were drop-out rates and reasons for drop-out similar across intervention and unexposed groups?

Case-control studies

- Is the case definition explicit?
- Has the disease state of the cases been reliably assessed and validated?
- Were the controls randomly selected from the source of population of the cases?
- How comparable are the cases and controls with respect to potential confounding factors?
- Were interventions and other exposures assessed in the same way for cases and controls?
- How was the response rate defined?
- Were the non-response rates and reasons for non-response the same in both groups?

APPENDIX F. QUALITY ASSESSMENT CRITERIA (continued)

- Is it possible that over-matching has occurred in that cases and controls were matched on factors related to exposure?
- Was an appropriate statistical analysis used (matched or unmatched)?

Case series

- Is the study based on a representative sample selected from a relevant population?
- Are the criteria for inclusion explicit?
- Did all individuals enter the survey at a similar point in their disease progression?
- Was follow-up long enough for important events to occur?
- Were outcomes assessed using objective criteria or was blinding used?
- If comparisons of sub-series are being made, was there sufficient description of the series and the distribution of prognostic factors?

Critical Appraisal Skills Programme (CASP)[3]
Making sense of evidence, 10 questions to help you make sense of qualitative research
Currently awaiting approval to re-publish criteria here.

References

1. Harris RP, Hefland M, Woolf SH, et al. Methods Work Group, Third US Preventive Services Task Force. Current methods of the US Preventive Services Task Force: a review of the process. *American Journal of Preventive Medicine.* 2001;20(3 Suppl):21-35.
2. Khan K, ter Riet G, Popay J, Nixon J, Kleijnen J. *Undertaking Systematic Reviews of Research on Effectiveness: Stage II: Conducting the Review.* York: University of York; 2001.
3. Critical Appraisal Skills Programme. 10 questions to help you make sense of qualitative research: Milton Keynes Primary Care Trust; 2002.

APPENDIX G. PEER REVIEWERS

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Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Albisser	2001	Mixed model HMO with a membership of 275,000	Primary and/or subspecialty care physicians all generally in a mixed model HMO with a membership of 275,000	Homes	Quasi-experimental, longitudinal observation study design	N = 978 E-alone: 151 E+SMT: 589 E+caSC: 238) DCCT initiative: 101

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Albisser	2001	NR	12 months	*Enrollment in the HMO-sponsored disease management programs.	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Albisser	2001	NR	DIABETES	NR	NR	Mean Age: 58 Range: 19-81

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Albisser	2001	NR	NR	NR	NR	Male body weight at baseline: 63-136kg Female body weight at baseline: 56-131kg.

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Albisser	2001	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Albisser	2001	Each patient received and continued to receive standardized diabetes education. The second initiative sought to augment the education component by adding ongoing, self-management training. The third initiative added computer-assisted self-care to the same education component.	Group 1: (E-alone) Education alone Group 2: (E+SMT) education supplemented with self-management training Group 3: (E+caSC) education supplemented with computer-assisted self-care Group 4: (Control) (DCCT initiative) Glycolated Hemoglobin A1c values in Diabetes patients.	Touch-tone telephone (recorded to a computer)	To record data as reported by patients, pass this information through an algorithm, and pass intervention instructions to the patient.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Albisser	2001	One case worker was dedicated to the computer-assisted self-care initiative, which was under the direction of an endocrinologist to whole the difficult-to-manage patients were referred.	Received standardized diabetes education	NR	**HbA1c** Group 2 (E+SMT). Significant improvement from baseline (8.8 ± 1.5%) to 8.7 ± 1.4% at 3 months ($p < 0.01$). Significant improvement from 3 months to 8.9 ± 1.8% at 12 months ($p < 0.01$). Group 3 (E+caSM): had starting values of HBA1c of 9.5 ± 1.7% and fell significantly ($p < 0.01$) at 3 months to 8.6 ± 1.6%, then declined slightly to 8.4 ± 1.6% at 12 months ($p < 0.01$). Group 4, DCCT initiative: significant improvement from baseline (9.2 ± 1.43%) to 7.3 ± 1.4% at 3 months ($p < 0.01$). Significant improvement from 3 months to 6.7 ± 0.8% at 12 months ($p < 0.01$). **Body weight** Group 2 (E+SMT) showed a significant ($p < 0.01$) change from body weight at baseline (82 ± 15.9 kg) over the next 12 months to (94 ± 18.2 kg).

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Albisser	2001	NR	Cost of care Per member per month charges E-Alone: no additional charges E+SMT: $18 E+caSM: $1.31 DCCT: $11.88	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Albisser	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Albisser	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Albisser	2001	NR	NR	NR

Author	Year	Adverse Effects	Other
Albisser	2001	Body weight gain occurred in both the DCCT and the education and self-management training initiatives.	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
An	2006	E-mail college students	NA	WWW	Pilot Study and Cohort Study (experimental arm of RCT)	Pilot: 47 Experimental arm of RCT: 257 Studied for technology adherence (RCT): 517

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
An	2006	2004-2005	5 mos	*Students completing survey after an email recruitment *Smoke in the past 30 days *Age 18-24 *In school for next 2 semesters	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
An	2006	NR	NR	NR	Pilot: 27.7% RCT: 29.6%	Mean Pilot: 20.1 RCT: 20.1

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
An	2006	NR	NR	All in college	NA	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
An	2006	NR	NR	NR	NR	RealU

Appendix H. Data Table

Author	Year	Intervention*			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
An	2006	Pilot: subjects send weekly email asking to track their smoking, take an interactive quiz giving tailored feedback, and Question of the Week (answers posted to discussion board), tobacco topic only; RealU modifications to Pilot: Content on broad topics related to college life rather than only tobacco, users guided weekly to complete Tracker, Quiz, Question of the Week emailed, subjects encouraged to set goals weekly, peer coaches sent emails proactively to those not completing weekly tasks.	Pilot study and RealU experimental arm (not reporting on control group, or outcomes)	Tailored interactive website with email reminders and questions	NR

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
An	2006	NR	NR	NR	NA

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
An	2006	NA	NA	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
An	2006	Website Participation Pilot Study Week 1: 53% Week 2: 21% Week 5: 26% RealU experimental arm Mean: 95% over 20 weeks Range: 89%-98%)	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
An	2006	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
An	2006	NR	NR	NR

Author	Year	Adverse Effects	Other
An	2006	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Andersson	2005	Press release, articles, advertisements	NR	Homes	RCT	N = 85 Grp 1:36 Grp 2: 49 Follow up groups Grp 1: 36 Grp 2: 35

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Andersson	2005	NR	6 months	*Probability of .55 or more for diagnosis of major depression on CIDI-SFt *Total score on the MADRS-S between 15-30, including a score of less than 4 on item 9 (zest for life) *No psychosis (based on meds status) *No bipolar disorder *No antidepressant meds begun or changed during the last month *No history of cognitive behavioral therapy for depression *Age 18 or older *Prepared to work on self-help program for several hours/week *No travel abroad or major surgery planned *Completion of pre-treatment assessment	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Andersson	2005	NR	DEPRESSION	NR	Grp 1: 22% Grp 2: 28% Withdrawal: 28%	Mean (SD) Grp 1: 36.4 (± 11.5) Grp 2: 36.3 (± 9.9) Grp 3: 35.6 (±10.3)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Andersson	2005	NR	NR	Education university level Grp 1: 64% Grp 2: 61% Grp 3: 50%	45% City dwellers	Fewer than 3 self reported episodes of depression Grp 1: 33% Grp 2: 39% Withdrawal: 28% No previous Treatment for depression Grp 1: 44% Grp 2: 39% Grp 3: 44% Current antidepressant medication Grp 1: 22% Grp 2: 37% Grp 3: 28% Baseline BDI (SD) Grp 1: 20.5 (±6.7) Grp 2: 20.9 (±8.5) Grp 3: 21.6 (±7.2) Baseline QoLi score (SD) Grp 1: -0.1 (±1.1) Grp 2: -0.2 (±1.6) Grp 3: -0.2 (±1.1)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Andersson	2005	NR	NR	Swedish	NR	Internet Based Therapy

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Andersson	2005	Recruiting ads sent those interested to a website. To sign up a computer administered CIDI-SF, MADRS-S and gathered background information. Randomized participants were assigned groups and sent an email with log-in and user name. 89 pages of text as 5 modules were presented. Each module ended with a quiz. Therapist received response and gave email feedback w/i 24h. Participants could read website or download pdfs. 8 weeks was advised for completion. Discussion groups offered separately and monitored. 7 days had to have passed between log ins so depression levels could be monitored.	Group 1: Treatment Group Group 2: Control Group Group 3: Withdrawal Group	Website	Administer psychiatric tests, offer discussion groups, offer therapist feedback.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Andersson	2005	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Andersson	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Andersson	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Andersson	2005	NR	BDI (0-63 range) Pre, Post, pre-post Difference Grp 1: 20.5 (6.7 s.d.), 12.2 (6.8), 8.3 (5.7 to 10.9), Grp 2: 20.9 (8.5), 19.5 (8.1), 1.4 (-1.1 to 3.9) Follow up, Pre to follow up difference Grp 1: n36 - 13.1 (9.1), 7.8 (4.6 to 11.3) Grp 2: n: 35 - 13.1 (7.6), 7.4 (4.0 to 10.7) MADRS-S (range 0-54) Pre, Post, pre-post Difference Grp 1: 20.1 (5.7), 12.7 (8.3), 5.5 (4.6 to 10.1) Grp 2: 21.6 (7.2), 19.0 (7.6), 2.6 (-0.4 to 4.8) Follow up, Pre to follow up difference Grp 1: 14.6 (9.2), 6.3 (3.2 to 9.3) Grp 2: 14.5 (9.3), 6.8 (3.9 to 9.7)	Follow up, Pre to follow up difference

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Andersson	2005	Pre-Treatment, Post treatment, Pre-Post difference Grp 1: -0.1 (1.1), 0.5 (1.6), 0.6 (0.2 to 1.1) Grp 2: -0.2 (1.6), 0.0 (1.5), 0.2 (-0.2 to 0.6) Follow Up and Pre-treatment to follow up difference Grp 1: 0.7(1.7), 0.9 (0.4 to 1.4) Grp 2: 0.9 (1.8), 1.0 (0.5 to 1.4)	Group 1: Treatment Modules and discussion group Group 2: Discussion group only	N = 32

Author	Year	Adverse Effects	Other
Andersson	2005	Those who were not chosen for the treatment group received no help. After the study they were given access to the treatment modules.	Limitations include no formal diagnosis of depression made by clinician, those on med regimens were not excluded, short study

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Andersson	2003	NR	NA	Homes	RCT	N = 44 (+8 were recruited as controls to receive similar treatment outside the study) Grp 1 (Self help+ telephone): 24 Grp 2 (Self-help only): 20

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Andersson	2003	NR	6 weeks	*Pts need to have access to a computer, modem and an internet connection.	Pts with specific cluster headache or sign indicating serious physical or psychological disorders and pts with headache less than 6 months were excluded. Pts with Horton headache, whiplash, head trauma, fibromyalgia, major depression, tinnitus, or other medically unclear neurologic symptoms were excluded. Pts who just submitted the interest form and did not return to the site (or who were not able to call or reach via email) were also excluded.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Andersson	2003	NR	HEADACHE	NR	N = 8 (18%) Grp 1: N = 4 (17%) Grp 2: N = 4 (20%)	Mean (Range) Grp 1: 36.2 (18-54) Grp 2: 44.9 (25-59) Total: 40.3 (18-59)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Andersson	2003	NR	NR	NR	NR	Probable diagnosis Migrane Total: 20 Grp 1: 12 Grp 2: 8 Tension type headache total: 15 Grp 1: 9 Grp 2: 6 Tension type headache and migraine total: 5 Grp 1: 2 Grp 2: 3 Nonspecific total: 4 Grp 1: 1 Grp 2: 3 Duration of headache 0.5-1 yr total; 2 Grp 1: 0 Grp 2: 2 1-5 yr total: 14 Grp 1: 10 Grp 2: 4 6-10 yr total: 5 Grp 1: 3

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Andersson	2003	NR	NR	NR	NR	Internet based treatment with telephone contact

Appendix H. Data Table

			Intervention*		
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Andersson	2003	Therapist initiated telephone contact in the treatment of headache via the internet	The program delivered in 6 weekly treatment modules, information regarding headache and role of psychological factors provided, applied relaxation delivered in separate parts, Rationales, common questions and examples of potential problems added, Relaxation program included various aspects such as tense relax, relax only, cue controlled breathing, rapid relaxation and application training. Weekly report cards for the exercise, problem solving section with pts able to identify, cope with problems including headache related ones. Cognitive behavioral techniques for handling negative thoughts and core beliefs added with part of these being optional. The self help group had all of the above,	Computer	Information, questions and answers, email, learn relaxation techniques with downloadable sound files and online presentation of exercises.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Andersson	2003	NR	NR	NR	Grp 1 vs. Grp 2 No of subjects- 17 vs. 13 Headache index Pretreatment (pre)- 4.2 (3.7) vs. 3.2 (2.6) Post treatment (post)- 4.0(4.9) vs. 3.1 (2.4) Headache days Pre- 8.4 (4.4) vs. 7.2 (2.8) Post- 8.5 (4.1) vs. 6.4 (3.8) Peak headache Pre- 2.4 (0.6) vs. 2.4(0.8) Post- 2.3 (1.1) vs. 2.7(0.7) Rated intensity Pre- 2.1 (0.7) vs. 2.0(0.8) Post- 2.0(1.1) vs. 2.3 (0.8) Duration Pre- 9.8(6.3) vs. 7.1 (4.1) Post- 7.0(6.7) vs. 9.5(5.4)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Andersson	2003	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Andersson	2003	NR	NR	Author mentions that most subjects were pleased with the treatment and lack of time was the most common reason for not having practiced to the extent that they wished

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Andersson	2003	NR	Grp 1 vs. grp 2 No of subjects- 15 vs. 9 Questionnaires Hospital and Anxiety depression scale- depression subscale pre- 5.7(4.3) vs. 6.8 (2.5) post- 4.5 (3.9) vs. 4.9(3.3) Hospital and anxiety depression scale- anxiety subscale pre- 8.7(4.8) vs. 7.7 (4.5) posy- 7.9(5.1) vs. 7.0 (4.8) Headache disability inventory pre- 46.6(18.4) vs. 48.4 (13.3) post- 33.6 (16.4) vs. 34.4 (14.8) perceived stress scale pre- 31.3 (7.8) vs. 28.3(3.9) post- 25.7(2.0) vs. 24.7(7.3)	Coping strategies questionnaire Grp 1 vs. Grp 2 No of subjects- 15 vs. 9 Diverting attention Pre- 7.4 (3.6) vs. 7.6 (4.6) Post- 8.6(6.7) vs. 9.6(3.5) Reinterpreting pain sensations Pre- 3.8(5.1) vs. 2.1 (2.6) post- 6.1 (6.1) vs. 4.6 (4.6) Coping self statements Pre- 17.7 (6.4) vs. 16.3 (5.2) Post- 14.7 (5.2) vs. 18.7 (5.5) Ignore pain sensations Pre- 16.9(5.1) vs. 17.1 (3.3) Post- 13.7(3.3) vs. 18.2 (7.0) Praying and hoping Pre- 9.1 (5.2) vs. 13.9(9.2) Post- 8.8 (5.5) vs. 15.4 (10.9) Catastrophizing Pre- 17.1 (7.5) vs. 17.9 (8.8) Post- 11.1 (8.5) vs. 16.0 (8.3) Increased behavioral activities Pre- 11.3 (6.5) vs. 12.0(6.6) Post- 10.4(5.1) vs. 13.2 (7.4)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Andersson	2003	NR	NR	Dropout rate Grp 1: 29% Grp 2: 35% Difference was not statistically significant N= 44 Grp 1: 24 Completed treatment and registrations: 17 Completed treatment and questionnaires: 15 Failed to respond after exercise modules: 7 Grp 2: 20 Completed treatment and registrations: 13 Completed treatment and questionnaires: 9 Failed to respond after exercise modules: 7

Author	Year	Adverse Effects	Other
Andersson	2003	NR	Significant interaction was found for duration F (1, 28) =7.16, p= 0.012 Post hoc tests showed that the grp 1 had significant decreased duration Number of subjects reaching a 50% decrease in the headache index grp 1 vs. grp2= 29 % vs. 23% the difference was not statistically significant (chi square test) Significant main effect was found on HADS depression subscale F (1,22)=4.53, p=0.045 Disability a/w headache , as measured by HDI decreased significantly for both groups with a main effect of time F(1, 22)= 26.49, p=0.0001 PSS showed main effect of time F (1,22) =7.1, p=0.014 Significant main effect of time was found for subscale reinterpreting pain sensations F (1,22) = 11.2, p=0.029 significant reductions found for catatrophizing with amin effect of time

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Andersson	2006	Newspaper articles in national and regional papers, notices in health magazines, and link on homepage of Swedish National Anxiety Association	Sweden	Homes	RCT	N=64

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Andersson	2006	NR	1 year	*Fulfill the DSM-4 criteria for social phobia according to the SPSQ *Be afraid of giving a public speech *Have a total score of less than 31 on MADRS-S depression scale and less than 4 on the suicide item of this scale *Undergo no other psychological treatment for the duration of the study and have no history of earlier CBT *If prescribed drugs for anxiety/depression, dosage had to be constant for 3 months before the start of the treatment and the patient had to agree to keep the dosage constant throughout the study *Be at least 18 years or older *Attend an interview that used the SCID *Social phobia had to be the most severe disorder present in the patient *Not a substance abuser	Any criteria against the Inclusion criteria	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Andersson	2006	NR	SOCIAL PHOBIA	NR	IVR: 44% CG: 53% Total: 48.4%	IVR: 36.4 (±9.4) Range: 21-53 CG: 38.2 (±11.0) Range: 18-67 Total: 37.3 (±10.2) Range: 18-67

Appendix H. Data Table

		Patient Characteristics*				
Author	Year	Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Andersson	2006	NR	NR	Highest educational level (N) Nine-year compulsory school, % IVR: 0, 0 CG: 2, 6.3 Total: 2, 3.1 Secondary school (not completed), % IVR: 1, 3.1 CG: 1, 3.1 Total: 2, 3.1 Vocational school (completed), % IVR: 1, 3.1 CG: 4, 12.5 Total: 5, 7.8 Secondary school (completed), % IVR: 8, 25.0 CG: 7, 21.9 Total: 15, 23.4 College/university (not completed), % IVR: 7, 21.9 CG: 5, 15.6 Total: 12, 18.8	NR	EMPLOYMENT N, % Full time IVR: 21, 65.6 CG: 21, 65.6 Total: 42, 65.6 Part time IVR: 1, 3.1 CG: 3, 9.4 Total: 4, 6.3 Unemployed IVR: 2, 6.3 CG: 2, 6.3 Total: 4, 6.3 Student IVR: 8, 25 CG: 4, 12.5 Total: 12, 188 Registered sick IVR: 0, 0 CG: 0, 0 Total: 0, 0 Disability pension IVR: 0, 0 CG: 1, 3.1 Total: 1, 1.6 Retired

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Andersson	2006	NR	NR	Swedish	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Andersson	2006	Self-help manual that was adapted for use via the internet; divided into 9 modules	IVR: 32 CG: 32 (wait-listed, and received treatment after the IVR group did)	Home computer with access to the internet-access a self-help manual divided into modules	Education, feedback, motivation, encouragement, goal-setting, behavioral experiments, self-focus, safety behaviors

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Andersson	2006	NR	NR	Exposure sessions: two separate 3-hr group exposure sessions facilitated by therapists	Outcome Measures at Each Assessment Point Pretreatment, Post treatment 1 year F/U Effect Size B = btwn grp effect size at post treatment W=w/in grp effect size for treatment grp W/FU=1 yr F/u w/in grp effect size for total grp Liebowitz Social Anxiety Scale IVR: 68.5 (+22.5), 45.6 (+25.1) 39.0 (+21.2) CG: 66.7 (+20.9), 62.8 (+21.7) 46.5 (+21.5) B: 0.73 W: 0.91 W/FU: 1.29 Social Phobia Scale IVR: 35.8 (+16.7), 20.7 (+14.8) 17.8 (+11.6) CG: 32.5 (+13.1), 31.0 (+15.9) 24.2 (+11.8) B: 0.67 W: 0.96 W/FU: 1.12 Social Interaction Anxiety Scale

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Andersson	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Andersson	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Andersson	2006	NR	NR	Data for the Proportion of Participants Reaching the Criteria of Clinical Significant Improvement as Defined by Jacobson and Truax (1991) %, N Post treatment 1 yr F/u Liebowitz Social Anxiety Scale IVR: 43.3, 13 57.1, 28 CG: 18.7, 6 Social Phobia Scale IVR: 56.3, 18 53.0, 26 CG: 25.0, 8 Social Interaction Anxiety Scale IVR: 60.0, 18 46.9, 23 CG: 37.5, 12 Social Phobia Screening Questionnaire IVR: 73.0, 2 69.4, 34 CG: 15.6, 5 Personal Report of Confidence as a Speaker

Author	Year	Quality of Life	Support	Withdrawals
Andersson	2006	QoL Inventory Pretreatment, Post treatment 1 yr F/u B = btwn grp effect size at post treatment W=w/in grp effect size for treatment grp W/FU=1 yr F/u w/in grp effect size for total grp IVR: 1.5 (±1.1), 2.2 (±1.2) 2.2 (±2.1) CG: 1.1 (±1.4), 1.1 (±1.7) 1.6 (±2.4) B: 0.83 W: 0.61 W/FU: 0.43 Data for the Proportion of Participants Reaching the Criteria of Clinical Significant Improvement as Defined by Jacobson and Truax (1991) %, N Post treatment 1 yr F/u QoL Inventory IVR: 66.7, 20 53.1, 26 CG: 34.4, 11	NR	2 people dropped out during the course of the study 12 failed to finish all weekly modules 2 pts did not return their questionnaires

Author	Year	Adverse Effects	Other
Andersson	2006	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Andrade	2005	NR	The John Hopkins Moore HIV clinic in Baltimore	disease management assistance system device	RCT	N= 64 Intervention grp (IG): 32 Control group (CG): 32

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Andrade	2005	1999 to 2001	24 weeks	*Age ≥18 yrs *Able to self medicate *Currently receiving care at John Hopkins Moore clinic *Subjects were either previously treatment naïve and initiating HAART for the first time or antiretroviral experienced and switching HAART regimen *In the latter group, only those who received ≤ 3 HAART regimens before study enrollment included	Inability to self medicate; presence of severe dementia; and institutionalization.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Andrade	2005	NR	HIV	NR	IG: 16 (55) CG: 18 (62)	IG: 38 (±7) CG: 38 (±7)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Andrade	2005	Black IG: 26 (90) CG: 25 (86)	NR	NR	NR	CD4 cell counts, IG vs. CG: 235 (±141) vs. 213 (±245) Plasma HIV RNA load, IG vs. CG: 4.4 (±0.2) vs. 4.3 (±0.2) Memory impaired IG vs. CG: 14 (48%) vs. 17 (59%) Neuropsychological test scores, details on AIDS, Drug use in the past 4 days, Methadone treatment, HAART status at study entry, CES-D analysis given, not listed here. (No differences between the two groups were statistically significant)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Andrade	2005	NR	NR	NR	NR	The disease management assistance system (DMAS)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Andrade	2005	The DMAS is a portable battery powered electronic device that uses a digital signal processor to produce a timed, programmed voice message that prompts subjects to take their antiretrovirals. When a subject pushes a response button, the data can be uploaded and printed. The device can store up to 3 months of messages for up to 25 different medications.	All subjects attended an individualized, 30 min adherence counseling session each month and received adherence feedback from a standardized transcript that provided general education about barriers to adherence, hazards of non adherence and their prescribed HAART regimen. Mean adherence scores obtained from eDEM caps. IG group- provided with DMAS programmed with HAART regimen data to provide verbal reminders at dosing time. When a subject pushes a response button, the data can be uploaded and printed. CG- received only adherence counseling.	Battery powered electronic device	Voice reminders, storage of dosage times and dates.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Andrade	2005	NR	Subjects trained on usage of eDEM caps	NR	Plasma HIV RNA loads Week 12 IG vs. CG: Undetectable plasma loads: 38% vs. 14%, p=0.014 Week 24 IG vs. CG: Undetectable loads: 34% vs. 38%, p=0.49 Week 12 IG vs. CG: Decrease in load of at least 1 $\log_{10}$ copies/mm3: 55% vs. 41%, p= 0.098 Week 24 IG vs. CG: Decrease in load of at least 1 $\log_{10}$ copies/mm3: 72% vs. 41%, p=0.02 Overall mean reductions IG vs. CG: -2.10 vs. -0.98, p=0.02 Mean CD4 cell counts Week 12 IG vs. CG: 337 ($\pm$183) vs. 258 ($\pm$184), p=0.14 Week 24 IG vs. CG: 301 ($\pm$172) vs. 250 ($\pm$172), p= 0.28 Overall increase IG vs. CG: 68 vs. 45 , p=0.62

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Andrade	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Andrade	2005	Week 20: 88% of pts in IG reported that they used the device some or all of the time to manage HAART use. 1 subject reported never having used the device.	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Andrade	2005	NR	NR	Mean percentage adherence (SE) IG vs. CG Week 4: 76 (5.7) vs. 69 (5.2) Week 8: 75 (6.3) vs. 68 (6.1) Week 12: 87 (4.9) vs. 64 (6.3) Week 16: 83 (5.9) vs. 62 (7.4) Week 20: 80 (5.8) vs. 61(7.3) Week 24: 80 (6.3) vs. 64 (8.2) Overall: 80 (2.3) vs. 65(2.7) Mean adherence percentage (SE) impaired memory (IG : CG) vs. intact memory (IG : CG) Week 4: 70 (8.8) : 63(6.8) vs. 82 (7.0) : 77 (7.7) Week 8: 75(8.8) : 62 (8.4) vs. 70 (9.4) : 76(8.5) Week 12: 81 (7.3) : 56 (8.4) vs. 88 (7.7) : 77 (8.1) Week 16: 72 (9.3) : 55 (9.8) vs. 91 (6.2) : 76(9.6) Week 20: 73 (7.5) : 49(8.7) vs. 86 (8.9) : 80 (9.3) Week 24: 79(10.8) : 56 (10.6) vs. 82 (8.0) : 76 (12.5) Overall: 77 (3.4) : 57(3.5) vs. 83(3.3) : 77 (3.5) Among memory impaired subjects, scores were statistically significant and greater in the IG (p=0.001)

Author	Year	Quality of Life	Support	Withdrawals
Andrade	2005	NR	NR	Intervention group: 1 died, 1 lost to follow up, 29 included in ITT analysis Control group: 3 lost to follow up, 29 included in ITT analysis

Author	Year	Adverse Effects	Other
Andrade	2005	NR	Virological and immune responses to medication between memory impaired and memory intact given, not listed here (NS).

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Andrade	2001	Johns Hopkins	NR	Home/with patient	RCT	N=50

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Andrade	2001	6 months	NR	*Patients who were starting highly active antiretroviral therapy for the first time or who had failed it once or twice in the past	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Andrade	2001	NR	HIV/AIDS	NR	NR	NR

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Andrade	2001	American	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Andrade	2001	NR	NR	English	NR	Disease Management Assistance System (DMAS)

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Andrade	2001	The DMAS emits a beeping sound when patients are supposed to take their medication. They then press "play" button on the DMAS and the device plays a verbal medication reminder. Once the patients have taken their medication they press the "yes" button and the device records the date and time of their medication.	IVR Grp: 50 CG: 50	Pager like	Medication reminder, adherence recorder

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Andrade	2001	NR	NR	Monthly antiretroviral education and counseling	Viral loads (Mean) IVR: 1.5 log decrease CG: 0.5 log decrease CD4 cell count (Mean) IVR: 50 CD4 cell increase CG: 10 CD4 cell increase

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Andrade	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Andrade	2001	Preliminary data analysis of the first 19 patients (of 86, 52 who were enrolled through June 2001) showed a mean adherence score of 92% for IVR and 83 for CG. Memory-impaired subjects in IVR group had adherence of 90% vs. 80% in CG.	Reported that younger employees tended to use the e-mail as a communication tool for health counseling more than older employees, and there are different levels of skill and acceptability for e-mail among employees in administrative and manufacturing divisions	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Andrade	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Andrade	2001	NR	NR	NR

Author	Year	Adverse Effects	Other
Andrade	2001	NR	All pts were also given EDEM caps which recorded the time and date pts took medications, to help verify the accuracy of the DMAS recording system

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Andrewes	1996	NR	General teaching hospital (Royl Melbourne hospital) and a private hospital (Melbourne clinic)	Homes	Pre- post	N= 54 Grp 1 (DIET): 27 Grp 2 (CARL): 27
Anhoj	2004	WWW	NR	WWW	Cohort (survey, interview)	User online survey: 85 Provider mail survey: 131 Interview: 15

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Andrewes	1996	NR	NA	NR	NR	NR
Anhoj	2004	2002	NA	*Survey responders	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Andrewes	1996	NR	Yes- DSM-III-R diagnosed eating disorders (anorexia nervosa and bulimia)	NR	NR	Age in years - Mean (SD) DIET vs. Control: 22.4 (±5.6) vs. 21.6 (±5.0)
Anhoj	2004	NR	ASTHMA	NR	29% (N = 17/59)	Mean Male: 41 Female: 36

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Andrewes	1996	NR	NR	NR	NR	NR
Anhoj	2004	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Andrewes	1996	NR	NR	NR	NR	DIET
Anhoj	2004	NR	NR	NR	NR	LinkMedica

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Andrewes	1996	Health education package containing information aimed at educating patients on issues regarding the dangers and myths surrounding certain methods of dieting and the underlying mechanism which have been found to maintain eating disorders	Grp 1 (DIET): Aim of the program is to educate about anorexia and bulimia and to debunk some of the myths concerning weight control. Areas covered were laxative inefficiency, adverse effects of self induced vomiting, rebound effect of diuretics, effects on the brain due to starvation, natural metabolic rate drops, myths surrounding weight loss and exercise, weight reduction and self esteem, media influence, challenging aspects of puberty and family influences. Grp 2 (CARL): Subjects interacted with the CARL program by typing in responses to questions. on directional counseling stimulation.	Computers	Health education, questions and answers (typing in responses)
Anhoj	2004	Website with tailored feedback and support	NA	WWW	Web-based diary, graphic report of peak flow, medication management feedback, knowledge center, support group, ask the expert

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Andrewes	1996	NR	NR	NR	NR
Anhoj	2004	NR	NR	NR	NA

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Andrewes	1996	NR	NR	Eating disorder knowledge questionnaire Grp 1 vs. Grp 2 mean (SD) Pre intervention: 30.1 (±8.0) vs. 34.4 (±8.0) Post intervention: 44.4 (±10.8) vs. 37.1 (±7.9) F (1, 50)= 50.3, p ≤ 0.001
Anhoj	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Andrewes	1996	NR	Ease of use, Mean (SD) Grp 1: 8.5 (±2.6) to 9.8 (±0.6) Difficult to operate : Grp 2: 4.6 (±2.6)	Mean (SD) Usefulness and relevance Grp1: 7.1 (±2.9) to 8.6 (±2.0) Wanting to receive more info 6.3 (+2.5) to 7.9 (±2.2) Grp 2: Not useful: 2.0 (±1.5) Not enjoyable: 4.1 (±3.0)
Anhoj	2004	NR	NR	Users rated quality of website functions, but combined patients and providers and survey instrument very poor

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Andrewes	1996	Eating disorder attitude questionnaire, Mean (SD) Grp 1 vs. Grp 2 Pre-intervention: 149 (±42.7) vs. 148.6 (±40.4) Post-intervention: 166.9 (±49.0) vs. 149.5 (±41.9) F (1,50) = 6.8, p=0.01	NR	NR
Anhoj	2004	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Andrewes	1996	NR	NR	NR
Anhoj	2004	NR	NR	NR

Author	Year	Adverse Effects	Other
Andrewes	1996	NR	NR
Anhoj	2004	NR	Qualitative description of users, categorized as 'controllers' or 'disease neglecters'; patient users felt "doctors ignorant"

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Araki	2006	Manufacturing Plant	NR	Manufacturing plant	RCT	N=36
Armstrong	2005	Patients at Cancer Risk Evaluation Program at U of Pennsylvania were screened for inclusion	NR	NR	Double blind RCT	N = 27 Grp 1: 13 Grp 2: 14

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Araki	2006	2 months	NR	*Employed at a manufacturing plant in Tokyo *Had health data (for the annual checkup) available as of May 20th *Abnormal levels of gamma-GTP	Requiring immediate medical attention, past history of hepatic dysfunction, those who drank less than once a month	NR
Armstrong	2005	2000-2003	6 weeks	*Have undergone oophorectomy or mastectomy	No significant residual breast or ovarian cancer risk, those with ovarian cancer or metastatic breast cancer	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Araki	2006	NR	ALCOHOLISM	NR	100%	Mean Age (SD) Grp 1: 43.4 (±8.1) Grp 2: 44.3 (±7.2) Grp 3: 43.8 (±7.3)
Armstrong	2005	NR	CANCER Risk, BRCA 1/2 Mutations	NR	N = 0%	Mean (Range) Total: 43 (26-59) Grp 1: 45 (30-59) Grp 2: 42 (26-54)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Araki	2006	Japanese	NR	NR	NR	NR
Armstrong	2005	Caucasian: 100%	NR	Overall 74% College educated Grp 1: 70% Grp 2: 85%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Araki	2006	NR	NR	Japanese	Based on the Knowledge-Attitude-Behavior (KAB) model, precise knowledge on appropriate drinking behaviors would likely lead to a favorable attitude to adopting an appropriate behavior, and in turn it would result in an actual behavior	NR
Armstrong	2005	NR	NR	English	NR	Tailored Decision Support System

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Araki	2006	E-mail counseling or face-to-face counseling that included short lectures on potential health risks of excess alcohol consumption and appropriate drinking behaviors. Also included goal setting.	Grp 1 (Face-to-Face): 12 Grp 2 (Email): 12 Grp 3 (CG): 12	Computer/email, brochure, live counselor	Email was used to encourage cessation of heavy drinking and often used attached brochures Face-to-face counseling employed real counselors and used brochures as well
Armstrong	2005	Provides individualized survival and cancer incidence curves specific to outcomes of alternative management strategies	Group 1: Intervention Group 2: Control	Computer was used to create curves, unclear as to patient interaction	Offer decision strategies for dealing with BRCA 1/2

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Araki	2006	NR	NR	NR	Baseline Reported alcohol consumption (g Ethanol/day) Grp 1: 24.8 (±15.7) Grp 2: 35.0 (±18.6) Grp 3: 19.8 (±17.9) p=0.1074 Serum gamma-GTP Grp 1: 140.7 (±63.6) Grp 2: 138.1 (±65.4) Grp 3: 117.4 (±40.2) p=0.5613 After IVR Grp 1: 116.3 p=0.05 Grp 2&3: not significant change
Armstrong	2005	NR	1:1 meeting with research coordinator, review of educational booklet	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Araki	2006	NR	NR	NR
Armstrong	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Araki	2006	NR	Reported that younger employees tended to use the e-mail as a communication tool for health counseling more than older employees, and there are different levels of skill and acceptability for e-mail among employees in administrative and manufacturing divisions	NR
Armstrong	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Araki	2006	NR	NR	Baseline/After IVR Knowledge: Grp 1: 3.2 (±1.7)/5.9 p<0.001 Grp 2: 4.2 (±1.1)/4.8 Grp 3: 3.6 (±2.2)/NS Baseline p=0.3654 Attitude: Grp 1: 5.6 (±2.2)/7.1 p<0.05 Grp 2: 5.2 (±2.5)/NS Grp 3: 6.6 (±2.1)/NS Baseline p=0.3521 Behavior: *see physiologic
Armstrong	2005	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Araki	2006	NR	NR	NR
Armstrong	2005	NR	NR	5-3 unable to travel or commit to see research coordinator, one underwent prophylactic mastectomy and oophorecotmy, 1 unreachable for follow up

Author	Year	Adverse Effects	Other
Araki	2006	NR	NR
Armstrong	2005	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Artinian	2003	Urban, Detroit VA medical center	Urban CHF clinic	Homes	RCT	N=18 Grp 1 (Usual care) :9 Grp 2 (Usual care+ compliance device) : 9

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Artinian	2003	NR	3 months	*Age equal to or more than 18 yrs *Symptomatic left ventricular dysfunction *Ejection fraction of 40% or less *Ownership or rental home with a telephone *Ability to read and understand English *Plans to remain in the city for the study period	H/o dementia, mental illness, symptomatic infectious disease or advanced liver disease, self reported substance abuse, hemodialysis, coronary angioplasty within last 60 days or coronary artery bypass graft surgery within last 90 days, inability to participate in 6 min walk test or terminal stages of cancer	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Artinian	2003	NR	CHF	NR	N = 17 (94%)	Mean (SD): 68 (±11 yrs)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Artinian	2003	Black: 65% (11 pts) Caucasian: 35% (6 pts)	< $ 10,000: 2 pts (13%) $10,000-19,000: 8 pts (53%) $ 20,000-29,999: 4 pts (27%) >$ 40,000: 1 pt (6%) *3 pts chose not to disclose their income	Mean educational level: 13 yrs Range: 8-19yrs	Urban	Marital status Unmarried: 14 pts (78%) Single: 2 pts (11%) Divorced/separated: 10 pts (56%) Widowed: 2 pts (11%) Married: 4 pts (22%) Live alone: 11 pts (61%) Live with spouse or child: 7 pts (39%)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Artinian	2003	NR	NR	NR	NR	Med-eMonitor

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Artinian	2003	*Med-eMonitor device-5 compartments for supplying up to 5 medications using alarm to remind the pts daily when to take, which to take and how many to take. *25 virtual compartments with daily tailored reminders or questions regarding other medications, monitoring, daily weight and BP, reducing salt intake, eating heart healthy and engaging in physical activity *Date and time stamped record of pill taking *Recordings of pts's responses to specific questions *Updates to pts's regimen downloaded and pts info automatically transmitted to server via telephone	Grp 1 : usual care + web based intervention (compliance device) Grp 2: Usual care All received self care behavior booklet, Grp 1 included visits to the cardiologist in the clinic at regular intervals (frequency determined by severity of HF). On each visit, pharmacist assesses medication taking and provided pts with written info about name, frequency and action of medication. Grp2 received all above + Med- eMonitor	Videocassette (Med - Monitor) that sat in a cradle connected to a telephone line	Compliance device with alarms and reminders, daily monitoring of weight and BP, and answers to specific questions

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Artinian	2003	NR	All pts received an educational booklet describing CHF self care behaviors pts were instructed on how to use their weight scale and BP monitor	Unclear	Functional status Grp 1 vs. Grp 2 NYHA Functional class Baseline Mean (SD) 3 (±0.83) vs. 3 (±0.50) 3 month Mean (SD) 3 (±1.01) vs. 2 (±1.01) ANOVA Time---F(1,16)=0.67,p=0.424 Group by time interaction- F(1,16)=0.00,p=1.0 6 MWT distance in feet Baseline Mean (SD) 846 (±347) vs. 946 (±294) 3 month Mean (SD) 983(±299) vs. 995 (±257) ANOVA Time-- F(1,16)=1.28,p=0.276 group by time interaction- F(1,16)=0.00,p=0.968

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Artinian	2003	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Artinian	2003	NR	Technical difficulties Difficulties with monitor: 4 pts (44%) Difficulty getting out small pills from compartments: 4 pts(44%) Difficulty reading the screen: 2 pts Color of lettering hard to see: some pts Message needs to be long enough for clarity: many Could not hear beep of the monitor: 1 pt	Loved it: 5pts(56%) Hated it: 4 pts (44%) Quotes of the pts included, not listed here

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Artinian	2003	Changing lifestyles (i.e. helped establish better routines): 6 (67%)	NR	Self care behaviors Grp 1 vs. Grp 2 Baseline Mean(SD) 95 (±22) vs. 92 (±8) 3 month Mean (SD) 108 (±22) vs. 106 (±21) ANOVA Time: F(1,16)=6.81,p=0.019 Grp by time interaction: F(1,16)=0.02, p=0.902 Post hoc paired samples t test Grp 1: t (8)= 1.85, p=0.102 Grp 2: t (8)=1.85, p= 0.102 Compliance with daily monitoring Weight: Grp 1 vs. Grp 2: 79% vs. 85% , t (15)= 0.57,p=0.577 BP: Grp 1 vs. Grp 2 : 51% vs. 81%, t (15)= 1.83, p= 0.095 Grp 2 rates as measured by monitor Average compliance rates for with weight and BP: 96% Medication compliance rate: 94%

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Artinian	2003	Total Quality of life (QOL) Grp 1 vs. Grp 2 Baseline mean (SD) 43 (±22) vs. 51 (±24) 3 month mean 28 (±27) vs. 38 (±25) ANOVA Time: F (1,16) = 10.00, p= 0.006 Grp by time interaction-: F (1,16)= 0.05, p=0.832 Post hoc paired samples t test Difference between baseline and follow up mean Grp 1: t (8)=1.78, p=0.113 Grp 2: t (8)=4.63, p=0.002 Physical QOL Grp 1 vs. Grp 2 Baseline mean(SD) 21 (±13) vs. 26 (±9) 3 month mean 14 (±11) vs. 19 (±11) ANOVA Time: F (1,16)= 6.20, p=0.024 Grp by time interaction: F (1,16)= 0.03, p=0.868	NR	NR

Author	Year	Adverse Effects	Other
Artinian	2003	NR	Clinical characteristics of sample at baseline viz NYHA FC, Perceived health, smoking, BMI -given but not listed here Cronbach alpha values for reliability across time given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Bachofen	1999	NR	NR	Homes	Cohort	N=21

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Bachofen	1999	NR	3 mos	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Bachofen	1999	NR	OCD	NR	N = 56.6%	Mean (SD): 31 (±8.2) Range: 21-54

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Bachofen	1999	NR	NR	NR	NR	Mean age at onset of OCD (SD): 19 (±6.1) Range: 10-34 Mean OCD duration (SD): 12 yrs (±6.9) Range: 2-28 yrs OCD rituals (N) Washing: 4 Checking: 9 Harming self or others: 6 Numbers: 4 Perfectionism: 3 All but 1 taking psychotropic medication at the time of study

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Bachofen	1999	NR	NR	NR	NR	Self therapy with BT steps

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Bachofen	1999	Self-guiding manual and touch tone phone used to access computer driven interviews via an interactive voice response system	Pts given 190 pg BT STEPS manual and a PIN to access the IVR system A toll free call could be made from any touch tone telephone in the UK to a computer in Madison, WI Coordinator explained steps, pts left to personalize their self treatment program under guidance of the manual and the IVR system After call completion, computer generated and faxed a feedback sheet that summarized the call. After pts started doing the ERP sessions, a personalized ERP homework diary sheet, based on the goals they had entered, was mailed to them each week Pts who did not call the IVR system for a week were contacted by phone or mail to inquire the reason.	Touch Tone telephone	Question and answers, feedback sheet, personalized ERP diary sheet, helped personalize self treatment program

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Bachofen	1999	NR	A coordinator spent 5 mins with each pt, explaining how to use the BT steps and make IVR calls and encouraging daily use of the system. For pts who lived far away, manual was mailed and coordinator explained the steps over the phone	NR	Y-BOCS (Yale Brown Obsessive Compulsive scale) Total Baseline vs. Completers (12 week) , Mean (SD) 25 (±6.2) vs. 20 (+7.5) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 3.19, 18, 0.005 vs. 3.12, 20, 0.005 Rituals Baseline vs. Completers (12 week) , Mean (SD) 13 (±3) vs. 10 (±4.4) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 3.54, 18, 0.002 vs. 3.43, 20, 0.003 Obsessions Baseline vs. Completers (12 week), Mean (SD) 11 (±3.8) vs. 10 (±3.4) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 1.89, 18, 0.074 vs. 1.88, 20, 0.075 PGI- Patient Global impression scale Completers (12 week) , Mean (SD) 2.8 (±1.0)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Bachofen	1999	NR	The cost of the system compares favorably to that of medication and clinician guided care. They save 80 % of the per patient time needed by a clinician to guide ERP	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Bachofen	1999	Pts used the IVR system over a period of 67.2 (±38.3) days Pts took a mean of 34.6 (±26.5) days from the time they made call 1 until they completed their first ERP session Pts who did 2 or more ERP sessions took a mean of 64 days doing ERP after completing call 4	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Bachofen	1999	NR	NR	Hamilton rating scale for depression Baseline vs. Completers (12 week) , Mean (SD) 22 (±8.1) vs. 17 (±8.3) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 2.99, 18, 0.008 vs. 2.93, 20, 0.008 Work and social adjustment scale Total Baseline vs. Completers (12 week) , Mean (SD) 20 (±7.3) vs. 17 (±7.6) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 2.28, 18, 0.035 vs. 2.27, 19, 0.035 Work item Baseline vs. Completers (12 week) , Mean (SD) 5.2 (±2.7) vs. 4.5 (±2.3) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 1.49, 18, 0.154 vs. 1.49, 19, 0.153 Home management Baseline vs. Completers (12 week) , Mean (SD) 6.1 (±1.6) vs. 4.9 (±2.2) Completers (N=19) (t, df, p) vs. ITT analysis (t, df, p) 2.15, 17, 0.046 vs. 2.14, 18, 0.047

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Bachofen	1999	NR	NR	2 pts had to leave the study as their turn on the waiting list arrived to begin clinician guided therapy

Author	Year	Adverse Effects	Other
Bachofen	1999	NR	Data on improvement in OCD patients who completed 2 or more versus 1 or no exposure and ritual prevention session given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Barnason	2003	4 Midwestern hospitals	Hospital	Homes	RCT w/ repeated measures	N = 35 HCI (experiment): 18 RC (control): 17

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Barnason	2003	NR	3 months	*From previous parent study of N = 180 *Ischemic Heart Failure (HF) *CABG *Written consent *Age ≥65	Age < 65 yrs	Yes: Range 65 -85 yrs.

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Barnason	2003	NR	CAD	NR	HCI: 78% RC: 59%	Mean (SD) HCI: 73.72 (±5.06) RC: 72.82 (± 4.80)

Appendix H. Data Table

		Patient Characteristics*				
Author	Year	Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Barnason	2003	NR	NR	NR	NR	"There were no statistically significant differences by group for any of the demographic characteristics (age, gender, or length of hospital stay)'

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Barnason	2003	NR	NR	NR	NR	Health Buddy

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Barnason	2003	Small device attached to patient's telephone. Provides assessment, strategies, education, and positive reinforcement	Group 1: (Home Communication Intervention): Health Buddy: daily session Group 2: (Routine Care): RC consisted of the usual patient education and counseling provided to all CABG subjects prior to hospital discharge. Ability to ask questions: NR.	Phone attachment /screen	Provides daily: assessment, strategies, education, and positive reinforcement

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Barnason	2003	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Barnason	2003	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Barnason	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Barnason	2003	NR	Self-efficacy score: [F (1,29) = 6.40, P < 0.02] HCI: 50.6 (standard error = 1.1) RC: 46.5 (standard error = 1.1)	Salt Fewer subjects HCI subjects reported the use of salt when cooking and eating at 4 weeks, 6 weeks, and 3 months postoperatively. There was as significant difference at 4 weeks using salt with cooking (X2 = 6.92, P > .01): RC: 47.1% HCI: 6.3 % Exercise Adherence The HCI group reported significantly higher exercise adherence (t = 3.09, P < .01) and stress control (t=3.77, P < .01) at 3 months postoperatively.

Author	Year	Quality of Life	Support	Withdrawals
Barnason	2003	Physical Functioning HCI subject has significantly [F(1,29) = 4.56, P <.04] higher adjusted physical functioning mean scores (Mean: 84.4, SD: ±3.9) compared with the RC group (Mean:71.5, SD: ±3.9) General Health Functioning HCI subjects had significantly [F(1,29) = 6.99, P <.01] higher adjusted general health functioning mean scores (Mean: 79.8, SD: ±2.9) compared with the RC group (Mean: 69.4, SD: ±2.8) Pain There was a significant time effect [F(1,29)=11.25, P <.002] on the pain subscale both HCI and RC: 6 weeks: 77.4 (±3.3) 3 months: 87.8 (±3.7) Mental Health HCI subjects had significantly [F (1,29)= 8.33, P <.007] higher mental health functioning (Mean: 88.7, SD: ±3.09) compared with RC group (Mean: 78.0, SD: ±3.0). Validity HCI subjects had significantly [F	NR	NR

Author	Year	Adverse Effects	Other
Barnason	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Barnason	2006	Convenience sample	"Midwestern Medical Center"	Homes	Randomized, experimental two-group repeated measures design	N = 50

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Barnason	2006	NR	3 months	*Speak/read English *Have telephone service *Undergoing coronary artery bypass graft *Pre-discharge *Ages 65 and older	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Barnason	2006	NR	CORONARY ARTERY DISEASE	NR	56%	Mean: 75.3

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Barnason	2006	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Barnason	2006	NR	NR	English	NR	Health Buddy

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention*	
				Type of Device*	Functions*
Barnason	2006	12 weeks of a desktop telehealth device with daily interventions with recovery assessment, strategies to manage problems, education and positive reinforcement	Group 1: Experimental - received Healthcare Intervention (HCI) Group 2: Control - Routine care (HHC)	Desktop telehealth device	Illuminated screen with 4 large buttons - daily feedback

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Barnason	2006	NR	Screened for vision and key use no reported training	Medical Outcomes Short Form-36 at 6 weeks and 3 mos. after bypass. Physiological Functioning Scales: IVR mean 77.6, CG mean 69.59 Time improvement Physical: (F [1,36]=9.42, P<.01) Role Physical: (F[1,36]=5.74, P<.05) Time Effect Mental Health: (F[1,36]=7.97, P<.01) both groups	Non-Routine provider visits: IVR mean 2.8,CG mean 2.61 Emergency room visits: IVR 1 subject, CG 6 subjects, but not stat. significant (squared =2.1, P=.15) Nursing visits: IVR avg. 9.68(±5.4), CG avg. 7.48(±6.8)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Barnason	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Barnason	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Barnason	2006	NR	Self report instrument developed by research team	NR

Author	Year	Quality of Life	Support	Withdrawals
Barnason	2006	WITHIN group time effects differences: Both groups improved: Mental Health: (F[1,36=7.97, P<.01) other within group mental health outcomes listed.	NR	NR

Author	Year	Adverse Effects	Other
Barnason	2006	Chest pain, fluid in leg, pneumonia, heart failure, wound infection, dysrhythemias, blood clot: leg, Very nervous, GI problems, constipation	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Barrera	2002	16 Primary care medical practices	Primary care medical practices	Homes	RCT	N= 160 CG: 40 Coach: 40 Social Support: 40 Social Support + Coach: 40

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Barrera	2002	NR	3 mos	*Age: 40-75 years old *Live in local area *Have a telephone *Read and write English *Be diagnosed with Type 2 diabetes for least 1 year *Did not previously have Internet access at home or work	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Barrera	2002	NR	TYPE 2 DIABETES	NR	N = 46.9% Control: 47.5% Coach: 42.5% Social Support: 52.5% Social Support + Coach: 45%	Mean (SD) Total: 59.3 (±9.4) Control: 60.8 (±9.1) Coach: 57.6 (±9.1) Social Support: 56.7 (± 9.2) Social Support plus Coach: 62.1 (± 9.5)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Barrera	2002	NR	Income (this was a 6-point scale where 1 = less than $10,000, and where 6 > $50,000) N = 160, 2.9 (1.4) Control: (n=40), 2.9 (1.2) Coach: (n=40), 2.7 (1.4) Social Support: 3.1 (1.6) Social Support + Coach: 2.7 (1.3)	Education (This was a 7-point scale where 1 = 6th grade or less, 2 = 7th - 9th grade, 3 = 10th - 11th grade, 4 = high school graduate, 5 = some college, 6 = college graduate, 7 = graduate or professional school) N = 160, 4.8 (1.3) Control: (n=40), 4.8 (1.2) Coach: (n=40), 5.0 (1.2) Social Support: 4.7 (1.4) Social Support + Coach: 4.9 (1.3)	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Barrera	2002	NR	English literate	English	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Barrera	2002	This study used a new measure that was designed to provide a fair evaluation of a Internet-based support group that focused on diabetes. Information Only computer access to an extensive number of informational articles that concerned medical, nutritional, and lifestyle aspects of diabetes. Personal Coach Only Information Only intervention plus they had computer-mediated access to a professional who had expertise in providing dietary advice to diabetes patients. Participants worked with their coach, viewed resources via the web, had access to an online dietary conference, and accessed a personal database where they could enter information on their daily intake of fruits,	Computers with internet access. Social support websites with forums, live chat, and informational articles.	Computer-based interventions to assess changes in participant perceptions of social support.	NR

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Barrera	2002	NR	Each participant received training in using the features of the computer that would allow them to access and navigate the website.	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Barrera	2002	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Barrera	2002	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Barrera	2002	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Barrera	2002	NR	Age was significantly related to change on the DSS, r(123) = -.22, p < .05, and did not show interactions with this condition. Age (as covariate) and DSS change scores (as criterion), ANCOVA showed significant effect for both age, F(1,118) = 6.46, p < .05, and condition, F(3, 118) = 4.88, p < .01, f = .33. Information controls contrasted with Social Support Only and Combined Conditions that contained Internet-based social support was significant t(119) = -3.82, p < .001.	Total = 37. Support group = 10, Information, personal coach, and combined condition groups: 9 each. No significant effects for condition or interaction between groups.

Author	Year	Adverse Effects	Other
Barrera	2002	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Block	2004	NR	Berkeley, California	Homes	RCT	N=491
Brennan	2001	Hospital	NR	Homes	RCT	N = 140 Grp 1: 50 Grp 2: 50 Grp 3: 40

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Block	2004	9 months	NR	*Female *African American or non-Hispanic white *Age 40-65 yrs *Low-income	Any criteria against the Inclusion criteria	NR
Brennan	2001	NR	6 mos	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Block	2004	YES Below poverty: 68.0% 100-185% of poverty: 24.5% Above 185% of poverty: 7.5%	NR	NR	0.00%	50.1 (39-65)
Brennan	2001	NR	CABG	NR	N = 78%	Mean (Range): 63.4 (38-82)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Block	2004	African American: 48.4% White non-Hispanic: 51.6%	<$10,000: 23.3% 10,000-15,000: 9.6% 15,000-20,000: 8.5% 20,000-25,000: 7.7% 25,000-35,000: 17.1% 35,000-50,000: 11.6% 50,000-65,000: 6.7% >65,000: 15.6%	Elementary only: 0.6% Junior high only: 2.1% HS grad: 31.0% More than HS: 66.3%	NR	Fruit and vegetable occurrence/day 0: 6.2% 1: 15.4% 2: 18.3% 3: 15.6% 4: 16.6% 5 or more: 27.9%
Brennan	2001	Caucasian: 86% African American: 12%	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Block	2004	NR	NR	NR	Research overwhelmingly implicates low intakes of fruits and vegetables as factors influencing the prevalence of several chronic disease and poor health	Little by Little
Brennan	2001	NR	NR	NR	NR	HeartCare

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Block	2004	CD-ROM that includes a brief assessment of fruit and vegetable intake as well as messages and tips to increase intake	CD-ROM Only: 160 CD-ROM + 2 phone calls: 162 CG: 159	CD-ROM	To increase the level of fruit and vegetable intake by low income women
Brennan	2001	Computerized, internet-based information and support system that provides extension and enhancement of traditional nursing services	Group 1: HeartCare Group 2: CHIP Group 3: Usual care	Computer/internet	Education, support, tailored health information

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Block	2004	Interviewers were provided with scripts for the two brief telephone calls made to the CD-ROM + telephone call groups	NR	NR	Change in Fruit/Vegetable Occurrences: CD-ROM + telephone calls: 1.32, p=0.016 CD-ROM only: 1.20, p=0.052 CG: 0.71, p=NA
Brennan	2001	None	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Block	2004	NR	NR	NR
Brennan	2001	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Block	2004	NR	NR	NR
Brennan	2001	For one week snapshot: Group 1 used the HeartCare system a total of 451 times, an average of 64 accesses per day	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Block	2004	NR	NR	Change in Stage of Readiness for Change CD-ROM Only: 0.41, p=0.01 CD-ROM + phone calls: 0.31, p=0.15 CG: 0.17, p=NA
Brennan	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Block	2004	NR	NR	N=10
Brennan	2001	NR	NR	NR

Author	Year	Adverse Effects	Other
Block	2004	NR	NR
Brennan	2001	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Carlbring	2007	NR	NR	Homes	RCT	N= 57 IVR: 29 CG: 28

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Carlbring	2007	NR	1 year	*Fulfill the DSM-4 criteria for social phobia according to the SPSQ *Have a total score of below 31 on MADRS-S depression scale and a score of less than 4 on the suicide item of this scale *Agree to undergo no other psychological treatment for the duration of the study, and have no history of earlier cognitive- behavior therapy *If taking prescribed drugs for anxiety or depression, the dosage had to be constant for 3 months before the start of the treatment, and the participants had to agree to keep the dosage constant throughout the study *Have access to a computer with internet connection *Be at least 18 yrs old *Live in Sweden *Be able to speak to the therapists by phone on a weekly basis *Following telephone administration must have social phobia as the primary diagnosis if other co morbid conditions present *Not currently meet diagnostic criteria for psychosis or substance abuse	NR	No

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Carlbring	2007	NR	SOCIAL PHOBIA	NR	IVR vs. CG: 41 % vs. 29%	Mean (SD) IVR vs. CG: 32.4 (±9.1) vs. 32.9 (±9.2)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Carlbring	2007	NR	NR	Education % IVR vs. CG Elementary: 7 vs. 7 High school Not completed: 0 vs. 4 Completed: 28 vs. 18 Community college: 3 vs. 4 College/university Not completed: 34 vs. 34 Completed: 28 vs. 32	NR	Self-rated computer experience IVR vs. CG Far above average: 34 vs. 32 Above average: 24 vs. 21 Average: 34 vs. 32 Below average: 7 vs. 14

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Carlbring	2007	NR	NR	NR	NR	Cognitive behavioral therapy with telephone support

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Carlbring	2007	9 week Internet based cognitive behavioral self-help designed to increase treatment adherence by minimum therapist contact by email supplementation and short weekly telephone calls.	CG: received no treatment IVR: Intervention modules included information, exercises and interactive quiz that ended with 3-8 essay questions. Pts encouraged to explain the most important sections of the module, provide thought records, describe experience with and outcome of their exposure exercise. For each module, pts required to post at least one online message in an online discussion group about a predetermined topic. Feedback on homework assign given within 24 hrs One weekly telephone call made weekly to each pt to provide positive feedback and to answer questions the pt had about the module.	Computer	Information modules, email, online discussion board

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Carlbring	2007	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Carlbring	2007	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Carlbring	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Carlbring	2007	NR	IVR vs. CG Liebowitz social anxiety scale Fear/Anxiety Pre treatment score: Mean (SD) 36.0 (+11.7) vs. 34.2 (+10.6) Post treatment score ; Mean (SD) 24.2 (+12.0) vs. 36.1 (+12.3) Main effect Time: F=16.8, (p<0.001), group; F= 3.1 Interaction effect: 32.2 (p<0.001) Effect size Within group: 1.00 vs. - 0.17 Between group: 0.98 Avoidance Pre treatment score: Mean (SD) 35.2 (+12.9) vs. 33.8 (+11.0) Post treatment score ; Mean (SD) 21.6 (+12.8) vs. 33.3 (+11.9) Main effect Time: F= 34.2 , (p<0.001), group, F= 3.0 Interaction effect: 29.2 (p<0.001) Effect size Within group: 1.06 vs. 0.04	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Carlbring	2007	Quality of life inventory, Summary score Pre treatment score: Mean (SD) 0.7 (±2.0) vs. 0.5 (±1.7) Post treatment score ; Mean (SD) 1.4 (±1.8) vs. 0.7 (±1.8) Main effect Time: F= 9.9 , (p<0.0125), group, F= 1.16 Interaction effect: 3.2 Effect size Within group: 0.37 vs. 0.11 Between group: 0.39	NR	Total randomized= 60, Treatment grp=30 Began other therapy=1 eligible for analysis=29 Did not return completed measures=1 Post treatment assessment= 28 Did not complete follow up=1 Follow up data = 27 Control grp= 30 Began other therapy=1 No computer access=1 Eligible for analysis=28 Post treatment survey= 28 No FU for control grp

Author	Year	Adverse Effects	Other
Carlbring	2007	NR	

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Cathala	2003	Outpatient dept. at Institute Monstouris	Dept. of Urology, Institute Monstouri	Homes	Cohort	N = 140
Cavan	2003	NR	NR	Homes	Cohort	N= 6

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Cathala	2003	Preliminary study: January-March 2000 November 2000-April 2002	NR	*Patients with localized prostate cancer treated with radical prostatectomy *Computer in home	NR	NR
Cavan	2003	NR	6 months	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Cathala	2003	NR	PROSTATE CANCER	NR	N = 100%	Mean: 63 Range: 46-70
Cavan	2003	Unclear	DIABETES	NR	NR	Mean: 36 Range: 29-61

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Cathala	2003	NR	Senior executives and professionals: 58% Tradesmen: 12%	NR	NR	NR
Cavan	2003	NR	NR	NR	Unclear	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Cathala	2003	NR	NR	English, French	NR	Website
Cavan	2003	NR	NR	NR	NR	Diasnet

Appendix H. Data Table

Author	Year	Intervention*			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Cathala	2003	Website to securely house data and answer questions for those with a radical prostatectomy	NR	Website	History of surgery - techniques and complications, video on operation, glossary, access to medical files including discharge, operative and histology, QOL questionnaire, patient/dr. dialogue
Cavan	2003	A structured patient education program which utilizes the DiasNet computer model to display and manipulate patient data. The program used as a training exercise in carbohydrate assessment and insulin dose adjustment to help patients optimize their metabolic control	N=6 Pts asked to enter from home or work PC, blood glucose values, insulin doses and a food diary. The computer model generated the a simulation of the blood glucose concentration for the data collection period. It then suggested alternative insulin doses (regimes), or meal sizes, to reduce risk of hypo and hyperglycemia. Pts entered four days data on three occasions in the first month and then as often as they wished.	Computer	Data entry, simulation of blood glucose concentration, suggestion of alternative medication regimes

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Cathala	2003	NR	NR	NR	NR
Cavan	2003	NR	Pts attended a one hour training session, which covered accessing the system, data entry and interpretation.	NR	There is a graph showing HbA1c levels but difficult to give precise values, as author has not reported the same.

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Cathala	2003	NR	NR	NR
Cavan	2003	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Cathala	2003	11% had problems accessing site, 14% had tech problems attributed to incorrect PSA data entry or not having the right software to run the video	NR	Satisfied with site sections: 98% Satisfied with medical file: 94%
Cavan	2003	Pts did not enter any data for several weeks, only one entered data on three consecutive as requested.	All pts found the graphical display and ability to manipulate their data very useful. Qualitative responses of pts given, not listed here	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Cathala	2003	NR	NR	NR
Cavan	2003	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Cathala	2003	NR	NR	NR
Cavan	2003	NR	NR	NR

Author	Year	Adverse Effects	Other
Cathala	2003	NR	Older patients used email follow up more than younger ones, email follow up was greater for patients living further from the hospital
Cavan	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Cawsey	2000	NR	Beatson Oncology center, Glasgow	Homes	RCT (more details given in Jones 1999)	N= 525

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Cawsey	2000	NR	NR	NR	Pts receiving palliative treatment, those with no knowledge of their diagnosis, those with only a single treatment planned and those not giving consent to participate	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Cawsey	2000	NR	CANCER	NR	NR	NR

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Cawsey	2000	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Cawsey	2000	NR	NR	NR	NR	Personalized information system

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Cawsey	2000	Evaluation of a personalized information system for patients with cancer. The system dynamically generates hypertext pages that explain treatment, diseases, measurements etc related to the patient's condition, using information in the patients medial record as the basis for the tailoring	Grp 1: personalized information; access to the system that generated personalized explanation using the medical record, pts received a printout of the dialogue with the system after the session Grp 2: generalized information; access to system with similar look and feel but only contained generalized information, main differences were the opening screen and detailed content of individual screens. Grp 3: combined group; this grp had access to both the above systems, an initial screen provided links to both. Grp 4: leaflets group; grp given opportunity to browse and select from a folder containing a wide range of appropriate leaflets	Computer	General and personalized information

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Cawsey	2000	NR	The first 3 grps were invited to carry out a computer consultation at the beginning of their course of radiotherapy in the researcher's office; pts also offered to use a computer again after their first use, but one sited in the waiting room	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Cawsey	2000	NR	NR	Small but not significant effect on doctor's assessment of how knowledgeable pts were-- with the result that more pts in the general group were viewed as above average, (35% vs. 27%, p=0.19)

Author	Year	Use of Technology	Usability	HIT Satisfaction
Cawsey	2000	NS difference in the average time spent using the computer and only a small difference (p=0.11) in which group used the computer at any time after the first session. Pts receiving personalized information was more likely to use the computer between 3 weeks and 3 months (12/80 vs. 4/155, chi sq=12.8, p<0.001) The majority of the pts used the printouts of their sessions with the computer later at home, 73% of personalized information grp and 59% of general information grp (chi square=3.4, 1 df, p=0.07) Pts in the personal grp were more likely to report using it with their family	NR	Pt views on information given; general vs. personal Was info useful: 76 (60) vs. 51 (70), p=0.16 Did it tell you anything new: 63 (50) vs. 46 (64), p=0.05 Was information relevant: 85 (66) vs. 63 (85), p= 0.004 Find information easily:109 (85) vs. 63 (89), p= 0.41 Feel overwhelmed with info: 37 (29) vs. 17 (23), p=0.41 Was it too technical:18 (14) vs. 6 (8) , p=0.23 Was it too limited: 71 (56) vs. 30 (41), p= 0.04 Satisfaction score: 44 (26) vs. 36 (42), p= 0.04 A t test between patient satisfaction scores between the two groups shows that the mean score of 2.33 for the personal group is significantly higher than the mean score of 1.64

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Cawsey	2000	NR	NS difference found in the psychological state between the groups as measured by the HADS and MAC questionnaires. NS difference on the doctor's assessment of their anxiety, or of how active/passive they were	NR

Author	Year	Quality of Life	Support	Withdrawals
Cawsey	2000	NR	NR	789 pts were eligible for the study 74 excluded and 190 refused to take part in the study (more details in Jones et al 1999)

Author	Year	Adverse Effects	Other
Cawsey	2000	NR	At 3 months, pts asked if they would prefer unlimited time with their computer for getting information, or 10 mins with a specialist nurse or radiographer. Most preferred latter, but pts using personalized design were slightly more likely to choose time with the computer (32% vs. 20%), (chi square=2.9, 1df, p=0.09)

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Chan	2003	Pediatric clinic	Honolulu, HI	Homes	Cohort	N= 10

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Chan	2003	6 mos	NR	*Pediatric patients *Ages 6-17 *Persistent asthma *Written informed consent obtained from parents/guardians *Assent obtained from all children over the age of 7	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Chan	2003	NR	ASTHMA	NR	Total: 50% Office grp: 80% Virtual: 20%	Mean (SD) 7.6 (±2)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Chan	2003	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Chan	2003	NR	NR	NR	NR	Home monitoring service

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Chan	2003	Pts used the digital video camera and computer to record peak flow meter readings and their daily use of the MDI or DPI two times a week	Office group: had scheduled office visits to receive asthma education Virtual group: received asthma education via the internet	Home computer system, video camera, microphone, cable to access the internet	Receive asthma education via the internet, record peak flow meter use and values, transmit this data

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Chan	2003	NR	NR	NR	Asthma Control Days 0-90 Peak flow values (% of personal best) Total: 84.3 Virtual: 82.7 Office: 86.0 Total # unscheduled asthma clinic visits Total: 2 Virtual: 1 Office: 1 % symptom-free days as recorded in diary Total: 75.1 Virtual: 70.8 Office: 80.4 Mean (SD) total symptom-control score Total: 4.5 (±0.5) Virtual: 4.5 (±0.6) Office: 4.4 (±0.4) Mean (SD) # beta-agonist uses in diary Total: 10.8 (±18.0 Virtual: 3.0 (±3.3) Office: 20.5 (±24.9)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Chan	2003	Therapeutic Adherence Days 0-90 Virtual vs. Office vs. Total Total # corticosteroid inhalers refilled: 8 vs. 16 vs. 24 Mean (SD) # corticosteroid inhalers per patient per mo 0.5 (±0.5) vs. 1.1 (±0.6) vs. 08. (±0.6) Total # videos of inhaler use sent 84 vs. 109 vs. 193 Mean (SD) # videos of inhaler use submitted per person 16.8 (±3.4) vs. 21.3 (±6.7) vs. 19.3 (±5.6) Adherence to submission of videos of inhaler use (%) 70.0 vs. 90.8 vs. 80.4 DPI or MDI plus space technique score (%) 87.2 vs. 87.3 vs. 87.3 Days 91-180 Virtual vs. Office vs. Total Total # corticosteroid inhalers refilled: 6 vs. 8 vs. 14	NR	Asthma Knowledge Test and Survey Results, Mean (SD) Virtual vs. Office vs. Total Knowledge test score (%) Before Study 82.0 (±8.8) vs. 77.0 (±5.2) vs. 79.8 (±7.5) After Study 84.8 (±7.6) vs. 8.3 (±5.5) vs. 84.0 (±6.6)

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Chan	2003	Diagnostic Adherence Virtual vs. Office vs. Total Days 0-90 Total # asthma diary entries 119 vs. 293 vs. 412 Mean (SD) # asthma diary entries per patient 23.8 (±23.8) vs. 58.6 (±39.4) vs. 41.2 (±35.7) Asthma diary adherence (%) 18.7 vs. 65.1 vs. 41.9 Total # videos of peak flow meter use submitted 83 vs. 111 vs. 194 Mean (SD) # videos of peak flow meter use submitted per patient 16.6 (±3.2) vs. 22.2 (±7.5) vs. 19.4 (±6.2) Adherence to submission of videos of peak flow meter use (%) 69.2 vs. 92.5 vs. 80.8 Peak flow meter technique score (%) 99.7 vs. 99.2 vs. 99.5 Days 91-180	NR	Virtual vs. Office vs. Total Satisfaction survey score 4.0 (±0.3) vs. 4.2 (±0.6) vs. 4.1 (±0.4) Satisfaction with electronic checks 3.8 (±0.8) vs. 4.3 (±1.0) vs. 4.0 (±0.9)

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Chan	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Chan	2003	Virtual vs. Office vs. Total QoL Score Before Study Caregiver 5.6 (±1.2) vs. 6.4 (±0.7) vs. 6.0 (±1.0) Patient 6.6 (±0.4) vs. 6.5 (±0.7) vs. 6.5 (±0.5) After study Caregiver 6.2 (±1.0) vs. 6.4 (±0.6) vs. 6.3 (±0.8) Patient 6.6 (±0.2) vs. 6.6 (+0.6) vs. 6.6 (±0.4)	NR	NR

Author	Year	Adverse Effects	Other
Chan	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Chen	2006	NR	Senior High school students	Homes	Non-Random Group	Total= 77 Grp 1 (auricular acupressure+ internet program): 38 Grp 2 (auricular acupressure only): 39

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Chen	2006	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Chen	2006	NR	SMOKING	NR	Grp 1 vs. Grp 2: 100% vs. 87.2%	NR

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Chen	2006	NR	NR	High school students	NR	Grp 1 vs. Grp 2 Using antioxidiser: 0% vs. 10.3% Having part time work: 10.5% vs. 20.5% Experiencing smoking cessation: 57.9% vs. 79.5% Having family member who is smoking: 65.8% vs. 69.2%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Chen	2006	NR	NR	NR	NR	Smoking cessation program

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Chen	2006	Comparing effects of auricular acupressure with or without an internet assisted program on smoking cessation and self efficacy of adolescents	Grp 1: received 4 weeks of auricular acupressure plus an internet smoking cessation program Grp 2: received only auricular acupressure Auricular acupressure: five common points used, shenmen, lung, mouth, stomach and endocrine points, seed embedding method used, pts asked to press each point for at least a minute, 3-5 times/day for 4 weeks, adhesive patch with the ear seed renewed weekly. Internet assisted smoking cessation program: website composed of interactive pages with the following units a) Impact of smoking (smoking and health, second hand smoking, difficulty of quitting and legal regulation b) Auricular acupressure for smoking cessation	Computers	Forums, counseling, education, hyperlinked website surfing

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Chen	2006	NR	NR	NR	Mean serum cotinine level (SD), Grp 1 vs. Grp 2: Before intervention: 346.77 ng/ml (142.51) vs. 376.06 ng/ml (169.71) After intervention: 342.29 ng/ml (182.70) vs. 379.73 ng/ml (187.68) In terms of quitting rate-levels under 100 ng/ml (Grp 1vs Grp2): 6/38 (15.78%) vs. 1/39 (2.56%) For the degree of nicotine dependence Before intervention, Grp 1 vs. Grp 2 Low: 24 (63.2%) vs. 30 (76.9%) Medium: 10 (26.3%) vs. 7 (17.9%) High: 4 (10%) vs. 2 (5.1%) After intervention, grp 1 vs. grp 2 Low: 31 (81.6%) vs. 31 (79.5%) Medium: 6 (15.8%) vs. 5 (12.8%) High: 1 (2.6%) vs. 3 (7.7%) Group 1 showed a statistically significant difference of nicotine dependence before and after intervention (z= - 2.81, p< 0.01) Grp 2 did not show any significant difference (z= - 0.47, p > 0.05)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Chen	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Chen	2006	NR	NR	Usefulness of website, Mean (SD) Overall usefulness of website: 5.02 (±1.49) Discussion forum: 5.53 (±1.47) Auricular acupressure for smoking cessation: 5.15 (±1.46) Impact of smoking: 4.98 (±1.37) Critical issues in smoking cessation: 4.82 (±1.50) Hot topics: 4.76 (±1.72) Hyperlinked websites: 4.66 (±1.61) Professional counseling: 4.64 (±1.39) Online questionnaire: 4.51 (±1.60)

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Chen	2006	NR	Self efficacy, M (SD), pretest vs. posttest Grp 1: 45.80 (±15.14) vs. 58.57 (±15.67), t= 5.77, p < 0.001 Grp 2: 43.47 (±14.88) vs. 48.97 (±12.54), t= 2.32, p< 0.05	NR

Author	Year	Quality of Life	Support	Withdrawals
Chen	2006	NR	NR	NR

Author	Year	Adverse Effects	Other
Chen	2006	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Cho	2006	NR	Kang nam St Mary's hospital diabetes center	Homes	RCT	N= 40 CG: 40 IVR: 40

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Cho	2006	February 2002-August 2004	30 months	*Age ≥ 30 yrs *Followed up for more than 6 months in the clinic	Disabling conditions or disease like heart failure, hepatic dysfunction, a creatinine level > 0.133 mmol/l, severe complications of diabetes, or treatment with an intensified insulin regimen. Also people who did not have internet access in their homes or offices, did not know how to use the internet, or did not wish to participate in the study were excluded. Pts having history of participating in other programs that provided similar information or if they received diabetes management education from any other website other than the study website were excluded.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Cho	2006	NR	TYPE 2 DIABETES	NR	CG: 57.5% IG: 65%	Mean (SD) CG: 54.6 (±8.6) IG: 51.3 (±9.1)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Cho	2006	NR	NR	NR	NR	Mean (SD) CG vs. IG Diabetes duration in yrs: 6.9 (±5.7) vs. 6.7 (±5.3), p=0.868 Hypertension: 13 (±32.5) vs. 11 (±27.5), p=0.808 BMI (kg/m2): 23.8 (±2.8) vs. 22.8 (±2.6), p=0.139 SBP (mmHg): 128.5 (±16.1) vs. 121.3 (±16.5), p= 0.070 DBP (mmHg): 77.2 (±9.1) vs. 74.0 (±11.6), p= 0.187 Glucose control methods CG vs. IG Lifestyle modifications: 3 vs. 4 Oral medication only: 30 vs. 25 Oral + Insulin: 3 vs. 5 Insulin only: 4 vs. 6

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Cho	2006	NR	NR	NR	NR	Internet Based Glucose Monitoring System (IBGMS)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Cho	2006	Internet based system for blood glucose monitoring with additional information such as use of current medication, blood pressure and weight with appropriate recommendations provided by the study team	IG: Pts logged on to biodang.com and uploaded glucose levels on a blood glucose board on the online chart. Additional information on the use of current medication, blood pressure and weight were uploaded. Pts also recorded changes in lifestyle and any questions or detailed information that the pt wished to discuss. The clinical instructors in the team monitored the system and sent appropriate recommendations to each pt every 2 weeks. Every 3 mos, pts had a face to face interview with their physician and provided a blood sample for follow up lab testing. CG: Pts used a conventional note keeping record system. They were given the clinic's usual recommendations about medications, dosage and lifestyle modification from	Computer	Uploading glucose levels, e mail communications.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Cho	2006	NR	Pts were taught how to use the system	NR	Mean (SD): CG vs. IG FBG (mmol/l) ; Baseline: 7.67 (+2.8) vs. 8.07 (+3.36), p= 0.526 15 months: 7.99 (+1.85) vs. 8.96 (+2.61) 30 months: 7.87 (+1.83) vs. 8.51 (+2.68) A1C (%) Baseline: 7.5 (+1.3) vs. 7.7 (+1.5), p= 0.457 15 months: 7.4 (+1.3) vs. 6.9 (+1.1) 30 months: 7.4 (+1.3) vs. 6.7 (+0.9) Total Cholesterol (mmol/l) Baseline: 4.8 (+0.9) vs. 4.64 (+0.8), p=0.403 15 months: 4.27 (+0.83) vs. 4.49 (+0.72) 30 months: 4.49 (+0.76) vs. 4.5 (+0.67) Triglyceride (mmol/l) Baseline: 1.68 (+1.22) vs. 1.24 (+0.8), p= 0.062 15 months:1.5 (+0.95) vs. 1.66 (+1.29) 30 months: 1.28 (+0.75) vs. 1.16 (+0.73)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Cho	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Cho	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Cho	2006	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Cho	2006	NR	NR	NR

Author	Year	Adverse Effects	Other
Cho	2006	NR	Graphs of the long term results given There is a table of staff recommendations and patient reports given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Christensen	2004	NR	NR	Homes	RCT	N= 525 Bluepages (Grp 1): 166 Moodgym (Grp 2): 182 Control (Grp 3): 178

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Christensen	2004	August 2002-May 2003	6 weeks	*Access to internet *Scores of 22 or above on the Kesler psychological distress scale *Not receiving clinical care from either a psychologist or a psychiatrist	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Christensen	2004	NR	DEPRESSION	NR	Bluepages: 31% MoodGym: 25% Control: 30%	Bluepages: 37.25 (±9.4) MoodGym: 35.85 (±9.5) Control: 36.29 (±9.3)

Appendix H. Data Table

		Patient Characteristics*				
Author	Year	Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Christensen	2004	NR	NR	Years (SD) spent in education Bluepages: 15.0 (±2.4) MoodGym: 14.6 (±2.4) Control: 14.4 (±2.3)	NR	Marital status (%); Bluepage vs. Moodgym vs. Control Married/cohabiting: 61 vs. 54 vs. 56 Divorced/separated: 15 vs. 14 vs. 14 Never married: 30 vs. 31 vs. 36 Mean score (SD) on Kessler psychological distress scale Bluepage vs. Moodgym vs. Control 17.5 (±4.9) vs. 17.9 (±5.0) vs. 18.0 (±5.7) Info on intervention preference, mean score on center for epidemiological studies depression scale given, not listed here

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Christensen	2004	NR	NR	NR	Blue page and MoodGym	Blue page and MoodGym

Appendix H. Data Table

			Intervention*		
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Christensen	2004	Blue page: information about depression with evidence based information at 8th grade reading level from the site http://bluepages.anu.edu.au MoodGym: offered cognitive behavioral therapy for the prevention of depression from site http://moodgym.anu.edu.au	Bluepage (Grp 1): website available freely in world wide web, pts given a login identification number and directed each week to one of the five sections of the website with an overview at 6 weeks, post intervention questionnaire at 6 weeks. MoodGym (Grp 2): pts given a login identification number and undertook online assessments, MoodGym consisted of five interactive modules which were made available sequentially weekly; pts revised all aspects of the program in the sixth week, post intervention questionnaire at 6 weeks. Control Grp (Grp 3): Pts phoned weekly by interviewers to discuss lifestyle and environmental factors influencing depression.(Topics included education and hobbies, social, financial and family roles, work	Computer	Education, cognitive behavioral therapy (online assessments)

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Christensen	2004	Interviewers received instruction booklets providing timetables for tracking phone calls and verbatim instructions.	Pts sent detailed guidelines outlining navigation and weekly assignments for MoodGym or Bluepages	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Christensen	2004	NR	NR	Intention to treat (n=525) Medical Literacy Bluepages vs. MoodGym vs. Control: -0.6 (+0.7) vs. -0.1 (+0.5) vs. -0.1 (+0.5) Difference (95% CI) Bluepages vs. MoodGym: -0.5 (-0.7 to -0.4) (S) MoodGym vs. Control: 0.0 (-0.1 to 0.2) Bluepages vs. Control: -0.5 (-0.6 to -0.3) (S) Psychological Literacy Bluepages vs. MoodGym vs. Control: -0.7 (+1.1) vs. -0.5 (+1.0) vs. - 0.0 (+0.9) Difference (95% CI) Bluepages vs. MoodGym: -0.3 (-0.5 to 0.0) (S) MoodGym vs. Control: -0.4 (-0.7 to -0.2) (S) Bluepages vs. Control: -0.7 (-1.0 to -0.4) (S) Lifestyle Literacy Bluepages vs. MoodGym vs. Control: -0.6 (+0.9) vs. -0.0 (+0.5) vs. 0.1 (+0.8) Difference (95% CI) Bluepages vs. MoodGym:

Author	Year	Use of Technology	Usability	HIT Satisfaction
Christensen	2004	Bluepage: Site visited an avg of 4.49 (SD= 1.35, n=113) with an average of 67.2 (23.9) hits MoodGYM: pts completed half of 29 exercises (14.8, 9.7)	NR	The author states that both the sites were acceptable to pts, with dropout rates of 25% and 15% (these rates are remarkably low in comparison with other interventions)

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Christensen	2004	Intention to treat (n=525) Center for epidemiological studies depression scale, Mean (SD) Bluepages vs. MoodGym vs. Control: 3.9 (±9.1) vs. 4.2 (±9.1) vs. 1.0 (±8.4) Difference (95% CI) Bluepages vs. MoodGym: -0.3 (-2.6 to 2.0) MoodGym vs. Control: 3.2 (0.9 to 5.4) (significant at 0.05 level-S) Bluepages vs. Control: 2.9 (0.6 to 5.2) (S) Automatic thoughts questionnaire Bluepages vs. MoodGym vs. Control= 6.4 (±18.1) vs. 9.3 (±16.9) vs. 3.1 (±15.8) Difference (95% CI) Bluepages vs. MoodGym: 2.8 (-7.2 to 1.5) MoodGym vs. Control: 6.1 (1.9 to 10.4) (S) Bluepages vs. Control: 3.3 (- 1.1 to 7.7) *Completers (n=414)* Center for epidemiological studies depression scale, Mean (SD) Bluepages vs. MoodGym vs. Control:	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Christensen	2004	NR	NR	MoodGYM: 25% Bluepage: 15% Bluepages Assigned= 165 Total dropouts= 25 (Too busy=5, not contactable=2, trouble with internet= 1, ill=1, didn't like=1, incorrectly included=1, no reason given=4) MoodGym Assigned= 182 Total dropout= 46 (No reason given=12, not contactable=10, too busy=7, family reasons=3, didn't like it=6, trouble with internet=5, other=3) Control Assigned= 178 Total dropout=19 (no reason given=14, lost interest=1, family problem=1, too busy=1, not contactable= 1, ill=1)

Author	Year	Adverse Effects	Other
Christensen	2004	NR	NS

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Cross	2007	University of Maryland IBD program and gastroenterology clinic at VA in Baltimore	Maryland	Homes	Cohort	N=25

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Cross	2007	2004-2005	6 months	*Diagnosable IBD *Comprehend simple instructions in English *Have telephone at home *Ages ≥ 18 years	Posessing other types of colitis (infectious, ischemic, microscopic), no telephone at home, uncontrolled medical or psychiatric disease,had had surgical ostomy, had undergone IBD surgery in the past 6 months, had had a previous colectomy and ileoanal anastomosis, were pregnant, or were less than 18 years of age	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Cross	2007	NR	IBD	NR	52%	43.1 ± 15.3

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Cross	2007	Caucasian: 76% Hispanic: 8% African American: 16%	NR	Years (SD) spent in education Bluepages: 15.0 (±2.4) MoodGym: 14.6 (±2.4) Control: 14.4 (±2.3)	NR	Type of IBD Ulcerative Colitis: 60% Crohn's Disease: 32% Indeterminate Colitis: 8% Disease severity in previous months None: 16% Mild: 24% Moderate: 44% Severe: 16% Employment Full-time: 56% Part-time: 16% Student: 8% None: 20% Medical Therapy Aminosalicylates: 40% Antibiotis: 20% Steroids: 52% Immunomodulators: 32% Infliximab: 20% Cyclosporine: 4% Internet Use Once a day: 76% Once a week: 8% Once a month or less:

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Cross	2007	NR	NR	English	NR	Home Telemanagement System (HAT)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Cross	2007	Laptop connected to an electronic scale: desgined for pt self-test and symptom diary recording along with medication side effect recording and automated feedback (tailored to the symptoms/side effects of each pt)	All pts received their normal IBD care along with HAT	Laptop and a Scale	Education, data input, data collection, tailored feedback

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Cross	2007	NR	30-40 minute instruction session at home	Regular IBD care	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Cross	2007	NR	NR	Pre-Intervention Very limited: 32% Good: 64% Excellent: 4% CCKNOW Scores Baseline vs. 6 months 12 ± 4.4 vs. 9.2 ± 5.3

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Cross	2007	Adherence: overall weekly adherence with self-tests was 91% ±11 with only 3 pts (12%) completing less than 80% the self-tests during the 6 month period	91% thought the self-testing was not compolicated and that it took very little time 86% said that the testing did not interefere with their normal activities 64% said they could do the self-testing more than once a week	81% said that the initial training session was sufficient to use HAT 9% thought that it was too limiting to use HAT 91% of pts would consider using HAT in the future 90% of pts were happy with help they received from HAT at 6 mos vs. 70% initially

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Cross	2007	Baseline vs. 6 months HBI 3.8 ± 4.3 vs 2.2 ±3.6 p = 0.09 Sedimentation Rate 25.7 ± 34.4 vs. 16.1 ± 17.9 p = 0.06 C-reactive Protein 11.3 ± 25.9 vs. 3 ± 4 p = 0.13 86% of pts reported receiving excellent care at 6 mos, vs. 65% at baseline 57% of pts had their needs met at baseline, 71% after implementaiton of HAT	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Cross	2007	SIBDQ Questionnaire Scores Baseline vs. 6 months 49.2 ± 15.1 vs. 55.6 ± 14.5 p = 0.06	NR	N=34 5 did not comply with installation of HAT in home 2 pts did not have telphone at home 1 pt withdrew after 1st month 1 pt had extended hospital stay

Author	Year	Adverse Effects	Other
Cross	2007	NR	NS

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Cruz-Correia	2007	Outpatient clinic	Immunoallergy clinic	Homes	Randomized cross-over study	N = 21 Internet first: 7 Paper first: 12

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Cruz-Correia	2007	NR	2 mos	*Age 16 to 65 *Diagnosis of asthma for 6+ months *Use inhaled budesonide/formoterol *Pre-bronchodilator FEV1 >50% predicted	Severe psychiatric, neurological, oncologic or immunologic disease. Unable to access Internet during study period.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Cruz-Correia	2007	NR	ASTHMA	NR	N = 29%	Mean: 29

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Cruz-Correia	2007	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Cruz-Correia	2007	NR	NR	NR	NR	P'ASMA

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Cruz-Correia	2007	Web-based monitoring and decision support tool, tailored action plan, for patients and physician, vs. paper-based monitoring	Paper ® Internet (4 wks each) Internet ® Paper (4 wks each)	Peak flow and symptom diary	NR

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Cruz-Correia	2007	NR	Subjects given instruction on instruments and peak-flow monitoring during each 4-week phase of the study	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Cruz-Correia	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Cruz-Correia	2007	Median time to complete diaries was 3 minutes for paper and Internet (p=.675) Median time to complete peak flow monitoring was 2 minutes (same for both)	Paper vs. Internet vs. Piko-1 (peak flow): Easy to record data: 93% vs. 93% vs. 93% Easy to view data: 81% vs. 93% vs. 67% Like to use it: 80% vs. 93% vs. 100% Takes too long to use: 31% vs. 33% vs. 37%	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Cruz-Correia	2007	NR	NR	Mean % adherence to self-monitoring Piko-1 during paper: 45% Piko-1 during Internet: 46% Paper diary: 92% Internet diary: 41%

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Cruz-Correia	2007	NR	NR	NR

Author	Year	Adverse Effects	Other
Cruz-Correia	2007	NR	Paper vs. Internet vs. Piko1 (peak flow): Easy to forget: 44% vs. 47% vs. 40% It may be useful: 87% vs. 100% vs. 93% It may help improve asthma control a lot: 50% vs. 73% vs. 50% It may help improve treatment adherence a lot: 53% vs. 64% vs. 58%

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Delgado	2003	NR (author says that patients attending the university heart failure clinic but does not give any other details)	Heart failure clinic at Toronto General hospital	Homes	Cohort	N=16

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Delgado	2003	NR	3 months	*Confirmed diagnosis of heart failure *Internet access at home or workplace *Pts who did not have access to the internet but who had a caregiver who could access the internet were also invited to participate	Expected survival rate of less than 6 months based on the patient's clinical status and prognostic functional tests (e.g. cardiopulmonary tests ordered by the cardiologist)	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Delgado	2003	Unclear	HEART FAILURE	NR	N = 10 pts (62.5%)	Mean (SD): 53.3 (±12.5) Range: 32-83

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Delgado	2003	NR	NR	NR	Unclear/NR	Ishaemic disease: 5 pts Idiopathic dilated cardiomyopathy: 9 pts Other causes: 2 pts NYHA classification Class 2: 7 pts Class 3: 9 pts Medication profile ACEI: 14 pts (87.5%) Beta blockers: 13 pts (81.2%) Spironolactone: 10 pts (62.5%) Digoxin: 13 pts (81.2%) Furosemide: 14 pts (87.5%) ARB: 3 pts (18.7%) Hydralazine/nitrates: 1 pt (0.6%)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Delgado	2003	NR	NR	NR	NR	www.heartfunction.com

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Delgado	2003	Internet communication website was designed to be an informative resource for the patient and a daily communication method between patients and heart failure clinic at Toronto general hospital.	16 patients recruited in the cohort study. The website allowed for quick trending of weights, checking of medication, tracking goals of therapy and easy communication of non urgent cases. Pt were asked not to use the system for urgent communications. The website provided updated information of the most relevant clinical trials in heart failure, updates made every 3 months to the homepage, facilitated links to sites like AHA, WHO. Pts instructed to enter their first morning weight, heart rate and blood pressure and any specific comments or questions, reply sent through the system by research nurse, responses included increasing or decreasing the dose of diuretic, obtain blood work, info about test results, etc.	Computer	Daily logs of weight, communication with research nurse, education, links to other sites

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Delgado	2003	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Delgado	2003	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Delgado	2003	For pts who completed the study questionnaire within 3 months, the average of logins was 73 Drop off in frequency of site hits by a small group of patients over time, but majority continued usage over long periods (over 1 year)	NR	Questionnaire on patient satisfaction, Mean score results The links at the site were useful: 4.37 I was able to enter information easily: 5.0 I would reliably receive a response from the clinic: 4.56 I found the clinic website useful: 4.62 Communication using the website improved my quality of care: 4.12

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Delgado	2003	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Delgado	2003	Mean MLHFQ score Baseline: 59.75 (±1.5) 3 months: 49.87 (±1.3) 3 month scores vs. baseline scores Relationship with friends and family 3.062 vs. 2.06,p =0.03 Working around the house and yard 3.68 vs. 2.81, p=0.008 Side effects of medication 2.81 vs. 1.93, p=0.048	NR	NR

Author	Year	Adverse Effects	Other
Delgado	2003	NR	Qualitative responses for patient satisfaction given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Durso	2003	NR	Physician clinic (The author's practice)	Homes	Cohort	N=10

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Durso	2003	NR	3 months	Not Specified *Type2 diabetes pts *Over 60 yrs of age *Independent in self-care *Able to use the phone	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Durso	2003	Unclear	TYPE 2 DIABETES	NR	N = 3 (42.86%)	Mean (SD): 78.43 (±9.91)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Durso	2003	NR	NR	6 pts had some college or higher level of education	Unclear	Living alone in continuing care retirement community: 2 pts Living with son: 1 pt Living with spouses: 4 pts Medication Taking 9 or more medicines/day: 4 pts Managed with insulin: 3 pts Treated with oral diabetics- others Cellular telephone used by 1 pt before study For the study Cellular telephone used by 3 pts Home phones used by 2 pts Used both - 2 pts

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Durso	2003	NR	NR	NR	NR	personal diabetes management system (PDMS)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Durso	2003	Web based interface into the automated telephone call system used to look into older patient's ability to use the PDMS and its impact on diabetes health behaviors and patient and provider communications	10 patients recruited. At times predetermined by patients and provider, the PDMS prompts patients with interactive recorded human voice messages, these include performing self care activities (e.g. check feet, check blood glucose, take medication), calling the provider for medical advice, providing health education, recording personal health data. Messages customized to meet individual needs. Pts record data by entering values on the key pad. data then transmitted to the secure web site and reviewed by health care provider at his/her discretion.	Telephone	Data logs, customized reminders, performing self care activities, providing health education

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Durso	2003	NR	Each pts was provided with individualized diabetes education. Pts also given American Diabetes Association (ADA) book Diabetes A to Z. The nurse practitioner taught each pt how to use the cellular phone to receive messages and record glucose values and weight. The PDMS prompted pts to call nurse practitioner when pt experienced diabetic symptoms, medication side effects or any problems with the care plan.	NR	Glycosylated hemoglobin (%) subject - Before vs. after 1001 - 8.6 vs. 7.3 1002- 7.4 vs. 7.0 1004- 6.7 vs. 6.8 1005- 6.0 vs. 6.1 1007- 8.6 vs. 7.6 1008- 7.8 vs. 8.0 1011- 8.3 vs. 5.9 BMI subject - Before vs. After 1001- 30 vs. 32 1002- 24 vs. 23 1004- 33 vs. 33 1005- 29 vs. 28 1007- 29 vs. 27 1008- 28 vs. 29 1011- 35 vs. 33

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Durso	2003	NR	NR	Diabetes Knowledge test scores (%) Subject- Before vs. After 1001: 86 vs. 86 1002: 79 vs. 100 1004: 57 vs. 86 1005: 71 vs. 71 1007: 79 vs. 100 1008: 79 vs. 71 1011: 64 vs. 57

Author	Year	Use of Technology	Usability	HIT Satisfaction
Durso	2003	NR	PDMS study usability questions (1-5 scale, 5 is the best), Mean (SD) Convenience of cellular phones: 3.71 (±1.7) Convenience of home phones: 4.17 (±1.60) Quality of voice on phone: 4.71 (±0.76) Your ability to understand message: 4.71 (±0.76) Ease of cell phone use: 2.57 (±1.40) Ease of home phone use: 4.33 (±1.63) Ease of recording glucose, weight, and exercise: 3.86 (±1.46) Value in management of diabetes: 4.28 (±0.95) Aid to communication with health provider: 4.28 (±1.50)	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Durso	2003	NR	NR	Frequency: % (n) (Before) vs. % (n) (After) Activity Never: 42.9% (3) vs. 0 1-2 X week: 14.3%(1) vs. 14.3% (1) 3-4 X week: 14.3% (1) vs. 28.6% (2) 5-6 X week: 28.6% (2) vs. 14.3% (1) Everyday: 0 vs. 42.9% (3) Monitor glucose Never: 28.6% (2) vs. 14.3% (1) 4-6 X week: 14.3% (1) vs. 14.3% (1) Once/day: 28.6% (2) vs. 28.6% (2) More than once/day: 28.6%(2) vs. 42.9% (3) Miss medication Never: 85% (6) vs. 85% (6) 1-2 X month: 0 vs. 14.3 % (1) 1-3 X week: 14.3% (1) vs. 0 Check feet Daily: 100 % (7) vs. 100% (7) Symptoms of hypoglycemia Never: 42.9% (3) vs. 14.3% (1) 1-2 X month: 57.1 % (4) vs. 71.4 % (5) 1-3 X week: 0 vs. 14.3 % (1) Symptoms of hyperglycemia

Author	Year	Quality of Life	Support	Withdrawals
Durso	2003	NR	NR	3 did not complete the study due to acute illness and hospitalization

Author	Year	Adverse Effects	Other
Durso	2003	NR	Qualitative response in the form of summary of participants comments given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Earnest	2004	Waiting room of clinic	CHF clinic at U of Colorado Hospital at Denver	Homes	RCT	N = 107 Grp 1: 54 Grp 2: 53

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Earnest	2004	January-December 2002	12 mos	*Followed up in the clinic, *Spoke English *18+ yrs old *Have used a web browser (not necessary to have home internet)	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Earnest	2004	YES: 10% Minority	CHF	NR	77% (CI 68-84)	Mean: 54 Range: 54-58

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Earnest	2004	Caucasian: 90%	>$45k/yr: 53% (CI 42-63)	49% college graduates (CI 39-59)	NR	100% previous experience using internet, 95% had access to a home computer

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Earnest	2004	19% (CI 12-27) in Safety Net insurance program for needy patients	NR	English	NR	SPARRO, System Providing Patients Access to Records Online

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Earnest	2004	Secure web access to medical records, guide to heart failure and a messaging system	Group 1: Intervention Group 2: Control	Secure website	Offer patients access to records, lab tests and educational materials

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Earnest	2004	NR	Written user guide	NR	Exercise Endurance Grp 1 vs. Grp 2: 0.74 Pooled: 0.25 Strengthening Grp 1 vs. Grp 2: 0.40 Pooled: 0.95 MOS SF-36 Physical Grp 1 vs. Grp 2: 0.75 Pooled: 1.0 Physical role functioning Grp 1 vs. Grp 2: 0.60 Pooled: 0.14

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Earnest	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Earnest	2004	Demographic Factors Associate with use of SPARRO Age: p=0.55 Gender (%male): p= 0.63 Race: p= 0.06 Education (%college grad): p= 0.54 HH income >$45000: p= 0.25 Baseline KCCQ symptom (Mean): p= 0.07 Number of clinic visits (Mean): p= 0.10	NR	Baseline Expectations of Patients and Physicians Patient empowerment: p= 0.01 More questions: p= 0.11 Worry more: p<0.01 reports confusing: p= 0.01 Notes offensive: p= 0.03 Notes confusing: p= 0.35

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Earnest	2004	General Health Perception Grp 1 vs. Grp 2: 0.71 Pooled: 0.09	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Earnest	2004	NR	MOS Social Support Offline Grp 1 vs. Grp 2: 0.95 Pooled: 0.25 Online Grp 1 vs. Grp 2: 0.08 Pooled: 0.37	N = 26

Author	Year	Adverse Effects	Other
Earnest	2004	NR	Limitations include a highly educated patient population, more computer literate and high staff/patient ratio in this clinic

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Estabrooks	2005	Urban as well as rural	NR Look at Glasgow 2004, Amthauer 2003 has more info on physician and patient recruiting	Doctor's office	Intervention arm of RCT	N = 422 Grp 1 (Reduce fat): 112 Grp 2 (Increase fruits and vegetables): 100 Grp 3 (Increase physical activity): 210

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Estabrooks	2005	NR	6 months	*Age equal to or above 25 yrs *Language: English *Presence of Type 2 Diabetes.	Pts who chose smoking cessation as target behavior were excluded	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Estabrooks	2005	YES	TYPE 2 DIABETES	NR	Reduce fat: 52.7% Increase fruit and veggies: 49% Increase physical activity: 45%	Mean (SD) Reduce fat: 62 (±13.37) Increase fruits and vegetables: 60 (±11.86) Increase physical activity: 63 (±12.80)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Estabrooks	2005	Grp 1 (Reduce fat) Caucasian: 86.5% Hispanic: 10.8% Other: 2.7% Grp 2 (Increase fruits and veggies) Caucasian: 81% Hispanic: 10.9% Other: 8% Grp 3 (Increase physical activity) Caucasia: 83.8% Hispanic: 11% Other: 5.2%	Income Grp 1 (Reduce fat) < $ 10,000: 10.2% $10,000-29,999: 25.9% $30,000-49,999: 33.3% ≥$ 50,000: 30.6% Grp 2 (Increase fruits and veggies) < $ 10,000: 13.5% $10,000-29,999: 30.2% $ 30,000-49,999: 22.9% ≥$ 50,000: 33.3% Grp 3 (Increase physical activity) < $ 10,000: 11.2% $10,000-29,999: 24.9% $ 30,000-49,999: 27.4% ≥$50,000: 36.5%	Grp 1 (Reduce fat) <HS: 12.5% High school graduate: 22.3% College 1-3 yrs: 29.5% College/grad school: 35.7% Grp 2 (Increase fruits and veggies) <HS: 14% High school graduate: 30% College1-3 yrs: 34% College/grad school: 22% Grp 3 (Increase physical activity) <HS: 11% High school grad: 27.1% College1-3 yrs: 33.8% College/grad school: 28.1%	Urban as well as rural	Married % Grp 1: 70.5 Grp 2: 68 Grp 3: 68.1 Median number of co-morbid diseases Grp 1: 2 Grp 2: 2 Grp 3: 2 Diet Fat consumption: Mean (SD), p= 0.28 Grp 1: 22.27 (±7.78) Grp 2: 19.18 (±8.98) Grp 3: 20.49 (±8.48), Fruit and vegetable consumption: Mean (SD), p < 0.0001 Grp 1: 13.5 (±4.94) Grp 2: 10.65 (±3.59) Grp 3: 12.40 (±4.61) Physical activity Days of vigorous activity, p< 0.0001 Grp 1: 0.42 Grp 2: 0.34 Grp 3: 0.29

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Estabrooks	2005	NR	NR	NR	NR	Diabetes priority program

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Estabrooks	2005	Clinic based, interactive, self management CD-ROM that allowed pts to select a behavioral goal and receive mail and telephone support for the initial 6 months followed by additional behavioral assessments.	Goal setting component targeted development of tailored action plan based on the pts needs; Pts completed brief assessment of diet and physical activity; Pts selected a behavioral change goal in the area of diet or exercise; interactive session facilitated pts in selecting specific activities to support the goal, identifying barriers and choosing strategies to overcome these barriers; program generated hard copy, minimal coaching involved, Pt then completed brief counseling session with care manager of that practice to provide goal related feedback	Computer (CD-ROM)	Goal setting, Tailored action plan, assessments of dietary intake and physical activity, hard copy of pts personal action plan

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Estabrooks	2005	NR	NR	NR	Fat consumption, Mean (SD) Baseline vs. 6 months Grp 1: 22.27 (±7.78) vs. 18.42 (±7.99); p < 0.0001 Grp 2: 19.18 (±8.99) vs. 16.84 (±8.75), p=0.0029 Grp 3: 20.49 (±8.49) vs. 19.09 (±7.80), p= 0.0058 Overall comparison= 0.0088 Fruit and veggie consumption, Mean (SD) Baseline vs. 6 months Grp 1: 13.5 (±4.94) vs. 14.12 (±5.07) ; p=0.0967 Grp 2: 10.65 (±3.59) vs. 12.70 (±4.11) , p<0.0001 Grp 3: 12.4 (±4.61) vs. 12.86 (±5.20), p= 0.0587 Overall comparison= 0.075 Vigorous activity Baseline vs. 6 months Grp 1: 0.42 vs. 0.46 ; p=0.4594 Grp 2: 0.34 vs. 0.36 , p= 0.288 Grp 3: 0.29 vs. 0.37 , p= 0.0002 Overall comparison= 0.1634 Moderate activity Baseline to 6 months Grp 1: 0.49 vs. 0.55; p= 0.0917 Grp 2: 0.45 vs. 0.48 , p= 0.4515

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Estabrooks	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Estabrooks	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Estabrooks	2005	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Estabrooks	2005	NR	NR	Grp 1 (N) Baseline vs. 6 months 112 vs. 92 (No reasons given) Grp 2 (N) Baseline vs. 6 months 100 vs. 90 (No reasons given) Grp 3 (N) Baseline vs. 6 months 210 vs. 169 (no reasons given)

Author	Year	Adverse Effects	Other
Estabrooks	2005	NR	No

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Ewald	2006	27 clinical practices	27 clinical practices	Homes/Clinic	Cohort	N=53
Ferrer-Roca	2004b	NR	Island town	Home or Work	Cohort	N = 172 Grp 1 (DM): 12 Grp 2 (Website review only): 160

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Ewald	2006	3 months	None	*Age ≥18 years with essential hypertension requiring antihypertensive therapy	NR	NR
Ferrer-Roca	2004b	September 2002-June 2003	9 mos	*Dx of DM *Aged: 18-75 years *Internet access at home or work, or mobile phone with WAP services *Basic knowledge of the IT	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Ewald	2006	NR	HYPERTENSION	NR	55%	Mean Age: 57.7 Range: 33-90
Ferrer-Roca	2004b	YES: rural islanders	DM	NR	NR	Mean (Range): 39 (27-68)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Ewald	2006	German	NR	NR	NR	Mean (Range) BMI: 28.1 (19-41) Duration of HTN (yrs): 6.4 (0-23)
Ferrer-Roca	2004b	NR	NR	NR	Rural, islanders	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Ewald	2006	NR	NR	German	International guidelines for the management of HTN have acknowledged the need to look for alternative methods of BP measurement in order to quantify more precisely the contribution of HTN to CV risk.	TensioPhone 2 telemonitoring BP device
Ferrer-Roca	2004b	NR	NR	NR	NR	Website with patient and doctor interfaces for inputting data and sending advice

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Ewald	2006	Device stores BP measurement data. Device is an upper-arm oscillometric device with a built-in modem for data teletransmission via standard telephone lines.	All patients used the device for BPSM	BPSM device	To record data, transmit data, and store data
Ferrer-Roca	2004b	Group 1: those who entered the trial to test the system Group 2: those that did not meet study criteria to enter the trial, but reviewed the website only	NR	Website	Education, data input, advice sending

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Ewald	2006	NR	Received instruction on how to operate the BPSM device	HTN medication (lowers BP): olmesartan medoxomil	Office Measurements Systolic (SD)/Diastolic (SD) (mmHG) Baseline (visit 1): 162.6 (±18.7)/96.3 (±13.5) Week 12 (visit 2): 133.5 (±7.7)/79.8 (±5.8) Systolic diff. v. baseline: 29.1 (±16.9) Diastolic diff. v. baseline: 16.5 (±13.2) BPSM Baseline: 147.8 (±16.1)/85.7 (±11.6) Week 9: 138.6 (±13.2)/79.0 (±10.7) Systolic diff. v. baseline: 9.2 (±16.9) Diastolic diff. v. baseline: 6.7 (±8.9)
Ferrer-Roca	2004b	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Ewald	2006	NR	Assuming none since Germany has a universal health care system	NR
Ferrer-Roca	2004b	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Ewald	2006	Reduction of BP ≥2 BPSMs/day and 100% compliant: -16.6/-8.0mmHg 1 BPSM/day and 75% compliant: -0.2/-3.3.mmHg	NR	NR
Ferrer-Roca	2004b	NR	86% of Grp1 and 40% of Grp 2 would recommend the site (P<0.01) 71 % of Grp1 and 92% of Grp 2 thought the system was easy to use (P<0.05) 33% of Grp 1 and 12% of Grp 2 did not find the system useful and efficient (P<0.05) 50% of Grp 1 and 88% of Grp 2 had difficulties in accessing the system(P<0.01)	Responses were only from Grp1: results are ambiguous, with only 8 subjects completing questions on HIT satisfaction

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Ewald	2006	NR	NR	NR
Ferrer-Roca	2004b	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Ewald	2006	NR	NR	NR
Ferrer-Roca	2004b	NR	NR	NR

Author	Year	Adverse Effects	Other
Ewald	2006	NR	NR
Ferrer-Roca	2004b	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Ferrer-Roca	2004a	NR	NR	Homes	Cohort	N= 23
Finkelstein	1996	Lung transplant recipients	Tertiary care academic center	Home-monitoring	Cohort	N = 41

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Ferrer-Roca	2004a	NR	8 months	*Pts with diabetes *Access to their own personal mobile phone or access to one belonging to their relative	NR	NR
Finkelstein	1996	1993-1994	12 mos	*Alive and willing	Transplant or training prior to full implementation	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Ferrer-Roca	2004a	NR	DIABETES	NR	MR	Range 18-75 0-24 yrs: 19 pts 25-49 yrs: 1 pt 50-75 yrs: 2 pts ≥75: 1 pt
Finkelstein	1996	NR	LUNG TRANSPLANT	NR	N = 41.46% (17/41)	Mean (SD): 47.1 (±11.7) Range: 15-66

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Ferrer-Roca	2004a	NR	NR	NR	NR	NR
Finkelstein	1996	NR	NR	NR	NR	NR

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Ferrer-Roca	2004a	NR	NR	NR	NR	Mobile phone text messaging
Finkelstein	1996	NR	NR	NR	NR	Electronic spirometer/diary

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Ferrer-Roca	2004a	Pts used SMS to transmit data (glucose levels and body weight) to a server which automatically answered with an acknowledgement message. A monthly calculated glycosylated hemoglobin result was also automatically sent to the pt by SMS.	Web based server capable of receiving and displaying patient data. Pts entered their blood glucose or other values such as body weight using their mobile phone. The server automatically answered via SMS with a pre recorded acknowledgement when a pt entered a blood glucose value, or with specific help or warning messages when data were wrong or out of range for the individual patient. Each month the system calculated a mean blood glucose value for each pt. Each pt's calculated mean HbA1c value was sent to the pts mobile phone via SMS and stored in the database. Moreover, 4 messages containing advice, automatic reminders or warnings were also sent.	Mobile phone	Data input , SMS, acknowledgement message, monthly glycosylated Hb result through SMS, warnings and reminders
Finkelstein	1996	Daily home monitoring of symptoms and vital signs in electronic diary, plus automatic recording of spirometer data, with weekly transmission to clinic	All patients received home monitoring diary instrument, plus initial training, weekly phone calls, quarterly newsletter, a hotline, plus usual care	Home spirometer with electronic diary and automatic weekly modem transmission of data	Tracking symptoms and signs

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Ferrer-Roca	2004a	NR	NR	NR	NR
Finkelstein	1996	NR	Initial training, weekly phone calls, quarterly newsletter, a hotline,	Weekly phone calls, quarterly newsletter, a hotline	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Ferrer-Roca	2004a	NR	The monthly cost based on pt sending one text message/day for 5 days/wk The std cost of text message was US $ 0.18 The cost / pt was $ 3.6/month A total of 25 messages /month including the monthly report, education, warnings and reminders Cost to the diabetes manager was $4.5. These were compared with hypothetical use of premium SMS calls which cost almost $1.2/message. Thus, cost to the pt would be $24 /month, but the diabetes service would make a profit of $ 8.4/month	NR
Finkelstein	1996	NR	Estimate 4.5-5 minutes per patient per week staff time, over usual care	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Ferrer-Roca	2004a	Average of 33 SMS server messages / month from the 23 pts. Reduction in reported activity during a holiday period.	Elderly people had difficulty typing the SMS messages and this was instead done by relatives	People criticized the fact that system did not allow data from previous day to be entered. Average scores on pt satisfaction survey Question- SMS users (n=6) Are automatic messages of interest?: 4.2 Are doctors' messages useful?: 3.8 Is your diabetes better controlled with SMS?: 3.0 Do you like the SMS diabetes system?: 4.2 Is your glycosylated Hb level of interest to you?: 4.2 Do you prefer to manage diabetes yourself?: 4.2 Do you prefer doctor to manage your diabetes?: 3.7 What is your level of satisfaction with the SMS system?: 4.3
Finkelstein	1996	8941 transmissions by 41 subjects in 52 weeks; initial 6.2/wk, stable over 3.9/wk; 98% complete symptoms, vital signs, 100% complete spirometry	NR	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Ferrer-Roca	2004a	NR	NR	NR
Finkelstein	1996	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Ferrer-Roca	2004a	NR	NR	NR
Finkelstein	1996	NR	NR	None (121 screened; 4 refused; 6 unstable; 33 deaths, 37 before intervention ready = 41)

Author	Year	Adverse Effects	Other
Ferrer-Roca	2004a	NR	NS
Finkelstein	1996	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Franklin	2006	NR	Pediatric Clinics, Tayside	Homes	RCT	N = 92 Grp 1: 28 Grp 2: 33 Grp 3: 31

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Franklin	2006	October 2002-February 2003	NR	*Type I Diabetes for > 1 year *Tx with insulin therapy (2 or 3 injections per day)	Serious social problems, severe learning disabilities, needle phobia	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Franklin	2006	NR	TYPE 1 DIABETES	NR	Grp 1: 63% Grp 2: 45% Grp 3: 55%	Mean Grp 1: 12.7 Grp 2: 14.1 Grp 3: 12.6

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Franklin	2006	Not Caucasian Grp 1: 4 pts Grp 2: 3 pts Grp 3: 3 pts	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Franklin	2006	NR	NR	NR	NR	Sweet Talk

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Franklin	2006	Automated mobile phone text-messaging support system, goal setting	Group 1: Conventional insulin therapy (CIT) Group 2: CIT plus Sweet Talk Group 3: Basal bolus or pump therapy, Sweet Talk, nutrition counseling All patients received 3-4 month clinic visits and access to emergency hotline	Phone	Text messages, reminders

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Franklin	2006	Goal setting training for diabetes team by team psychologist; details NR	NR	NR	HbA1c: Group 1 vs. Group 2: 10.1±1.7, 95% CI -0.7, +0.7, P= 0.99 Group 2 vs. Group 3: : 9.2±2.2, 95% CI -1.9, -0.5, P <0.001 Diabetic ketoacidosis (DKA); episodes Group 1 vs. Group 2: 3 vs. 2, P= 0.58 Group 2 vs. Group 3: 2 vs. 7, P=0.10 Severe hypoglycemia; episodes Group 1 vs. Group 2: 4 vs. 1, P= 0.63 Group 2 vs. Group 3: 1 vs. 2, P= 0.37

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Franklin	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Franklin	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Franklin	2006	NR	Self-efficacy for diabetes (SED) score: Group 1 vs. Group 2 56.0+ 13.7 vs. 62.1+6.6, 95% CI +2.6, + 7.5, P=0.003 Group 2 vs. Group 3 62.1+6.6 vs. 63.1+ 7.2, 95% CI -2.1,+4.2, P=0.50	Adherence score (Visual analog scale- self-report) Group 1 vs. Group 2: 70.4 (±20.0) vs. 77.2 (±16.1), 95% CI +0.4, +17.4, P=0.042 Group 2 vs. Group 3: 77.2 (±16.1) vs. 78.8 (±16.2), 95% CI -7.0, +8.0, P=0.90

Author	Year	Quality of Life	Support	Withdrawals
Franklin	2006	NR	Diabetes social support interview (DSSI): Family and friends: Group 1 vs. Group 2: NS, data not provided Group 2 vs. Group 3: NS, data not provided	NR

Author	Year	Adverse Effects	Other
Franklin	2006	NR	Diabetes social support received from diabetes team Group 1 vs. Group 2: Group 2 vs. Group 3:

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Frenn	2005	Urban public middle school	NA	Computer lab	Nonrandomized between group	N= 137 IG: 43 CG: 60

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Frenn	2005	NR	1 month	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Frenn	2005	YES	NR	NR	IG Diet More than 3 sessions: 30% Less than 3 sessions of diet: 33.3% Activity More than 2 sessions: 26.3% Less than 2 sessions: 33.3% CG Diet: 44.9% Activity: 50%	12 yrs IG Diet More than 3 sessions: 45% Less than 3 sessions of diet: 50% Activity More than 2 sessions: 51.2%% Less than 2 sessions: 25% CG Diet: 51% Activity: 46.7% 13 yrs IG Diet More than 3 sessions: 42.5% Less than 3 sessions of diet: 16.7% Activity More than 2 sessions: 37.2% Less than 2 sessions: 50%

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Frenn	2005	Asian IG Diet More than 3 sessions: 0% Less than 3 sessions of diet: 0% Activity More than 2 sessions: 0% Less than 2 sessions: 0% CG Diet: 4.1% Activity: 5% Black IG Diet More than 3 sessions: 20% Less than 3 sessions of diet: 50% Activity More than 2 sessions: 20.9% Less than 2 sessions: 33.3%	Free lunch IG Diet More than 3 sessions: 75% Less than 3 sessions of diet: 66.7% Activity More than 2 sessions: 72.1% Less than 2 sessions: 75% CG Diet: 71.4% Activity: 70% Reduced IG Diet More than 3 sessions: 12.5% Less than 3 sessions of diet: 0% Activity More than 2 sessions: 14% Less than 2 sessions: 8.3%	NR	Urban public middle school	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Frenn	2005	NR	NR	NR	NR	Internet/video exercise and low fat diet intervention

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Frenn	2005	Eight session health promotion/transtheoretical model internet/video delivered intervention to increase physical activity and reduce dietary fat among low income, culturally diverse, seventh grade students.	IG: Eight session blackboard platform delivered internet approach with 4 two to three min videos. Focus of the intervention on strategies appropriate for all stages of change, particularly for those in precontemplation and contemplation stages. (concepts included consciousness raising, self reevaluation, improve access to healthy foods and physical activity, decisional balance including reduce barriers to healthy foods and physical activity and emphasize benefits for healthy foods and physical activity). Computer generated tailored feedback provided for physical activity and dietary fat; 10 discussion board answers for which individualized e mailed feedback provided; structured workbook provided to record notes.	Computer	Education, tailored feedback, emails, discussion board

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Frenn	2005	NR	NR	NR	Exercise: IG students who completed more than half the sessions increased moderate/vigorous exercise by an average of 22 mins compared with a decrease of 46 mins for the control group t (103)= - 1.99, p=0.05 Those who completed all 3 sessions (n=39) increased activity by 33 mins. Dietary fat: IG students participating in more than half of the sessions decreased dietary fat from 30.7 % to 29.9% , t(87)= 2.73, p=0.008 CG students had 31.5% dietary fat pretest and 31.6% dietary fat post test.

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Frenn	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Frenn	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Frenn	2005	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Frenn	2005	NR	NR	IG students who did not complete half the exercises and not included in the analysis=12 IG students who participated in less than half the sessions (dietary fat) and removed from analysis = 6

Author	Year	Adverse Effects	Other
Frenn	2005	NR	Change in activity of IG students who did not complete half the exercises not significantly different from the control students, t (13)= 1.53, p=0.15 IG students participating in less than half the sessions on dietary fat were not significantly different than students in the control group, t (16.6)= -1.843, p=0.08 Pre and post test activity and dietary fat for subjects in each stage of change shown in graphic form Graphs depicting comparative subgroup changes in dietary fat and exercise given but very difficult to obtain precise values Subgroup analysis Activity; For IG students participating in more than half the activity sessions, moderate and vigorous activity were increased for all racial group For CG students, activity decreased in each racial grp Dietary fat; For IG students participating in more than half the sessions, decreased for all racial groups

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Gega	2004	NR	Computer aided self-help clinic	Fearfighter: mostly in clinic, occasionally at a free internet café or a medical center, some could access it at home or elsewhere linked to the internet after it became available on the web Cope and BTSteps: self help booklets given and free phone calls made by pts from home to the IVR system. Balance: accessed system by PC with a CD-ROM drive at the clinic, home, free internet cafe or a physician's office.	Case Study; Cohort	N= 210

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Gega	2004	12 months	Fearfighter, cope and BT steps=12 weeks Balance=4 weeks	Presence of an anxiety and depressive disorder, motivation to do self help, and no substance abuse, psychosis or active suicidal plans	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Gega	2004	NR	ANXIETY or DEPRESSIVE DISORDER	NR	Slightly under half were men (no raw data available)	NR

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Gega	2004	NR	NR	A third were unemployed or students (no raw data)	NR	Mean problem duration: 8 yrs with moderately severe problems 39% had given up work/long term sick leave Almost 1/2 were having current treatment from their physician or a mental health professional 1/2 were on psychotropic medication (no raw data) 20% had CBT previously 35% used computers most days at work Broad diagnosis Depression: 71 Phobia/panic disorder: 60 Generalized anxiety disorder: 35 Obsessive compulsive disorder: 35

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Gega	2004	NR	NR	NR	NR	Computer aided systems of cognitive behavior therapy (CCBT) (Fearfighter, Cope, Balance and BTSteps)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Gega	2004	Systems of cognitive behavior therapy accessible at home included fearfighter for phobia/panic; Cope for non-suicidal depression; BTSteps for Obsessive compulsive disorder; Balance for generalized anxiety/mild depression.	CCBT systems help the pts make most of the decisions about how to devise, execute and complete CBT including appropriate homework and relapse prevention. The therapist's role was restricted to briefly screening the patient and offering live advice (by phone) if pt got stuck during CCBT. The clinic's pt accessed Cope and BT Steps by phoning a computer on an interactive voice response system (IVR) system after reading a manual. Computer faxed to the clinic weekly reports of phone calls, duration, modules accessed and for Cope pts, suicide risk Balance and Fearfighter could be accessed via internet and Balance had a CD-ROM form too Pts told to use the system as much as possible; pts advised to use fearfighter cope or BTSteps	Computer, phone	Cognitive behavior therapy, IVR

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Gega	2004	NR	Pts were given manuals to read before calling the Cope and BTSteps system	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Gega	2004	NR	Assuming administrative costs and 15% overheads, the estimated per pt cost advantage of CCBT over face to face CBT would rise from 15% /pt for 350 pts a yr to 41% per pt for 1,350 pts a yr The total cost of CCBT nationally might rise if many users who were previously untreated sought CCBT to offset savings from lower per patient cost	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Gega	2004	Mean of 58 days from pts starting CCBT to ending it. In this period, mean of 64 mins support from the clinician The clinic' pts who accessed computer by phone spent similar total times calling the computer as in previous studies- 2 hrs on Cope calls and 4 hrs on BT Steps calls.	NR	Pts fairly satisfied with their CCBT system and satisfied even more with live support and self help clinic as a whole. Marginal preference for therapist over computer guidance seen satisfaction and preference ratings were similar among users of he four different systems.

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Gega	2004	NR	Significant improvement on work/social adjustment for fearfighter, cope and balance users. Significant improvement from pre to post treatment on measures specific to their problem for completers of each self help Clinically meaningful effect size of 0.8 or more exceeded by fearfighter users on the FQ's global phobia and anxiety/depression scores; by cope users on depression and on work/social adjustment; and by BTSteps users on obsessive compulsive total and sub scores. Completers improved comparably to completers in other studies that used the CCBT system and measures.	NR

Author	Year	Quality of Life	Support	Withdrawals
Gega	2004	NR	NR	Over 12 months intake, screening questionnaires received=355 unsuitable on the questionnaire= 8% screening interview with a clinician offered to= 327 attended=266 suitable=210 refused CCBT= 42 (20%) dropped out early or gave no post treatment data= 60 (29%)

Author	Year	Adverse Effects	Other
Gega	2004	NR	3 case illustrations discussed.

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Gerber	2007	Inner city	Inner city clinics and Childhood diabetes registry	Homes	Cohort	N=19
Gerbert	2003	3 primary care clinics	San Francisco Bay Area, CA	Clinic	RCT	N=52

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Gerber	2007	NR	6 months	NR	NR	NR
Gerbert	2003	NR	NR	*Ages 18-65 *Smokes tobacco and/or drinks alcohol	Outside age range, does not smoke tobacco or drink	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Gerber	2007	YES: inner city	DIABETES: Types 1 and 2	NR	Total: 32%	Mean age: 22.3 yrs (19-26)
Gerbert	2003	YES: recruited from clinic that primarily serves low-income individuals on Medi-Cal	YES: SMOKING and/or DRINKING ALCOHOL	NR	48.00%	Range: 18-65

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Gerber	2007	African-American: 84%	NR	Finished high school: 74%	Urban	Had received diabetes education previously: 74% Had diabetes related complication: 37% Out of 13 women, 7 had ay least one child Computer at home: 21% Current use of computer at work or school: 47% Very comfortable with computer: 84% Somewhat comfortable: 3%
Gerbert	2003	African-American: 48% Caucasian: 23% Latino: 12% Asian: 10% Other: 8%	NR	NR	NR	Current Smokers: 31% Drinking at risky or hazardous levels: 40% Combination: 29%

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Gerber	2007	Public aid: 53% No health insurance: 21% Unemployed or disabled: 37%	NR	NR	NR	STYLE- Self management training in youth for lifelong effectiveness
Gerbert	2003	NR	NR	NR	NR	Project Choice

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Gerber	2007	Internet based transition support program consisting of background information on diabetes, goal setting exercises with individualized feedback, role playing, group discussions, empowerment activities and communication skills training designed to improve interactions with health professionals.	Internet based program on commercial course management software. Each week, a diabetes educator introduced a new module with an activity and feedback evaluation form and monitored the discussion board. This board provided encouragement, discussion of clinical and logistic problems and prevented sharing of misinformation. Three " ask an expert" segments allowed pts to consult with psychologist, patient advocacy expert and a social worker with experience in diabetes related health care access.	Computer	Information on diabetes, goal setting exercises with individualized feedback, role playing, group discussions,
Gerbert	2003	This "video doctor" is an interactive, multimedia video doctor, that helps reduce primary care pts smoking and alcohol use by: a) a patient-centered advice message and b) a brief motivational intervention tailored to the information input by the pt	CG: 16 Video doctor-advice message: 18 Video doctor-advice message + brief intervention: 18	Interactive multimedia software	To provide suggestions about how to quit smoking/drinking to pts

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Gerber	2007	NR	NR	NR	83% stated that they experienced greater control of their diabetes following completion of modules
Gerbert	2003	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Gerber	2007	NR	NR	NR
Gerbert	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Gerber	2007	STYLE accessed a total of 4445 times 25.8% of all hits were between 9 PM-11 PM STYLE used maximum in the first 2 months (1460 and 1417 hits respectively) Use declined 262 times the 6th month. Discussion board had the heaviest use (4-576 per participant, median 57, SD=148.5) 50% completed modules within 30 mins, additional 30% spent 30-60 mins on the modules	50% felt that the modules were very easy or easy to complete with the remainder describing them as somewhat hard. 67% reported trouble completing module activities on time often due to work, school and family commitments	Overall, every one of the pts indicated that the module was very helpful.
Gerbert	2003	NR	7 point scale Mean: 6.79	7 point scale Mean: 5.69

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Gerber	2007	NR	NR	NR
Gerbert	2003	NR	NR	7 point scale intention to change behavior Smokers: 5.94 Alcohol Users: 4.42

Author	Year	Quality of Life	Support	Withdrawals
Gerber	2007	NR	50% received encouragement from family members often or very often to log in to STYLE.	NR
Gerbert	2003	NR	NR	NR

Author	Year	Adverse Effects	Other
Gerber	2007	NR	Qualitative results on the discussion board reported, not listed here
Gerbert	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Glasgow	2000	Outpatients	Primary care physicians-small group practices	Center for healthy living, centralized location for most pts	RCT	N= 320 Grp 1 (no Telephone [TF], no Community resources[CR]): 80 Grp 2 (no TF, CR): 80 Grp 3 (TF, no CR): 80 Grp 4 (TF, CR): 80

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Glasgow	2000	NR	6 months	*Meeting the Welborn criteria for Type 2 diabetes on the basis of age at diagnosis, body mass index, and when insulin was begun *Age >40 yrs *Living independently *Have a telephone *Not planning to move out of the area during the next year	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Glasgow	2000	NR	DIABETES	NR	TF, CR: 43.6% TF, no CR: 43% No TF, CR: 52.6% No TF, no CR: 33.7%	Mean (SD): (TF, CR) vs. (TF, no CR) vs. (No TF, CR) vs. (No TF, CR) 57.4 (± 9.4) vs. 59 (±9.6) vs. 60.5 (±8.6) vs. 60.6 (±9.5)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Glasgow	2000	Caucasian TF, CR: 91.4% TF, no CR: 88.6% No TF, CR: 90.9% No TF, CR: 90.0%	NR	Some college or more TF, CR: 58.0% TF, no CR: 63.0% No TF, CR: 59.7% No TF, CR: 46.3%	Unclear	Retired, % (TF, CR) vs. (TF, no CR) vs. (No TF, CR) vs. (No TF, CR) 35.8 vs. 31.6 vs. 28.6 vs. 45.0 Live alone, % (TF, CR) vs. (TF, no CR) vs. (No TF, CR) vs. (No TF, CR) 64.2 vs. 44.3 vs. 58.4 vs. 51.2 Years diagnosed, mean(SD) (TF, CR) vs. (TF, no CR) vs. (No TF, CR) vs. (No TF, CR) 6.4 (5.9) vs. 7 (6.7) vs. 6.8 (7.6) vs. 5.1 (4.3) On insulin, % (TF, CR) vs. (TF, no CR) vs. (No TF, CR) vs. (No TF, CR) 14.8 vs. 16.5 vs. 15.8 vs. 15.0 Previous diabetes

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Glasgow	2000	NR	NR	NR	NR	Choosing Well project

Appendix H. Data Table

		Intervention*			
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Glasgow	2000	Interactive multimedia touch screen , computer assessment and feedback session The computer interaction assessed, immediately analyzed and provide feedback on the patient's dietary patterns, barriers to and support for dietary self management and preferences for different intervention strategies. The session concluded with a tailored dietary fat reduction goal based on the participant's eating patterns and preferences and a 1 page goals printout summarizing this info. Telephone FU- consisted of brief, structured calls to provide ongoing support and reinforcements to pts via continued contact with interventionist who met pts during the office visit. also provided personalized problem solving training based on barriers to dietary self care identified via	Grp 1: no Telephone (TF), no Community resources(CR) Basic intervention pts received the above and a general pamphlet on low fat eating Grp 2: No Telephone Follow up but community resources provided Grp 3: Telephone follow up, no community resources Grp 4: Telephone FU and community resources provided	Computer	Assessment, education, analysis and tailored feedback

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Glasgow	2000	NR	NR	NR	HBA1c, p=NS, n=267 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline- 7.6(1.2) vs. 7.3 (1.5) vs. 7.5 (1.9) vs. 7.6 (1.8) 3 month FU- 7.6 (1.4) vs. 7.3 (1.6) vs. 7.6 (2.1) vs. 7.5 (1.7) 6 month FU- 7.4 (1.2) vs. 7.3 (1.4) vs. 7.4 (1.4) vs. 7.5 (1.7) Total Cholesterol, p=0.010, n=266 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline-210 (40) vs. 203 (39) vs. 202 (38) vs. 205 (35) 3 month FU-201(34) vs. 202 (34) vs. 198(37) vs. 201 (31) 6 month FU- 206(39) vs. 194(30) vs. 202(39) vs. 201 (30) Weight, NS, n=265 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline- 199(36) vs. 212(49) vs. 219949) vs. 221(52) 3 month FU- 198(37) vs. 210(46) vs. 217(47) vs. 218(49) 6 month FU- 197(37) vs. 210(46) vs. 217(48) vs. 219 (51) Lipid ratio: total/HDL, NS, n=266 (No TF, no CR) vs. (no TF, CR) vs.

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Glasgow	2000	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Glasgow	2000	NR	NR	Satisfaction with the program 3 month Follow Up, p=NS, n=290 No TF, no CR: 36 (±5.5) No TF, CR: 35 (+5.5) TF, no CR: 36 (±4.7) TF, CR: 37 (±4.3)

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Glasgow	2000	NR	NR	Block fat screener, p-NS, n=265 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline: 48.6 (±28.5) vs. 49.0 (±27.2) vs. 48.8 (±30.6) vs. 54.5 (±33.8) 3 month FU: 26.2 (±17.1) vs. 23.8 (±15.2) vs. 26.8 (±19.0) vs. 26.9 (±23.2) 6 month FU: 24.7 (±17.5) vs. 23.9 (±14.4) vs. 25.7 (±19.2) vs. 22.8 (±17.4) Kristal FFB fat composite, p=0.017, n=265 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline: 1.9 (±0.5) vs. 1.9 (±0.5) vs. 2.0 (±0.4) vs. 1.9 (±0.5) 3 month FU: 1.9 (±0.5) vs. 1.9 (±0.5) vs. 1.9 (±0.4) vs. 1.8 (±0.5) 6 month FU: 1.6 (±0.4) vs. 1.8 (±0.4) vs. 1.7 (±0.4) vs. 1.6 (±0.4) Kristal FFB fruit and vegetable scale, p= 0.045, n=265 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline: 1.9 (±0.8) vs. 2.0 (±0.8) vs. 2.2 (±0.8) vs. 2.0 (±0.8) 3 month FU: 1.8 (±0.8) vs. 1.9 (±0.8) vs. 2.1 (±0.8) vs. 1.9 (±0.9)

Author	Year	Quality of Life	Support	Withdrawals
Glasgow	2000	Diabetes intrusiveness, p= 0.014, n=267 (No TF, no CR) vs. (no TF, CR) vs. (TF, no CR) vs. (TF, CR) Baseline: 25.7(11.1) vs. 29.2 (15.2) vs. 28.6 (12.0) vs. 30.8(15.7) 3 month FU: 31.0 (15.6) vs. 30.6(15.0) vs. 32.4(13.0) vs. 31.4(13.3) 6 month FU: 26.0(12.7) vs. 29.6(14.9) vs. 28.2(12.40 vs. 29.2(14.0)	NR	Attempt to contact: 706 pts Ineligible: 164 (Type 1 DM, not in the area, no telephone) Never reached: 72 (incorrect phone numbers) Asked not to be contacted: 51 Declined participation: 99 (not interested in dietary change, not perceiving a problem, too ill, project time too consuming) Participants: 320 At the 6 month FU, 43 failed to provide data 5-13 per condition ANOVAs failed to reveal any main effect or interactions involving dropout status further attrition analysis not performed

Author	Year	Adverse Effects	Other
Glasgow	2000	NR	A series of ANOVAs conducted to determine whether there are any differences in demographic or dietary history/severity variables between pts. Table on intervention implementation by condition given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Glasgow	2003	NR	Primary care medial office	Homes	RCT	N= 320
Gomez	2002a	NR	Immune Dev. Trust-London, The Lambeth, Southwark and Lewisham Health Authority - London and Apoyo Positivo - Madrid.	NR	NR	NR

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Glasgow	2003	NR	10 months	*Pts taking insulin met the Welborn criteria based on age at diagnosis, BMI and age of insulin initiation *Pts were living independently *Have a telephone *Read and write English *Diagnosed with Type 2 diabetes for at least 1 year *Not planning to move out of the area during the next year	NR	NR
Gomez	2002a	NR	NR	*Patient has HIV/AIDS	NR	NR

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Glasgow	2003	NR	TYPE 2 DIABETES MELLITUS	NR	N = 150 pts (47%)	Mean (SD): 59 (±9.2)
Gomez	2002a	NR	HIV/AIDS	NR	NR	NR

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Glasgow	2003	NR	NR	NR	NR	NR
Gomez	2002a	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Glasgow	2003	NR	NR	NR	NR	Diabetes network (D- Net)
Gomez	2002a	NR	NR	English, Spanish	NR	SEAHORSE II

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Glasgow	2003	Internet based self management project evaluating the incremental effects of adding tailored self management (TSM) training or peer support components to a basic internet based, information focused comparison The TSM intervention addressed self efficacy through internet-mediated modeling, accomplishment of graduated goals and development of individual and situation specific problem solving strategies. Pts had access to professional "coach" (could access twice per week) and resources to reach their dietary goals tailored to their needs. Pts also had access to online " dietitian question and answer" conference covering specific topics. They could enter and receive graphical feedback on their pattern of blood glucose levels for different periods of the day.	Information only group: Pts had access to extensive number of articles on topics of medical, nutritional, and lifestyle aspects of diabetes. These provided info only and not individually tailored recommendations. Pts completed assessments online and received automated dietary change goals based on their current levels. TSM Grp: same as above Peer support Grp: same as above	Computer	Live chat, logs, databases, information, forums
Gomez	2002a	Web based self monitoring system for HIV/AIDS patient care	NR	Web interface	Self-monitoring personal diary, remote doctor support, data analysis, allows user to post comments and articles

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Glasgow	2003	NR	Pts received in home training in use of computer of approximately two to three visits of 1-2 hrs each	NR	Dietary outcomes Kristal total No peer support (No PS) vs. Peer support (PS) Baseline mean(SD) 2.22 (0.41) vs. 2.19(0.50) 10 month adjusted mean(SD) 2.00(0.38) vs. 1.96(0.38) Group differences- 0.04, MANCOVA/univariate p level- 0.399 No TSM vs. TSM Baseline mean(SD) 2.22(0.45) vs. 2.19(0.46) 10 month adjusted mean 2.03 (0.38) vs. 1.93(0.38) grp differences- 0.10, MANCOVA/univariate p level- 0.048 Estimated gms of daily fat No PS vs. PS Baseline mean(SD) 41.3(26.4)vs. 44.0(31.9) 10 month adjusted mean(SD) 29.8(14.3) vs. 27.9(14.3) Group differences-1.85 , MANCOVA/univariate p level-0.323 No TSM vs. TSM Baseline mean(SD) 44.4(33.8) vs. 40.8(23.8)
Gomez	2002a	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Glasgow	2003	NR	NR	NR
Gomez	2002a	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Glasgow	2003	Average logons per participant per month PS vs. No PS Month 1-3: 18.7 vs. 9.4 Month 4-6: 13.2 vs. 5.1 Months 7-10: 6.7 vs. 3.6 TSM vs. No TSM Months 1-3: 16.7 vs. 11.4 Months 4-6: 9.8 vs. 8.5 Months 7-10: 5.3 vs. 5.0	NR	NR
Gomez	2002a	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Glasgow	2003	NR	Psychosocial outcomes CES-D Total No PS vs. PS Baseline mean(SD) 17.8(10.08) vs. 18.1(10.51) 10 month adjusted mean(SD) 14.06(9.12) vs. 12.59(9.13) Group differences-1.47, MANCOVA/univariate p level-0.219 No TSM vs. TSM Baseline mean(SD) 17.9(10.56)vs. 18.0(10.02) 10 month adjusted mean 12.93(9.11) vs. 3.72(9.12) grp differences= -0.79 , MANCOVA/univariate p level-0.507	NR
Gomez	2002a	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Glasgow	2003	NR	No PS vs. PS Baseline Mean (SD) 4.23 (±1.23) vs. 4.05 (±1.28) 10 month adjusted Mean (SD) 4.71 (±1.12) vs. 5.22 (±1.11) Group differences= -0.51, MANCOVA/univariate p level-0.001 No TSM vs. TSM Baseline Mean (SD) 4.14 (±1.32) vs. 4.14 (±1.20) 10 month adjusted mean 4.96 (±1.12) vs. 4.97 (±1.12) Grp differences= -0.01 , MANCOVA/univariate p level-0.934	Data were collected on 82% of the randomized participants Analyses of those present and those not present done and did not show significant effects
Gomez	2002a	NR	NR	NR

Author	Year	Adverse Effects	Other
Glasgow	2003	NR	Overall change from baseline to10 month follow-up given but not listed here
Gomez	2002a	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Green	2008	10 Medical Centers within Group Health	Washington and Idaho	Homes	RCT	N=778

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Green	2008	June 2005-December 2007	12 mos	*Ages 25-75 *HTN diagnosis and taking HTN medications *Ability to use a computer *Internet access *E-mail address *Willingness to attend screening sessions at a clinic *Diastolic BP 90-109 mmHg *Systolic BP 140-190 mmHg *Written informed consent	Posessing diseases other than HTN such as diabetes, cardiovascular or renal disease, unable to use a computer, lack of access to the internet, no e-mail address, unwilling to attend screening sesions	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Green	2008	NR	HTN	NR	Overall: 47.8% UC: 55.3% IVR: 54.1% IVR + pharmacist care: 44.1%	Overall: 59.1 (±8.5) UC: 56.8 (±8.5) IVR: 59.5 (±8.3) IVR + PC: 59.3 (±8.6)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Green	2008	Overall (%) Caucasian: 82.8 African-American: 7.8 Asian: 3.7 Other: 5.7 UC Caucasian: 82.9 African-American: 8.5 Asian: 3.1 Other: 5.4 IVR + PC Caucasian: 86.1 African-American: 6.9 Asian: 3.5 Other: 3.5 IVR + PC Caucasian: 79.3 African-American: 8.0 Asian: 4.6 Other: 8.0	NR	Overall (%) <12 yrs or GED: 8.0 Some Post-HS: 41.6 4 yr College Degree: 25.1 Graduate School: 25.3 UC <12 yrs or GED: 8.5 Some Post-HS: 45.3 4 yr College Degree: 18.6 Graduate School: 27.5 IVR <12 yrs or GED: 7.3 Some Post-HS: 42.5 4 yr College Degree: 27.8 Graduate School: 22.4 IVR + PC <12 yrs or GED: 8.0 Some Post-HS: 37.2 4 yr College Degree: 28.7 Graduate School: 26.1	NR	Antihypertensive Medication Classes Overall (%) 0: 3.6 1: 47.0 2: 33.5 >3: 15.8 UC (%) 0: 5.0 1: 49.2 2: 34.5 >3: 11.2 IVR (%) 0: 1.9 1: 46.3 2: 33.2 >3: 18.5 IVR + PC (%) 0: 3.8 1: 45.6 2: 33.0 >3: 17.6 BP, Mean (SD) mmHg Overall

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Green	2008	NR	NR	English	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Green	2008	Access to Group Health's secure patient Web services (e-mail access, refilling prescriptions, health library, links to behavioral and lifestyle changes, etc), Group Health's HTN pamphlet, home blood pressure monitoring cuff	UC (n=258): Usual HTN care from physicians IVR (n=259): access to Group Health's web services and home blood pressure monitoring system IVR + PC (n=261): acces to Group Health's web services and home blood pressure monitoring system and phamacist intervention to help lower BP	Webserver and home BP monitoring cuff	Education, data input, data collection, tailored feedback

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Green	2008	NR	Subject training on home blood pressure monitoring kit	Pharmacist assisted intervention	Subanalysis of Pts with Systolic BP at Baseline > 160 mmHg (n=150) Systolic BP (95% CI) Unadjusted mean UC (N=51): 152.4 (148.2 to 156.6) IVR (N=47): 151.0 (146.6 to 155.2) IVR + PC (N=52): 139.8 (135.6 to 144.0) Overall P Value: < 0.001 UC: 0.64 UC vs IVR + PC: <0.001 IVR vs IVR + PC: <0.001 Adjusted mean change UC: -14.4 (-18.6 to -10.1) IVR: -17.8 (-22.2 to -13.4) IVR + PC: -27.6 (-31.8 to -23.4) Overall P Value: < 0.001 UC: 0.30 UC vs IVR + PC: <0.001 IVR vs IVR + PC: 0.002 Diastolic BP (95% CI) Unadjusted mean UC: 84.4 (81.6 6o 87.2) IVR: 83.8 (80.9 to 86.7) IVR + PC: 81.0 (78.2 to 83.3) Overall P Value: 0.21 UC: 0.78 UC vs IVR + PC: 0.10 IVR vs IVR + PC: 0.10

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Green	2008	NS	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Green	2008	At 12 mos after randomization Mean (SD) number of message threads UC: 2.4 (+4.6) IVR: 3.3 (±7.4) IVR + PC: 22.3 (±10.2) Mean (SD) number of patient initiated threads UC: 1.8 (±4.2), p = 0.01 IVR: 2.7 (±7.1), p <0.01 IVR + PC: 4.2 (±6.0), p <0.01 Mean (SD) number of telephone encounters UC: 4.0 (±4.8), p<0.001 IVR: 3.8 (±5.0), p<0.001 IVR + PC: 7.5 (±9.3)	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Green	2008	Consumer Assessment of Healthcare Providers and Systems (Scale 0-10) Missing Data: 65 Baseline: 7.9 (±1.5) UC: 8.1 (±1.5) IVR: 8.1 (±1.5) IVR + PC: 8.3 (±1.4) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: 0 (-0.3 to 0.3) UC vs IVR + PC: 0.2 (-0.1 to 0.5) IVR vs IVR + PC: 0.2 (0 to 0.5)	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Green	2008	Secondary Outcomes at 12 mos for all pts completing f/u in the electronic communications and home blood pressure monitoring trial; Mean (SD) QoL (1-100 scale) General health Missing Data: 38 Baseline: 67.1 (±20.4) UC: 66.7 (±20.4) IVR: 66.6 (±20.9) IVR + PC: 66.6 (±22.2) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: -0.1 (-4.0 to 3.7) UC vs IVR + PC: -0.1 (-4.0 to 3.8) IVR vs IVR + PC: 0 (-3.9 to 3.9) Physical health Missing Data: 44 Baseline: 80.6 (±27.0) UC: 78.1 (±27.7) IVR: 77.7 (±30.3) IVR + PC: 81.0 (±26.5) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: -0.4 (-5.6 to 4.7) UC vs IVR + PC: 2.8 (-2.3 to 8.0) IVR vs IVR + PC: 3.3 (-1.9 to 8.5)	NR	UC (n=11) 4 withdrew 1 refused 2 could not be contacted 3 moved 1 other IVR (n=13) 8 withdrew 1 could not be contacted 2 missed visit 2 died IVR + PC (n=24) 8 withdrew 5 could not be contacted 4 missed visit 4 left health plan 2 too ill 1 died

Author	Year	Adverse Effects	Other
Green	2008	NR	Secondary Outcomes at 12 mos for all pts completing f/u in the electronic communications and home blood pressure monitoring trial; Mean (SD) # of antihypertensive medication classes Missing Data: 0 Baseline: 1.64 (±0.85) UC: 1.69 (±0.91) IVR: 1.94 (±0.91) IVR + PC: 2.16 (±0.93) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: 0.3 (0.1 to 0.4) UC vs IVR + PC: 0.5 (0.3 to 0.6) IVR vs IVR + PC: 0.2 (0.1 to 0.4) Aspirin use, No. (%) Missing Data: 38 Baseline: 338 (±48.8) UC: 124 (±53.0) IVR: 131 (±56.0) IVR + PC: 149 (±66.5) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: 1.1 (0.9 to 1.2) UC vs IVR + PC: 1.3 (1.1 to 1.5) IVR vs IVR + PC: 1.2 (1.0 to 1.4)

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Guendelman	2002	Children's hospital	Children's hospital	Homes	RCT	N = 134 Grp 1: 66 Grp 2: 68
Gustafson	1999	HIV clinics and organizations in Wisconsin	NR	Homes	Randomized trial	N = 204 IVR: 107 CG: 97
Gustafson	1994	HIV & AIDS outpatients (no recruitment details)	NR	Homes	RCT	N = 204 IVR: 107 CG: 97

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Guendelman	2002	April 1999-July 2000	3 mos	*Ages 8-16 years old *English speaking caregiver telephone at home *Diagnosed with persistent asthma following NHLBI clinical practice guidelines	Involved in another asthma or drug efficacy trial Involved in research requiring behavioral modification If they had mental or physical challenges that made it difficult to use the system Co morbid conditions affecting quality of life	NR
Gustafson	1999	NR	3 to 6 months implementation with 2-3 month follow-up (total 5 to 9 months)	*Pt has HIV	Dementia, living with subject in experimental condition, living situation prohibiting computer installation, disappearance	NR
Gustafson	1994	1992-1993	5 months of use, 3 months post use for subset 30 INT/28 CTRL	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Guendelman	2002	YES: children, mostly Medicaid population	ASTHMA	NR	Grp 1: 61% Grp 2: 54%	Mean (Range): 12 (8-16)
Gustafson	1999	NR	HIV	NR	Exp: 90.9% CG: 89%	Mean (SD) Exp: 34.8 CG: 34.1
Gustafson	1994	NR	HIV/AIDS	NR	NR	NR

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Guendelman	2002	Grp 1 Caucasian: 8% African-American: 79% Grp 2 Caucasian: 12% African-American: 74%	NR	Of the primary caregiver ≤HS Grp 1: 39 % Grp 2: 51% Some College Grp 1: 61% Grp 2: 49%	NR	NR
Gustafson	1999	Caucasian Exp Grp: 81.2% CG: 86.7%	NR	Mean years Exp Grp: 14.3 CG: 14.7	NR	Employed Exp Grp: 53.1% CG: 44.4%
Gustafson	1994	"Minorities:" 39/204 (19.1%)	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Guendelman	2002	Public Health Insurance Grp 1: 92% Grp 2: 93%	English speaking caregiver	NR	NR	Health Buddy
Gustafson	1999	Insured Exp Grp: 75.8% CG: 80.5%	NR	NR	NR	CHESS
Gustafson	1994	NR	NR	NR	NR	CHESS

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Guendelman	2002	Interactive communication device with question and response tasks. Questions provided by the nurse to the patient for their response	Group 1: Intervention group that used Health Buddy Group 2: Control group	Website	Education, information sharing, advice sending
Gustafson	1999	Computerized information, decision support, expert	NR	Computer and Internet	Online library, referral directory, assessment, decision aid, action plan, discussion group, ask an expert, personal stories
Gustafson	1994	9 services for information, support, problem solving	NR	PC w/ modem	Information, social and emotional support, problem solving, in 9 modules

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Guendelman	2002	NR	Those assigned to the Health Buddy were given a demonstration on how to use the device and explained how to install it at home	NR	NR
Gustafson	1999	NR	NR	NR	NR
Gustafson	1994	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Guendelman	2002	Any urgent calls (Baseline vs. 12 week follow-up) - (P=0.05) Grp 1: 32% vs. 10% Grp 2: 22% vs. 15% ED visit (baseline vs. 12 week follow-up) - (P=0.21) Grp 1: 27% vs. 10% Grp 2: 28% vs. 18% Any hospitalizations (baseline vs. 12 week follow-up) - (P=0.96) Grp 1: 14% vs. 6% Grp 2: 13% vs. 2%	NR	NR
Gustafson	1999	Similar ambulatory and emergency visits; higher phone calls in Exp group Lower hospitalization in Exp group: 0.14 per subject Control: 0.21 per subject (p=.02)	NR	NR
Gustafson	1994	Self report visits same; calls to clinic higher; post study self report visits fewer; visit time less; admissions problem 16% v 42% ctrl (NS); LOS 61% higher ctrl, 29% lower interest	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Guendelman	2002	NR	NR	NR
Gustafson	1999	NR	NR	NR
Gustafson	1994	15966 uses/116 subjects, ~39 hrs/138 uses each; 73% in Discussion Group, 17% in Info Svc, 2% in Problem Solving	NR	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Guendelman	2002	NR	NR	NR
Gustafson	1999	NR	NR	NR
Gustafson	1994	NR	NR	No change in risky behavior, improved attitude about reporting HIV status

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Guendelman	2002	Limitation in activity (baseline vs. 12 week follow-up) - (P=0.03) Grp 1: 67% vs. 32% Grp 2: 72% vs. 47% Trouble sleeping (baseline vs. 12 week follow-up) - (P=0.83) Grp 1: 62% vs. 34% Grp 2: 59% vs. 27% Missed school (baseline vs. 12 weeks follow-up) - (P=0.41) Grp 1: 52% vs. 15% Grp 2: 44% vs. 22%	NR	12 participants (4 in Grp 1 and 8 in Grp 2) did not complete the 12 week follow-up Reasons included: moving or life crisis events within the family, 5 were lost to follow-up
Gustafson	1999	Exp group self-reported significantly improved cognitive function, negative emotions, active life and social support Improvements persisted in social support and participation in healthcare 3 months after subjects had 6 months of CHESS	NR	NR
Gustafson	1994	Improved 5 of 8 dimensions: social support, cognitive fxn, active life	NR	NR

Author	Year	Adverse Effects	Other
Guendelman	2002	NR	NR
Gustafson	1999	NR	NR
Gustafson	1994	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Gustafson	2001	Urban, small city and rural areas	2 Teaching hospitals; 2 Non-teaching hospitals and a cancer resource center	Homes	RCT	N= 295 Grp 1 (CHESS): 136 Grp 2 (Control): 132 N= 246 Grp 1: 121 Grp 2: 125

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Gustafson	2001	2 yrs (April 1995-May 1997)	5 months	*Pts were within 6 months of diagnosis *Age <=60 *Not homeless *Not active illegal drug users *Able to give informed consent *Able to understand and answer sample questions from the pre-test survey	Patients treated in small, rural general surgeries were excluded	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Gustafson	2001	YES: the two non teaching hospitals and the cancer resource center were catering to underserved population	BREAST CANCER	NR	N = 0%	Mean (SD): Grp 1: 44.3 (±6.6) Grp 2: 44.4 (±7.1)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Gustafson	2001	Caucasian Grp 1: 76% Grp 2: 72%	Income (annual: ≥$ 40,000) Grp 1: 58.1% Grp 2: 50.8%	Bachelor's degree Grp 1: 45.8% Grp 2: 40.2%	Urban, small city and rural areas	Living with partner, (%) Grp 1 vs. Grp2 71.9 vs. 72.6 Days since diagnosis At pretest; Mean (SD) ; Grp 1 vs. Grp 2 ; 55.0 (±36.3) vs. 47.4 (±32.6) Stage : Early- I or II , (%); Grp 1 vs. Grp 2; 81.9 vs. 78.9 Surgery: Mastectomy,(%); Grp 1v s Grp 2; 55.4 vs. 60.0 Chemotherapy; (%); Grp 1 vs. Grp 2; 54.5 vs. 51.2 Radiation, (%); Grp 1 vs. Grp 2; 38.0 vs. 40.8

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Gustafson	2001	Private insurance Grp 1: 86% Grp 2: 84.7%	NR	NR	NR	CHESS

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Gustafson	2001	Computer based patient support system providing information, decision-making and emotional support	Grp 2 (Control): Pts were given a copy of Dr. Susan Love's Breast Book Grp 1 (CHESS): had use of this for 6 months, were trained briefly and had a user's manual. CHESS description *Information system had short answers to frequently asked breast cancer questions, instant library with articles from scientific and popular press, consumer guide with description of health services, identifying good providers and the like, Referral directory with descriptions of and ways to contact local and national breast cancer services Support services had discussion groups (limited access, facilitated bulletin boards for sharing information and support), ask an expert with confidential responses, and personal stories of	Computer	Forums, question and answers, library, expert communication, action plan

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Gustafson	2001	NR	Grp 1 pts were briefly trained on how to use CHESS	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Gustafson	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Gustafson	2001	NR	NR	Participation- Level of comfort Grp 1vs Grp2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 months- 80.7 vs. 74.3 ; 6.4 (2.1 to 10.7), p < 0.01 5 month-79.1 vs. 76.5; 2.6 (-1.4 to 6.7) Confidence in doctors Grp 1vs Grp2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 month - 83.0 vs. 77.3, 5.7 (1.0 to 11.3), p < 0.05 5 month- 82.8 vs. 79.0, 3.8 (-2.2 to 9.8) Information competence Grp 1vs Grp2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 months- 70.4 vs. 65.6 ; 4.8 (1.5 to 8.1), p < 0.01 5 month - 69.3 vs. 65.8; 3.5 (0.0 to 6.9), p= 0.05 Unmet information need

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Gustafson	2001	NR	NR	Participation- behavioral involvement Grp 1vs Grp 2 Means (covariate adjusted); Difference between means; CHESS - Control (95% CI) 2 months: 75.6 vs. 73.1; 2.5 (- 1.1 to 6.1) 5 month: 74.5 vs. 72.8; 1.7 (-2.3 to 5.6)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Gustafson	2001	Social/Family well being Grp 1vs grp2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 months- 79.3 vs. 78.2; 1.1 (-3.0 to 5.4) 5 month - 75.8 vs. 74.7; 1.1 (- 3.3 to 5.5) Emotional well being Grp 1vs grp2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 months- 73.9 vs. 72.8 ; 1.1 (- 3.1 to 5.2) 5 month - 76.3 vs. 75.3; 1.0 (-3.0 to 5.0) Functional well being Grp 1vs grp2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 months- 62.2 vs. 63.0 ; - 0.8 (- 5.3 to 3.6) 5 month - 70.4 vs. 69.9 ; 0.5 (-3.5 to 4.4) Breast cancer concerns Grp 1vs grp2	Social support Grp 1 vs. Grp 2 Means (covariate adjusted); Difference between means ; CHESS - Control (95% CI) 2 months: 80.8 vs. 78.4 ; 2.4 (- 1.2 to 5.9) 5 month: 84.2 vs. 79.3; 4.9 (1.4 to 8.4)	Patient's recruited: 296 Withdrew before randomization: 1 Randomized: 295 Control: 148, CHESS: 147 Out of control group Withdrew before start of study: 16 Participated: 132 Out of 132 that participated, Dropped from study: 7 Completed trial, five month survey: 125 Out of CHESS group Withdrew before start of study: 13 Died before start of study: 1 Participated: 133 Out of 133 that participated, Dropped from study: 12 (Died during study=3, Lost to follow up=9) Completed trial, five month survey: 121

Author	Year	Adverse Effects	Other
Gustafson	2001	NR	Recruitment rates in the different places given, not listed here Reasons for refusal to participate among patients contacted also given Measurement issues discussed, not listed here The author mentions that their sample size of 246 subjects at an alpha= 0.05 provided a 0.80 power to detect a 0.36 SD difference between the CHESS and control groups. The author has also discussed interactions with indicators of medical under service, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Gustafson	1998	5 Wisconsin counties	Surgeons at 12 clinics, 10 hospitals, 7 HMOs	Homes	NR	N = 38
Hoch	1999	NR	NR	NR (Homes)	Descriptive	N = 497 Posts: 155 Responses: 342

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Gustafson	1998	1997	10 weeks	*Elderly women with breast cancer *Medicare eligible *Diagnosis w/in 4 months *Able to read and provide informed consent *No dementia	NR	YES
Hoch	1999	1995-1998	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Gustafson	1998	NR	BREAST CANCER	NR	N = 0%	Mean (SD): 71.8 (±6.06)
Hoch	1999	NR	EPILEPSY	NR	NR	NR

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Gustafson	1998	NR	NR	NR	Potentially eligible urban: 28pts (76%) Rural: 10 pts (71%)	63% living alone, 58% had co morbidities, 5.3% had metastic breast cancer, 37% had computer experience
Hoch	1999	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Gustafson	1998	NR	NR	English	NR	CHESS
Hoch	1999	NR	NR	NR	NR	MGH Neurology Epilepsy Web forum

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Gustafson	1998	NR	NR	Website	Provides patient education through a home PC, given articles, tutorials about services, anonymous access to experts, monitor health status, help making decisions
Hoch	1999	Open web forum	NR	Computer	Forum

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Gustafson	1998	NR	NR	NR	NR
Hoch	1999	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Gustafson	1998	NR	NR	NR
Hoch	1999	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Gustafson	1998	Service, Number/% of uses, Number/% of patients using service Discussion group: 743/33.9%, 38/100% Ask an expert: 374/17.1%, 38/100% Questions and answers: 287/13.1%, 38/100% Health Charts/profiles: 214/9.7%, 38/100% Instant Library: 161/7.3%, 32/85% Personal stories: 138/6.3%, 36/95% Consumer guide/referral: 75/3.4%, 29/76% Decision Analysis: 97/4.4%, 30/79% Stress Management: 52/2.4%, 18/48% Action Plan: 51/2.4%, 20/52%	NR	NR
Hoch	1999	Questions Caregivers: 42% Patients: 35% Providers: 2% Unidentified: 21% Answers Caregivers: 34% Patients: 38% Providers: 6% Unidentified: 22%	NR	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Gustafson	1998	NR	NR	NR
Hoch	1999	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Gustafson	1998	NR	NR	NR
Hoch	1999	NR	NR	NR

Author	Year	Adverse Effects	Other
Gustafson	1998	NR	NR
Hoch	1999	6% inaccurate responses	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Holman	1996	Diabetic patients	Diabetes clinic	Homes	Randomized cross-over design	N= 6
Jan	2007	Specialty clinic	Specialty clinic, university medical center	Homes	RCT	N = 164 IVR: 88 CG: 76

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Holman	1996	NR	NA	*Diabetic patients	NR	NR
Jan	2007	2004	3 months	*Internet access *"Persistent asthma"	Chronic co morbidity such as bronchopulmonary dysplasia	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Holman	1996	NR	DIABETES	NR	N = 67%	Mean (SD): 33.8 (±11.7)
Jan	2007	NR	ASTHMA	NR	IVR: 35% CG: 28%	Mean (SD) IVR: 10.9 (±2.5) CG: 9.9 (±3.2)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Holman	1996	NR	NR	NR	NR	Duration of diabetes years: 12.7 (±10.9) HbA_1: 9.3%
Jan	2007	Chinese	NR	NR	Urban	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Holman	1996	NR	NR	English	NR	Patient-oriented, insulin regimen optimizer (POIRO)
Jan	2007	NR	NR	NR	NR	Blue Angel for Asthma

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Holman	1996	Hand held computer to record prep radial glucose level, expected meal size, expected exercise, health level and hypoglycemic episodes, and to recommend correct insulin dose	Cross-over design: each participant had two consecutive three week study periods, with and without the computerized insulin dose advice switched on, in a randomly allocated order. Training: one week lead in period of recording glucose levels. Patients were given written instructions and a 24 hour contact number	Hand-held computer	Provide recommended insulin dose based on patient entered glucose level, size of meal, exercise, health and severity of hypoglycemic episodes
Jan	2007	Education, monitoring, self-management advice-not entirely clear how tailored	CG: symptom and spirometry diary, guideline based self management education IVR: internet based symptom and spirometry diary, guideline based self management education, physician advice by email or phone	Computer	Education, monitoring, self-management advice - not entirely clear how tailored

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Holman	1996	NR	NR	NR	Advice On vs. Advice Off: mean (SE) Pre-prandial glucose: 8.9 (±0.4) vs. 7.5 (±0.4); p=.015 Fructosamine: 492 (±34) vs. 481 (±34); NS HbA1: 9.2 (±0.5) vs. 9.2 (±0.5); NS
Jan	2007	NR	Family instructed in use of website	NR	PEF: NS (better mean INT, better median CTRL)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Holman	1996	NR	NR	NR
Jan	2007	NR	NR	Asthma knowledge IVR: 93% CG: 70%

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Holman	1996	NR	NR	Data NR. All the patients said that they had found POIRO easy and convenient to use
Jan	2007	NR	NR	INT satisfied w/ program, controls not asked

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Holman	1996	NR	Data NR. Reported text says most patients felt more confident about changing their insulin dose	NR
Jan	2007	NR	NR	Monitoring adherence fell 96 to 83 IVR vs. 93% to 53% CG Change in peak flow technique NS Spacer use NS Steroid use fell 83% to 63% IVR, 82% to 42 CG

Author	Year	Quality of Life	Support	Withdrawals
Holman	1996	NR	NR	Total: 1 patient. 16% Primary reason: domestic issues unrelated to the trial Additional factor: disappointment that POIRO "failed to prevent a hypo"
Jan	2007	Asthma control 'well controlled' 52 IVR: 52% to 62% CG: 40% to 42% QoL no difference	NR	Withdrew on request or tech failure IVR: 9 (9%) CG: 6 (7%) Did not return at 12 wk IVR: 6 CG: 5

Author	Year	Adverse Effects	Other
Holman	1996	NR	Ultralente insulin dose, soluble insulin dose, number of patients with hypoglycemia, number of hypoglycemic episodes
Jan	2007	NR	Symptoms: improved, but floor effect w/ CNTRLs

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Japuntich	2006	General population via billboards, bus posters, flyers, TV ads and press releases	Center for Tobacco Research and Intervention	Homes	RCT	N= 284 Control: 144 CHESS SCRP: 140
Jones	1999	Referred for radiotherapy of breast, prostate, larynx or cervical cancer	Radiotherapy clinic	In Clinic	RCT	N = 525 BKLT: 180 GINF: 167 PINF (personalized by EHR): 178

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Japuntich	2006	October 2001 - July 2002	12 mos	*Age ≥18 yrs *Smoking at least 10 cigarettes per day *Having a traditional telephone line *Literate in English	Current depression, current use of psychiatric medication, medical conditions contraindicating bupropion SR use (e.g., history of seizure disorder), current use of a smoking cessation product or treatment, or being pregnant or likely to become pregnant during the treatment phase of the study	NR
Jones	1999	1996-1997	3 months	*Referred for radiotherapy of breast, prostate, larynx or cervical cancer	Severe symptoms, palliative care, unaware of dx, cognitive or visual disability	Yes: Over 60 examined as variable

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Japuntich	2006	NR	SMOKING	NR	CG: 45.1% CHESS SCRP: 45%	Mean (SD) CG: 41.0 (±11.8) CHESS SCRP: 40.6 (±12.4)
Jones	1999	YES: "deprivation category" by external reference	CANCER	NR	NR	NR

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Japuntich	2006	Not Caucasian CG: 17.4% CHESS SCRP: 24.6%	NR	Control Group: Less than high school: 2.8% High school or GED: 27.8% Some college or tech school: 47.2% College or graduate school: 21.5% CHESS SCRP: Less than high school: 3.6% High school or GED: 29.5% Some college or tech school: 51.8% College or graduate school: 15.1%	NR	# of cigarettes per day: Mean (SD): Control: 22.1 (±11.8) CHESS SCRP: 21.1 (±9.5) Years smoking: Mean (SD): Control: 23.3 (±12.3) CHESS SCRP: 22.7 (±12.1) Number of quit attempts: Mean (SD): Control: 6.1 (±11.1) CHESS SCRP: 5.4 (±12.5)
Jones	1999	NR	NR	NR	NR	NR

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Japuntich	2006	NR	English literate	English	NR	Comprehensive Health Enhancement Support System for Smoking Cessation and Relapse Prevention (CHESS SCRP)
Jones	1999	NR	NR	NR	NR	Personalized computer based information

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Japuntich	2006	Intensive internet intervention to provide information, emotional support and problem-solving assistance. Four sections. First section provides information about quitting smoking. Second section is a support center that provided chat programs as well as a cognitive behavioral therapy intervention for negative emotions. Third section was an information repository. Fourth section allowed participants to search for information within CHESS SCRP, a list of recommended websites, and tips for evaluating other websites.	Control Group: 9 weeks of twice daily buproprion SR (150mg), three brief individual counseling sessions, and five follow-up visits CHESS SCRP: all of the above + 12 weeks of access to the CHESS SCRP website Participant training: in-home training session for use of computers and the specific website.	CHESS SCRP website	Information on quitting smoking, chat/discussion groups, ask-an-expert service, self-therapy for bad moods, journal (structured and unstructured), document storage, additional recommended websites, advice for evaluating other websites
Jones	1999	Cancer information tailored by data in EHR vs. not tailored vs. printed booklets	Tailored (PINF) vs. non-tailored (GINF) vs. choice of 143 printed booklets (BKLT)	Computer	Education

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Japuntich	2006	Staff explained basic computer used if necessary. Staff demonstrated all of the CHESS SCRP services and showed where they were located within the website.	NR	9 weeks of twice daily buproprion SR (150mg); 3 individual counseling sessions, five follow-up visits	None
Jones	1999	NR	NR	NR	NS change depression and cancer adjustment scores; 84% improved anxiety scores, especially PINF, especially but also BKLT; subgroups examined

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Japuntich	2006	NR	NR	NR
Jones	1999	NR	NR	Physician assessed 'above avg knowledge' 35% GINF, 25% PINF, 20% BKLT. [note that in general, docs assessed pt knowledge below average]

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Japuntich	2006	Over 12 week intervention period: Number of log-ins Mean: 33.6 (±30.8), Median: 24 Minutes logged on Mean: 486.4 (±638.9), Median: 202.9 Most popular services Support tools: Mean: 43.29 min (±109.81) Reading discussion group postings: Mean: 24.70 min (±116.13) Least popular services Information tools: Mean: 7.97 min (±18.41) Use not correlated with gender, race, education Use was correlated with age: Mean (SD) logins per week: 18-35: 2.02 (±1.53) 34-45: 2.18 (±2.54) ≥ 46: 3.35 (±2.57)	NR	NR
Jones	1999	12 min (1-44) 1st use; 71% no repeat use: 20/169 PINF, 4/155 GINF	NR	80% would prefer 10 min w/ professional (71% PINF, 80% GINF, 90% BKLT) Overall 40% satisfied Satisfaction with information higher in PINF

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Japuntich	2006	NR	Center for Epidemiological Studies Depression Scale (CES-D): measure used, Data NR	Fagerstrom Test for Nicotine Dependence (FTND) collected, Data NR Logistic Regression: use predicts 3 and 6 month abstinence levels (use transformed into 4 discreet categories of logins per week): 3 month: *O* R: 1.79, 95%CI 1.25-2.56 6 month: *O* R: 1.59, 95%CI 1.06-2.38 When controlling for # of past quit attempts, longest period of abstinence in the past, how much success the participant expected in this quit attempt, age, and dependence as measured by the FTND: still significant: 3 month: *O* R: 2.10 95%CI 1.36-3.25 6 month: *O* R: 2.13 95%CI 1.25-3.61 Cessation rates: ns by gender, education, race/ethnicity. Differed by age at 3 months (*OR*= 1.026, 95%CI 1.002-1.05), ns at 6 months Relapse prevention: access to CHESS SCRP to predict abstinence at 3 or 6 months: ns trend: 3 month: *O* R: 1.07, 95%CI .54-2.14 6 month: *O* R: 1.66, 95%CI .76-3.63
Jones	1999	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Japuntich	2006	NR	NR	All dropouts considered smokers in analyses. CHESS SCRP: 13.6% due to missed appointments; 15% withdrew before 1 year follow-up (reason NR); 19.3% lost to follow-up. Control: 22.2% withdrew before 1 year follow-up (reason NR); 20.8% lost to follow-up.
Jones	1999	NR	NR	NR

Author	Year	Adverse Effects	Other
Japuntich	2006	NR	NR
Jones	1999	NR	Cost of intervention calculated less compared to printed booklets at £7 per patient

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Jones	2001	Community practice	NR	Home, Community resource center	RCT	N = 112 Computer: 56 Psych Nurse: 28 Both: 28

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Jones	2001	NA	3 months	*ICD-10 diagnosis of schizophrenia *Living in southern Glasgow	Age > 65 yrs, had an uncertain diagnosis, judged acutely ill, chronic problems restricting participation, recent participation in an educational program.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Jones	2001	NR	SCHIZOPHRENIA	NR	N = 67%	Range: 18 to 65

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Jones	2001	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Jones	2001	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Jones	2001	Computer: 5 web-based sessions giving general information, personal information from medical record, feedback displays; Psych nurse: 5 in-person sessions (1 hour); Both: computer plus psych nurse Computer program sessions Psychiatric nurse sessions Both computer and nurse sessions	NR	WWW	NR

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Jones	2001	Researcher trained subjects on computer use	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Jones	2001	NR	Costs (£) of each intervention arm were estimated (ITT analysis), Computer vs. Nurse vs. Both (includes time + travel): Staff costs: 138.4, 107.9, 139.8; Patient costs: 14.2-32, 12-28, 17-38	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Jones	2001	Time on computer sessions: Median: 69 minutes Range: 34-143	Of 39 subjects completing 1st session Touch screens easy to use: 27 Touch screens OK to use: 9 Touch screens difficult to use: 3 One-third were uncertain about what to do following a display.	Computer vs. Nurse vs. Both Sessions useful: 67% vs. 75% vs. 60% Information relevant: 75% vs. 100% vs. 60% Enjoy sessions: 72% vs. 92% vs. 75% Enough information: 63% vs. 83% vs. 75% Illness description understandable: 59% vs. 58% vs. 60% Wanted information but not obtained: 12% vs. 33% vs. 35% Got information not wanted: 38% vs. 58% vs. 55% Mean satisfaction (0-10): 5.5 vs. 7.2 vs. 6.2

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Jones	2001	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Jones	2001	NR	NR	Randomized vs. Complete Data (N): Computer: 56 vs. 34; Nurse: 28 vs. 20; Both: 28 vs. 13

Author	Year	Adverse Effects	Other
Jones	2001	NR	Psychological Measures: Computer vs. Nurse vs. Both: Multiple measures used (BPRS, ITAQ, GAF, KISS) showed no difference across groups. % of patients with improved KISS scores (Knowledge and information about schizophrenia schedule), 1st to 3rd (3 month) interviews: 39%, 21%, 50%, p=.08

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Joseph	2007	Urban high schools	NR	Schools	RCT	N=314 IVR: 162 CG: 152

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Joseph	2007	NR	12 months	*Met study criteria for current asthma (defined as report of ever having a physician diagnosis of asthma accompanied by one or more of the following -daytime and/or nighttime symptoms in the past 30 days -use of medication symptoms for asthma in the past 30 days, -medical care use for asthma in the past year one or more refills of B-agonists in the past year) *Not reporting a physician diagnosis but answered positively to items from ISAAC and reported symptom frequencies similar to those used in EPR 2 for classification of mild intermittent asthma	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Joseph	2007	YES: urban African-American youth	ASTHMA	NR	N = 36.6%	Mean (SD): 15.3 (±1.0)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Joseph	2007	African American: 98%	NR	High school students	Urban high schools	52% qualities for federal school lunch program. Demographic information of non- participants given, not listed here

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Joseph	2007	49% Medicaid enrollees	NR	NR	NR	Puff city

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Joseph	2007	web based program focusing on controller medication adherence, rescue inhaler availability, smoking cessation/reduction. Consists of 4 consecutive educational sessions making use of normative and impassive behavior. Voiced over messages (accommodates low literacy). Participant specific information obtained at baseline and 4 sessions and used for tailoring Theory based health messages and info on asthma control presented in reference to he 3 core behaviors mentioned above. e.g. info on basic asthma pathophysiology, trigger avoidance, correct use of metered dose inhaler and other devices.	IG- web based tailored program as described above. CG- students in this grp were directed to existing generic asthma educational websites. Students restricted to these sites and could not access links for outside programs or general interest sites. 4 computer sessions just like IG each of 30 mins For both IG and CG, a program module including names and illustrations of asthma medications were used to facilitate identification of current usage. A health care referral coordinator proactively contacted the students in the treatment group depending upon the risk assessment report that had key questions indicating	Computer	Education, answering questions

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Joseph	2007	NR	NR	NR	Grp 1 vs. Grp 2 Adjusted RR (95% CI) Symptom days(2 wks) 2.1 (±3.0) vs. 2.8 (±3.4) 0.5 (±0.4-0.8); p= 0.003 Symptom nights/2 wks 0.9 (±2.3) vs. 1.5 (±2.5) 0.4 (±0.2-0.8); p= 0.009 School days missed/30 days 0.4 (±1.2) vs. 1.2 (±3.3) 0.3 (±0.1-0.7), p= 0.006 Days restricted activity/2 wk 1.3 (±2.2) vs. 2.3 (±3.4) 0.5 (±0.3-0.8), p= 0.02 Days had to change plans 0.4 (±1.2) vs. 0.6 (±1.5) 0.5 (±0.3-1.2), p= 0.17

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Joseph	2007	Grp 1vs Grp 2 Adjusted RR (95% CI), p Hospitalizations/12 months 0.2 (0.6) vs. 0.6 (2.0) 0.2 (0.2-0.9); 0.01 ED visits/12 months 0.5 (2.0) vs. 0.8 (1.9) 0.5 (0.3-1.3); 0.08	Estimated labor costs for the referral coordinator was $ 6.66/treatment student ($8.05 per treatment student referred, $11.73 per student contacted)	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Joseph	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Joseph	2007	NR	NR	Controller medication adherence, % (n), Positive behavior Grp 1 vs. Grp 2 20.4 (31) vs. 12.6 (18), p-- 0.09 No change in negative behavior Grp 1 vs. Grp 2 62.5 (95) vs. 63.6 (91), p--? Negative change in behavior Grp 1 vs. Grp 2 17.1 (26) vs. 23.8 (34), p--? Rescue inhaler activity, % (n) Positive behavior Grp 1 vs. Grp 2 38.8 (59) vs. 32.2 (46), p--0.01 ? no change in negative behavior Grp 1 vs. Grp 2 48.7(74) vs. 43.3(62) Negative change in behavior Grp 1 vs. Grp 2 12.5(19) vs. 24.5(35) Smoking cessation/reduction, % (n) Positive behavior Grp 1 vs. Grp 2 95.0 (132) vs. 94.1 (111), p= 0.89?

Author	Year	Quality of Life	Support	Withdrawals
Joseph	2007	Cumulative score Grp 1 vs. Grp 2 5.3 (±1.3) vs. 5.0 (±1.5) RR (95% CI) 1.2 (0.9-1.6), p=0.35? Activity domain Grp 1 vs. Grp 2 5.3 (±1.7) vs. 5.0 (±1.7) RR (95% CI) 1.4 (1.0-2.0), p= 0.16 Emotional domain Grp 1 vs. Grp 2 5.7 (±1.5) vs. 5.3 (±1.6) RR (95% CI) 1.2 (0.9-1.7), p-0.38 Symptom domain Grp 1 vs. Grp 2 5.3 (±1.6) vs. 4.9 (±1.6) RR (95% CI) 1.4 (1.0-1.9), p-- 0.07	NR	Out of 350 pts who returned consent forms, Baseline incomplete: 36 Out of this 36 Transferred: 14 Moved: 3 12th grade: 1 Other reasons: 18

Author	Year	Adverse Effects	Other
Joseph	2007	NR	Flowchart of study participation and randomization given Comparison of eligible students by study participation using results of the lung health survey given, not listed here Study compliance, status of core behavior, report of controller and rescue medication at session 1 by randomization grp given, not listed here Reasons for contact with referral coordinator and the no of students meeting the coordinator in both grps given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kashem	2006	NR	HF practice at Temple University medical center	Homes	RCT	N= 36 Grp C (control): 18 Grp T (telemedicine): 18

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kashem	2006	NR	8 months	*Pts with NYHA class 2,3 or 4 Heart failure (HF) and at least 1 HF admission within the past 6 months *All pts required to have telephone and internet access *Be able to read and write *Know basic skills of computer use and internet navigation	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kashem	2006	NR	CHF	NR	Control: 66.7% Telemedicine: 72.2%	Control: 55.1 (±12.6) Telemedicine: 52.2 (±10.6)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Kashem	2006	Control vs. telemedicine, (%) Caucasian: 66.7 vs. 72.2 African American: 27.8 vs. 27.8 Latino/Hispanic: 5.6 vs. 0	NR	NR	NR	Grp C vs. Grp T Weight (pounds): 206.1 (±66.5) vs. 202.4 (±47.7) BMI: 32 (±12.6) vs. 30.4 (±6.9) Systolic BP: 119.1 (±17.7) vs. 97.8 (±7.2) Diastolic BP: 70.5 (±7.5) vs. 61.7 (±3.4) Ejection fraction (%): 26.6 (±16.4) vs. 23.9 (±17.6) NYHA (%): Class 2: 42.9 vs. 42.1 Class 3: 52.4 vs. 57.9 Class 4: 4.8 vs. 0 Cardiomyopathy etiology (%) Ischemic: 44.4 vs. 50 Dilated: 38.9 vs. 38.9 Other: 16.7 vs. 11.1

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kashem	2006	NR	NR	NR	NR	Insight Telehealth systems

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Kashem	2006	Evaluation of web based internet telemedicine management system for reducing care encounters in heart failure patients	Grp T: pts reported three times weekly via a secure internet site for telemedicine intervention; received present standard care provided by the advanced HF and cardiomyopathy team. Pt use of the system: The pt can enter data regarding weight, steps per day with pedometer, blood pressure and heart rate (daily or several days' data can be entered in one login session); the pt can review their data by trend charts and numerical tables displayed on the computer screen; medication screen allows pt or provider to enter medication (each record includes dose, administration schedule, ordering physician, and date of prescription expiration); pt can review his/her medication, dose, frequency, physician and prescription information.	Computer	Data entry, review of charts, numerical tables, prescription information, messages between pt and health care provider

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kashem	2006	NR	All pts given sphygmomanometer and pedometer and instructed how to use them, pt made first time data entry with coaching by a research nurse	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kashem	2006	Control vs. Telemedicine Clinic phone calls: 21 vs. 39, p= 0.025 Scheduled clinic visits: 7 vs. 11, NS Unscheduled clinic visits: 5 vs. 3, NS Hospitalizations (number): 18 vs. 9, p= 0.025 Hospital days: 133 vs. 44, p= 0.030	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kashem	2006	Interactions Data sent by the patients: 1,253 Text messages sent by the patient: 362 Generic messages sent by the provider: 836 Tailored text messages sent by the provider: 416 Total number of internet interactions: 2,867	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kashem	2006	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Kashem	2006	NR	NR	NR

Author	Year	Adverse Effects	Other
Kashem	2006	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kaufman	2003	Diabetic outpatients	Medical center	Homes	Usability cognitive walkthrough and field observation	N = 25 NYC: 14 Upstate: 11 (but really 2 case studies)

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kaufman	2003	NR	NA	*Patient volunteers *Selected segments based on log files *Contrasted 2 cases at extremes	NR	YES

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kaufman	2003	YES: rural upstate NY and Hispanic NYC	DM	NR	NR	Mean (SD) NYC: 69.6 (±6) Upstate: 73.7 (±8)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Kaufman	2003	Hispanic: 14pts Caucasian: 11pts	NR	Mean years (SD) NYC: 8.5 (±5) Upstate NY: 12.1 (±3)	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kaufman	2003	NR	NR	Spanish: 12 English: 13	NR	IDEATel

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Kaufman	2003	Videoconferencing, BP & BG uploading and review, education, email	Novice users of system	Computer	Education, monitoring, videoconferencing,

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kaufman	2003	NR	Ongoing	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kaufman	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kaufman	2003	NR	System barriers: problematic widgets, small fonts, bad spacing, complex tasks, screen transitions, system stability Cognitive/Skill barriers: mouse-keyboard skill, mental model, literacy, numeracy. Also anxiety, self-efficacy, motivation	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kaufman	2003	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Kaufman	2003	NR	NR	NR

Author	Year	Adverse Effects	Other
Kaufman	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kenwright	2005	OCD patients	BTSteps clinic	Homes	Randomized trial	N=44 Requested Support: 22 Scheduled Support: 22

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kenwright	2005	NR	17 weeks	*Diagnosed primary obsessive compulsive disorder (OCD) for at least 2 years	Schizophrenia, bipolar disorder, other psychosis, primary major depression, suicidal plans, alcohol or substance abuse.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kenwright	2005	NR	OCD	NR	N = 47.7%	Mean: 40 Groups NR

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Kenwright	2005	NR	Unemployed: 45%	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kenwright	2005	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Kenwright	2005	Live help-line support during office hours	Scheduled support: 9 therapist initiated phone calls at set appointments over the 17 weeks Requested support: patient-initiated calls when help was wanted	Phone	Help-line support

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kenwright	2005	NR	NR	BT Steps: Phone system with user manual to guide individually tailored self-help for OCD. Uses Behavioral exposure therapy with ritual prevention (ERP). BTSteps guides traditional ERP in 9 steps. Steps 1-3 concern education and self-assessment, steps 4-9 guide daily self-exposure to triggers of rituals, obsessions, and discomfort, followed by self-imposed ritual prevention. IVR system helps users to identify triggers for rituals and obsessions and to set homework tasks that last at least 1 hour a day until discomfort falls for each trigger.	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kenwright	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kenwright	2005	Therapist-Support Phone Time: Mean per patient duration of support calls: Scheduled: Mean: 13 minutes (Range 5-35 minutes) Requested: Mean: 11 minutes (Range 3-25 minutes) Mean total support time per patient: Scheduled: Mean: 76 minutes (±78); Mean # calls: 7.5 (±3.7) Requested: Mean: 16 minutes (±36); Mean # calls: 1.5 (±2.8) Mean per patient time spent calling BTSteps's IVR system: Scheduled: 232 minutes (±162) Requested: 178 minutes (±149)	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kenwright	2005	NR	Yale-Brown Obsessive Compulsive Scale (YBOCS): Scheduled patients: significant improvements on YBOCS Total (t= 4.8, 95% CI= 4.6-113.6, effect size=1.2, p<.001,), YBOCS Obsessions (t= 4.8, 95%CI= 2.2-5.6, effect size, 1.0, p<.001), YBOCS Compulsions (t= 4.4, 95%CI= 2.2-6.1, effect size=1.1, p=.04) Requested patients: sig. improvement on YBOCS Compulsions (t= 2.0, 95%CI=.00-2.9, effect size=0.6, p=.04) Improvement significantly greater in Scheduled than Requested patients on YBOCS Total (F= 7.0, p=.01) and YBOCS Compulsions (F= 11.6, p=.001). ns for YBOCS Obsessions. Treated Target Triggers: discomfort during patients first two ERP homework tasks: Scheduled and Requested patients improved significantly, but difference ns (F=.917, p=.346) Work and Social Adjustment: Improvement greater for scheduled than requested patients on WSAS Total (F=3.2, df=1, p=.05)	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Kenwright	2005	NR	NR	Scheduled: 13.6% Requested: 59.1% (2-tailed Fisher's exact test= 0.004)

Author	Year	Adverse Effects	Other
Kenwright	2005	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kenwright	2004	NR	Computer aided self-help clinic	Homes/clinic	Cohort	Home internet=10 London clinic= 17

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kenwright	2004	Dec 2000 to Dec 2001	1 month	*Presence of phobia or panic disorder (based on an interview checklist of ICD-10 diagnostic criteria; WHO, 1992) *Motivation to try self- help *Absence of substance misuse, psychosis or active suicidal plan	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kenwright	2004	NR	PHOBIA/PANIC DISORDER	NR	Home internet vs. London clinic 60% vs. 52.9%	Home internet vs. London clinic 37 yrs vs. 36 yrs

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Kenwright	2004	NR	NR	NR	NR	Condition; Home internet Agoraphobia with panic= 6 Social phobia=3 Insect phobia and Claustrophobia=1 Co morbid conditions=5 (depression=3, Generalized anxiety disorder=2) London clinic Specific phobia=7 Agoraphobia with panic= 5 Social phobia=4 Generalized anxiety disorder=2 Obsessive compulsive disorder= 1 Mean problem severity Home internet vs. London clinic= 6 vs. 5.4 Employed full time

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kenwright	2004	NR	NR	NR	NR	FearFighter

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Kenwright	2004	Computer sided exposure self help system at home on the internet with brief therapist support by phone	Home internet- unlimited access to fearfighter on the internet for 12 weeks, never saw or attended the clinic. Therapist scheduled 7 live 0 min support session by telephone at weeks 1,2, 4, 6, 8, 10 and 12 London clinic-given appointments to use fearfighter on a stand alone computer in the clinic at weeks 1,2,4,6,8,10 and 12. Therapist gave support at start and end of each session, for a total of 10 min per session.	Computer	Fearfighter intervention (details of the intervention not available)

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kenwright	2004	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kenwright	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kenwright	2004	Home internet users Mean use= 16 times (±11), over 66 days (±25) London clinic Mean total of 237 min (±57) at the clinic	NR	Internet users generally satisfied and felt comfortable using the system (Further info available on request) 3 pts said they would prefer face to face guided self help to internet guided self help.

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kenwright	2004	NR	Week 0 vs. Week 12 vs. Week 16 vs. Change vs. Effect size FQ Global phobia (0-8), Mean (SD) Home internet: 6.0 (±1.2) vs. 3.4 (±1.3) vs. 2.8 (±1.7) vs. 53 (p<0.001) vs. 1.5 London clinic: 5.4 (±2) vs. 3.2 (±1.8) vs. 3.2 (±1.6) vs. 41 (p<0.001) vs. 0.4 FQ total phobia (0-120), Mean (SD) Home internet: 46 (±27) vs. 32 (±24) vs. 35 (±23) vs. 24 (p< 0.001) vs. 0.4 London clinic: 49 (±27) vs. 32 (±23) vs. 33 (±27) vs. 33 (p<0.001) vs. 0.6 FQ depression (0-8) Home internet: 4.1 (±1.9) vs. 3.2 (±4) vs. 2 (±1.5) vs. 51 (p<0.05) vs. 0.6 London clinic: 4.3 (±2.4) vs. 4.3 (±7.1) vs. 2.9 (±2.1) vs. 33 (p<0.05) vs. 0.8 FQ Anxiety/depression (0-48) Home internet: 19.4 (±6.6) vs. 19 (±4.8) vs. 7 (±4.1) vs. 64 (p<0.001) vs. 1.8 London clinic:	NR

Author	Year	Quality of Life	Support	Withdrawals
Kenwright	2004	NR	NR	266 referred to clinic 56 met criteria for treatment with fearfighter 154 met criteria for clinic's other computer aided self help systems for depression, general anxiety and obsessive compulsive disorder 56 more were unsuitable for computer aided treatment Out of 56 pts in the fearfighter grp 13 refused self help 43 began using intervention, 16 dropped out before completion of treatment (all in the clinic grp)

Author	Year	Adverse Effects	Other
Kenwright	2004	NR	Internet users had slightly more therapist support than stand alone computer users 113 min (±28.1) vs. 99 min (±11.4), t= -1.42, p=0.16

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kim	2006a	Outpatient diabetes clinic	University hospital	Homes	RCT	N = 73 Grp 1: 28 Grp 2: 22 Grp 3: 23

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kim	2006a	NR	3 mos	*Age 20 years and older *FBS less than 240 mg/dL and/or *Diabetes mellitus history less than 20 years *No chronic complications of severe retinopathy, nephropathy, or neuropathy *No evidence of heart disease, musculoskeletal disorders, or other disabling diseases that could restrict physical activity *No insulin administration	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kim	2006a	NR	DM	NR	N = 53.4%	Mean: 55

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Kim	2006a	Korean	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kim	2006a	NR	Korean	Korean	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Kim	2006a	WB= Web-based intervention, included interactive and animated features, stage-based personalized sections on goal setting, activity planning, determining target heart rates, and psychological and physical readiness questionnaires. Assist sequential movement through relevant stage-based information.	Group 1: WB (web-based intervention group) Group 2: PM (print material intervention group) Group 2: UC (usual care group)	Web-based intervention	Education, assessment, advice sending

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kim	2006a	Health care providers had to be fully trained for the constructs and meaning of TTM and use of the web-based intervention	NR	NR	FBS: Grp 1 and Grp 2 both decreased significantly, however did not differ significantly Grp 1 and Grp 2 decreased significantly more than Gp 3 (P<0.05, both) HbA1C: Grp 1 and Grp 2 both decreased significantly, however did not differ significantly Grp 1 and Grp 2 decreased significantly more than Gp 3 (P<0.01 and P<0.05, respectively)

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kim	2006a	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kim	2006a	NR	NR	82.9% of Grp 1 reported satisfaction with the intervention

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kim	2006a	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Kim	2006a	Physical Activity: Both Grp 1 and Grp 2 increased significantly (P<0.001), however the 2 groups did not differ significantly Grp 1 and Grp 2 increased significantly more than Grp 3 (P<0.01 and P<0.001, respectively)	NR	NR

Author	Year	Adverse Effects	Other
Kim	2006a	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kim	2007	NR	Endocrinology outpatient department of tertiary care hospital in South Korea	Homes	Cohort	N=60 Control group: 30 Intervention group: 30

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kim	2007	Jan 2003 to Aug 2004	12 weeks	*Pts should be able to perform blood glucose testing and self injection of medication *Access the website *Have their own cellular phone	Clinical history of an important illness, renal insufficiency with a creatinine level > 0.08 mmol/l, or had been using insulin pumps.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kim	2007	NR	DIABETES	NR	CG: 42.3% IG: 44%	CG: 47.5 (9.1) IG: 46.8 (8.8)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Kim	2007	NR	NR	NR	NR	BMI (kg/m2), CG vs. IG 23.4 (±2.5) vs. 24.5 (±2.9) Diabetes duration (yrs) CG : IG: 8 (±4.9) : 5.2 (±5.9) Treatment method, CG : IG Insulin: 8 (±30.8) : 8 (±32) OHA: 18 (±69.2) : 17 (±68.0) Glucosylated hemoglobin (%): 7.59 (±1.09) : 8.09 (±1.72) Fasting plasma glucose (mmol/l): 7.9 (±1.3) vs. 8.4 (±1.4) 2HPMG (mmol/l): 12.9 (±4.3) vs. 14.2 (±4.5)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kim	2007	NR	NR	NR	NR	Nurse short messaging service

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Kim	2007	To investigate the effectiveness of an educational intervention that used both cellular phone and the internet to provide SMS relating to plasma glucose levels.	CG: pts met the endocrinologist once or twice during the study period and were given recommendations about medication, medication dosage and lifestyle modification by the specialist IG: pts logged in website and sent their self monitored blood glucose levels and drug information, including the kinds and dosages of insulin and oral anti diabetic medications; data transported to the internet server system and automatically displayed on individual electronic chart in the homepage and pts able to see the recommendations as well as data on the website (After integrating the information, the researcher sent optimal recommendations back to each pt, weekly, by a SMS by a cellular phone or wired internet)	Cellular phone, computer	Data collection, recommendations by SMS

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kim	2007	NR	Pt trained on entering data on the website for 30 mins by a researcher	Glycosylated hemoglobin (%); CG vs. IG Baseline: 7.59 (±1.09) vs. 8.09 (±1.72) 3 months: 7.66 (±0.91) vs. 6.94 (±1.04) Group: 0.22 (±0.644) Time: 7.46 (±0.008) Group X Time: 8.35 (±0.005) Fasting plasma glucose (mmol/l) Baseline: 7.9 (±1.3) vs. 8.4 (±1.4) 3 months: 8.2 (±2.3) vs. 8.0 (±1.9) Group: 0.07 (±0.787) Time: 0.40 (±0.532) Group X Time: 3.03 (±0.088) 2 HPMG (mmol/l) Baseline: 12.9 (±4.3) vs. 14.2 (±4.5) 3 months:	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kim	2007	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kim	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Kim	2007	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Kim	2007	NR	NR	IG: 5 subjects did not record their glucose levels for more than 4 weeks on the web site CG: 4 subjects were lost before completing post test , 1 moved to another city and three decided to opt out of the program before completing the post test

Author	Year	Adverse Effects	Other
Kim	2007	NR	NS

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kim	2006b	Endocrinology outpatient department of tertiary care hospitcal located in an urban area	South Korea	Homes	Quasi-experimental, cohort, 1-group, pretest and posttest	N=45

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kim	2006b	January 2003 to March 2004	12 weeks	*30 years of age or older *Access to internet in the home *Diagnosed diabetes *Able to perform perform blood glucose self-testing and self-injection of medication *Able to input data at the web site *Have their own cell phone	Not following the inclusion criteria, clinical history of heart failure, hepatic dysfunction, renal insufficiency with a creatinine level higher than 1.5 mg/dL, or had been using insulin pumps	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kim	2006b	NR	DM	NR	42%	43.5

Appendix H. Data Table

		Patient Characteristics*				
Author	Year	Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Kim	2006b	NR	NR	NR	NR	Mean BMI: 24.3 Systolic BP: 117.2 mmHg Diastolic BP: 78.9 mmHg Duration of diabetes: 5.6 yrs HbA1c: 8.1% Fasting blood glucose: 164.9 mg/dL

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kim	2006b	NR	NR	Korean	NR	NR

				Intervention*	
Author	Year	Intervention Described	Intervention Groups	Type of Device*	Functions*
Kim	2006b	Pts were asked to input blood glucose levels every day via internet or cell phone. Optimal recommendations were sent weekly to each pt via SMS	NR	Website and text messages	Data input and data receiver

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kim	2006b	NR	30 minute instruction on how to input data at the website	NR	Glycosylated hemoglobin, % Pretest: 8.1 ± 2.1 Posttest: 7.0 ± 1.1 Difference: -1.1 ± 2.1 t: 2.89 P: 0.006 Adherence Diabetic diet, d/wk Pretest: 3.8 ± 2.8 Posttest: 3.0 ± 2.7 Difference: -0.8 ± 1.8 t: 1.44 P: 0.182 30-minute physical exercise, d/wk Pretest: 2.5 ± 2.2 Posttest: 3.4 ± 2.2 Difference: 0.9 ± 2.0 t: 2.22 P: 0.036 Diabetic medication taking, d/wk Pretest: 4.8 ± 2.6 Posttest: 5.9 ± 1.9 Difference: 1.1 ± 1.9 t: 2.36 P: 0.32 Foot care, d/wk Pretest: 4.9 ± 3.0

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kim	2006b	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kim	2006b	NR	NR	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kim	2006b	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Kim	2006b	NR	NR	12 pts did not record their glucose levels for more than 4 weeks on the website

Author	Year	Adverse Effects	Other
Kim	2006b	NR	Secondary Outcomes at 12 mos for all pts completing f/u in the electronic communications and home blood pressure monitoring trial; Mean (SD) # of antihypertensive medication classes Missing Data: 0 Baseline: 1.64 (±0.85) UC: 1.69 (±0.91) IVR: 1.94 (±0.91) IVR + PC: 2.16 (±0.93) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: 0.3 (0.1 to 0.4) UC vs IVR + PC: 0.5 (0.3 to 0.6) IVR vs IVR + PC: 0.2 (0.1 to 0.4) Aspirin use, No. (%) Missing Data: 38 Baseline: 338 (±48.8) UC: 124 (±53.0) IVR: 131 (±56.0) IVR + PC: 149 (±66.5) Differences between IVR Groups, Mean Difference or RR (95% CI) UC vs IVR: 1.1 (0.9 to 1.2) UC vs IVR + PC: 1.3 (1.1 to 1.5) IVR vs IVR + PC: 1.2 (1.0 to 1.4)

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kosma	2005	Rehabilitation centers, hospitals, colleges, and disability newsletters	NR	Homes	Pilot Study; RCT	N=75

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kosma	2005	NR	4 weeks	*Female age: 18-54 *Male age: 18-44 *Inclusion criteria based on health status, stages of change level, age range, disability type, internet access, but is NR what specifically was used to include/exclude pts	Unclear	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kosma	2005	NR	NR	Physical Disability Amputation: 5.3% Cerebral palsy: 18.7% Muscular dystrophy: 4% Spinal Cord injury: 33.3% Multiple Sclerosis: 21.3% Cerebral Palsy: 18.7% Other: 17.3%	28%	38.73 yrs (+8.86)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Kosma	2005	Caucasian: 89.3% African-Americans: 5.3%	NR	College Grad: 49.3% Graduate degree: 29.3% HS grad: 4% Some college: 17.3%	NR	Stages of Change Precontemplation: 10.7% Contemplation: 37.3% Preparation: 33.3% Action: 9.3% Maintenance: 9.3%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kosma	2005	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Kosma	2005	Web-based physical activity motivational program with and without discussion, weekly motivational messages	IVR (n=46): 4 week web-based physical activity motivational program with a different lesson plan for each link CG (n=29): no intervention	Website and emails	Motivational messages, discussion

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kosma	2005	NR	NR	NR	Posttest CG: more active 9.3 MET hrs/day IVR: 6.1 MET hrs/day

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kosma	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kosma	2005	NR	75% found the program appropriate for national distribution among adults with physical disabilities, easy to use scored 4.5 out of a 5 pt scale	Out of a 5 pt scale (5 highest, 1 lowest) Helpfulness: 3.4 (±1.4) Ability to change physical activity: 3.4 (±1.4) Ability to maintain physical activity: 3.3 (±1.2)

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kosma	2005	NR	NR	Stages of change Pretest, n Preconemplation: 8 Conemplation: 28 Preparation: 25 Action: 7 Maintenance: 7 Stages of change Posttest, n Precontemplation: 7 Conemplation: 21 Preparation: 22 Action: 13 Maintenance: 12

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Kosma	2005	NR	NR	NR

Author	Year	Adverse Effects	Other
Kosma	2005	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kressig	2002	Community dwellers	VA rehabilitation center and a local senior center	Unclear	Cohort	N= 34

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kressig	2002	NR	NR	*60 yrs of age and older without medical contraindication for exercise *Intact manual dexterity (ability to dial a phone number) *Intact near vision (ability to read a newspaper) *System included prescreening procedures to ensure pts are at minimal risk for falls and demonstrate normal cognitive function and normal mood	NR	YES: 60 yrs and older

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kressig	2002	NR	NR	NR	50%	Mean: 7.04 (±6.9) Range: 60-87

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Kressig	2002	NR	$10,000 to $39,000: 11 $40,000 or higher: 17 Did not want to say: 6	Some college education or more: 33	NR	No or very little computer experience:15 Cognitive function as measured by OMCT ranged from 0 to 10 with 30 pts (out of 32) scoring between 0 and 2

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kressig	2002	NR	NR	NR	NR	Exercise expert system

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Kressig	2002	System is a computerized health promotion tool whose ease of use and acceptability of the exercise recommendations were rated by pts. Time and assistance requirements and ability to successfully interface with the software were also evaluated.	Exercise expert system: software generates individualized exercise prescriptions for older healthy individuals based on responses given by clients and their practitioners to three different questionnaires, questionnaires pertain to medical history, mood, functional status, mental status, and specific preferences known to influence exercise behavior and maximize subsequent adherence.	Computer	Tailored exercise prescriptions

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kressig	2002	NR	System training manual: illustrated training manual with elementary mouse training and general instructions for interaction with the system. Pts were seated in front of computer and left alone with the manuals until they were ready to start the computerized questionnaire. Pts encouraged to ask questions after reviewing the manual.	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kressig	2002	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kressig	2002	Mean (SD), Min to Max in minutes Training time: 3.76 (±1.50), 1-7 Completion time: 32.58 (±15.57), 12-79	Mean (SD), min-max Ease of use score (0-5) 4.58 (±0.66), 3-5 Requests for assistance Mouse related: 0.67 (±1.16), 0-5 Non mouse related: 2.36 (±1.90), 0-8	Mean (SD), min- max Prescription acceptability score (6-24) 21.45 (±2.24), 15-24

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Kressig	2002	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Kressig	2002	NR	NR	33 pts completed the protocol, 1 male pt unable to complete because of fatigue

Author	Year	Adverse Effects	Other
Kressig	2002	NR	Pearson correlation (p values) for objective performance measures Measures; Total time vs. total assistance vs. mouse related vs. non mouse related Age: 0.314 (0.750) vs. 0.532 (0.001) vs. 0.338 (0.054) vs. 0.491 (0.004) Computer experience: - 0.456 (0.008) vs. - 0.389 (0.025) vs. - 0.303 (0.086) vs. - 0.325 (0.065) Education: 0.049 (0.785) vs. - 0.116 (0.521) vs. - 0.227 (0.203) vs. - 0.013 (0.944) OMCT score: 0.218 (0.222) vs. 0.081 (0.654) vs. -0.089 (0.622) vs. 0.161 (0.371) Income: - 0.248 (0.164) vs. - 0.204 (0.256) vs. - 0.139 (0.442) vs. - 0.182 (0.310) Ease of use score: - 0.481 (0.005) vs. - 0.427 (0.013) vs. - 0.311 (0.079) vs. - 0.370 (0.034) Prescription acceptability score: - 0.008 (0.967) vs. - 0.057 (0.754) vs.

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Kwon	2004	Outpatient clinic	Kangnam St. Mary's Hospital Diabetes Center	Homes	RCT	N = 110 Grp 1: 55 Grp 2: 55
Labiris	2004	Internet	Urban areas of USA, EU, Canada, and Australia	Homes	Cohort	N=1,234 Counseling given to 1,021

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Kwon	2004	May-August 2001	3 mos	*Type 2 diabetes for ≥1 year *Internet access *≥30 years old	Significant diseases that were likely to affect the outcome and compliance of this study Any who had participated in other programs that provided any information or education for diabetes management	NR
Labiris	2004	8 yrs	NR	NR	Need for physical examination and insufficient provision of medical data were the main reasons for failure to answer all requests	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Kwon	2004	NR	TYPE 2 DM	NR	Grp 1: 58% Grp 2: 64%	Mean Gp 1: 54 Gp 2: 53
Labiris	2004	YES	YES: Orthopedic related illnesses	NR	60.50%	Men: 43 (18-77) Women: 55 (32-75)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Kwon	2004	Korean	NR	NR	NR	NR
Labiris	2004	NR	NR	NR	YES: urban areas of EU, USA, Canada, and Australia	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Kwon	2004	NR	Korean	Korean	NR	Web-based diabetes management system
Labiris	2004	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Kwon	2004	NR	Group 1: Intervention group Group 2: Control group	NR	NR
Labiris	2004	Internet-based counseling: patients would send e-mails to panel of physicians and orthopedic surgeons, and GPs, and these professionals would respond	Number of Requests Systemic diseases: 764 Pediatric orthopedics: 154 Sports Injuries: 143 Hand: 81 Fracture complications: 64 Misc: 28	E-mail	To provide online counseling to pts

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Kwon	2004	NR	NR	NR	At 12 week follow-up HbA1C levels for Grp 1 decreased from 7.59 at baseline to 6.94%, (P<0.001) and decreased significantly more at follow-up than Grp 2 (P<0.05) HDL for Grp 2 changed from 47.9 to 50.6 mg/dl (P<0.05) No other significant changes
Labiris	2004	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Kwon	2004	NR	NR	NR
Labiris	2004	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Kwon	2004	NR	NR	NR
Labiris	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Kwon	2004	NR	NR	NR
Labiris	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Kwon	2004	NR	NR	N = 9 Grp1: 2 for not following the study protocol, 2 for lost to follow-up Grp 2: 5 for lost to follow-up
Labiris	2004	NR	NR	NR

Author	Year	Adverse Effects	Other
Kwon	2004	NR	NR
Labiris	2004	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
LaFramboise	2003	NR	NR	Homes	RCT	N= 90 Telephonic grp: 26 Home visit: 23 Health buddy: 21 Home visit/health buddy: 20

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
LaFramboise	2003	NR	2 months	*Inclusion criteria were oriented to person, place and time *No visual impairment *Ability to speak and read English *Having an active phone service.	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
LaFramboise	2003	NR	CHF	NR	Telephonic: 16.7% Home visit: 7.8% Health buddy: 13.3% Home visit/health buddy: 12.2% Total: 50.0%	Mean (Range) Telephonic: 67.6 (41-86) Home visit: 73.4 (53-85) Health buddy: 66.5 (39 91) Home visit/health buddy: 74.4 (56-90) Total: 70.3 (39-91)

Appendix H. Data Table

		Patient Characteristics*				
Author	Year	Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
LaFramboise	2003	Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy vs. Total Caucasian: 25.6 % vs. 20.0% vs. 21.1% vs. 17.8% vs. 83.3% African American: 3.3% vs. 4.4% v 2.2% vs. 3.3% vs. 13.3% Other: 0.0% vs. 1.1% vs. 0.0% vs. 1.1% vs. 2.2%	Mean (Range) Telephonic: $16,646 (5837-32,000) Home visit: $ 15,179 (5584-32,000) Health buddy: $ 20,101 (5700-50000) Home visit+health buddy: $ 21,680 (5800-65000) Total: $ 18,380 (5584-65,000)	Mean (Range) Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy vs. Total 11.4 (7-14) vs. 10.6 (3-16) vs. 11.9 (6-18) vs. 11.9 (8-16) vs. 11.4 (3-18)	NR	Living arrangement (%) Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy vs. Total Alone: 5.6 vs. 10 vs. 8.9 vs. 8.9 vs. 33.3 With spouse/significant other: 17.8 vs. 8.9 vs. 12.2 vs. 11.1 vs. 50 With other relative: 5.6 vs. 5.6 vs. 2.2 vs. 2.2 vs. 15.6 In home assistant or assisted living: 0 vs. 1.1 vs. 0 vs. 0 vs. 1.1

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
LaFramboise	2003	NR	NR	NR	NR	Health buddy

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
LaFramboise	2003	Simple, user friendly, readily visible, desktop telehealth communication device with daily interventions with recovery assessment, strategies to manage problems, education and positive reinforcement	Telephonic: Baseline focused physical assessment; HF disease management program (nurse provides assessment and education thru 5 weekly phone calls); HFP patient education notebook, non emergency phone number provided to call with questions; 2-month focused physical assessment Home visit: Everything same as above except that pts received 5 weekly home visits instead of phone calls Health buddy: everything similar to telephonic grp except Assessment and educational components of the HFP provided daily through Health buddy for up to 6 months with phone calls to pts as needed for follow up of high risk responses Home visits+health buddy:	Computer	Education, communication, response to questions

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
LaFramboise	2003	NR	NR	NR	Functional status, Mean (SD) Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy Baseline: 574.3 (373.6) vs. 510.3 (266.6) vs. 682.4 (465.26) vs. 599.2 (281.25) 2 month: 633.16 (434.13) vs. 604.44 (319.9) vs. 723.4 (462.8) vs. 637.3 (264.2) F (p)= 8.4 (0.005) Role-physical, mean (SD) Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy Baseline: 52.9 (44.9) vs. 38(44.5) vs. 31 (36.1) vs. 41.7(40.6) 2 mo: 62.5 (44.9) vs. 58.6 (44.3) vs. 58.3 (48.3) vs. 59.6 (44.7) F (p)= 12.7 (0.001) Bodily pain, mean (SD) Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy Baseline: 53.7 (26.7) vs. 59.7 (29.8)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
LaFramboise	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
LaFramboise	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
LaFramboise	2003	NR	Mental status, Mean (SD) Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy Baseline: 70.6 (21.8) vs. 73.9(21.1) vs. 76.2 (20.7) vs. 76.6 (17.4) 2 mo: 72.9(16.2) vs. 80(14.5) vs. 78.3 (20.8) vs. 83.2 (11.8) F (p)= 7.1 (0.009) Vitality Telephonic vs. Home visit vs. Health buddy vs. Home visit+health buddy Baseline: 39.4 (24) vs. 40.9(23.1) v 35 (22) vs. 37(22.3) 2 mo: 39 (27) vs. 44.8(29) vs. 41.7(23.1) vs. 42.4 (19.5) F (p) = 7.6 (0.007)	NR

Author	Year	Quality of Life	Support	Withdrawals
LaFramboise	2003	NR	NR	Out of 66 originally assigned to grp health buddy and grp health buddy/home visit 20 (30%) were not able to use health buddy and not eligible for inclusion or continuation Of these, 4 were not interested in being inconvenienced by the technology and 2 were weak or ill because of other conditions.6 lived in retirement homes and had no available outlet for health buddy's electrical cord.

Author	Year	Adverse Effects	Other
LaFramboise	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Lahm	1996	Preschool special education class 2 classes in special schools, 4 classes in rural schools, 5 in medium-sized urban school districts, 7 in large metropolitan districts	Virginia	Classroom	Convenience Cohort	N=48
Lee	2007	Metabolism Center	NR	Homes	RCT	N = 274 Grp 1: 134 Grp 2: 140

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Lahm	1996	9 months	NR	*Ages 3-5 *Placement in a non-categorical preschool special education class	Not chosen by the teacher to participate in the study	NR
Lee	2007	September 2003-May 2004	6 mos	*No severe complications that would affect the patients' ability to follow physician's orders *Normal level of consciousness Ability to read and communicate with spoken language *Have internet access	Invalid test results on one of the laboratory tests	YES

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Lahm	1996	NR	NR	YES: physical/mental/emotional disability	79.00%	Range: 3-5
Lee	2007	NR	TYPE 2 DM	NR	Grp 1: 57% Grp 2: 46%	Range <29 Grp 1: 7.4% Grp 2: 2.1% 30-39 Grp 1: 7.5% Grp 2: 2.1% 40-49 Grp 1: 15.7% Grp 2: 9.3% 50-59 Grp 1: 34.2% Grp 2: 29.4% 60-69 Grp 1: 18% Grp 2: 27.9% 70-79 Grp 1: 14.2% Grp 2: 26.4% >80 Grp 1: 3% Grp 2: 2.8%

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Lahm	1996	NR	NR	Preschool class	YES: classes recruited from urban and rural school districts	NR
Lee	2007	NR	NR	Illiterate Grp 1: 9.8% Grp 2: 12.1% Elementary school/Junior high school Grp 1: 32% Grp 2: 27.2% High School Grp 1: 15.7% Grp 2: 20% College or University Grp 1: 38.8% Grp 2: 38.6% Masters or PhD Grp 1: 3.7% Grp 2: 2.1%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Lahm	1996	NR	NR	NR	NR	NR
Lee	2007	NR	NR	NR	NR	POEM

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Lahm	1996	Computer programs designed to engage preschool age children with developmental, physical, or mental disabilities	IVR: 48	Interactive multimedia software	Goal of the study was to identify software design features that enhance engagement of young children with disabilities with instructional software
Lee	2007	Web-based system for managing patients' care of their diabetes	Group 1: Intervention group that used POEM Group 2: Control group	Web-based intervention	Education, medical data retrieval, reminders

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Lahm	1996	1 full-day workshop on a single-subject research and alternating treatments design	NR	NR	NR
Lee	2007	NR	Intervention group received training on accessing the internet, using the POEM system, and reading their cell phone messages	NR	Fasting blood glucose (mg/dl) Grp 1: 125.14 to 108.82 vs. Grp 2: 137.69 to 125.99 P=0.001 HbA1C (%) Grp 1: 8.56 to 6.74 vs. Grp 2: 8.90 to 7.42 P=0.001 Total cholesterol level (mg/dl) Grp 1: 180.01 to 160.99 vs. Grp 2: 189.56 to 174.60 P=0.012

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Lahm	1996	NR	NR	NR
Lee	2007	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Lahm	1996	Twice a day for 5 minutes for a maximum of 15 days	NR	NR
Lee	2007	Education Differences Those in the education category of "College or University" logged into the POEM system more often than those in the education category of "Illiterate" or "Elementary school/Junior high school" (P=0.007 and P=0.012, respectively) Age Differences Those in the age category of <29 years logged into the POEM system more often than those in the age category of 50-59, 60-69, and 70-79 (P=0.011, P=0.000, P=0.000, respectively) Those in the age category of 40-49 years logged into the POEM system more often than those in the age category of 60-69 and 70-79 (P=0.012 and P=0.040, respectively)	NR	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Lahm	1996	NR	NR	NR
Lee	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Lahm	1996	NR	NR	19 students had incomplete data
Lee	2007	NR	NR	NR

Author	Year	Adverse Effects	Other
Lahm	1996	NR	NR
Lee	2007	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Leu	2005	University of Washington Physician's network clinics. (no other details given)	20 Primary care providers and 2 endocrinologist clinics	Homes	RCT	N=50 CG: 25 Exp Grp: 25

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Leu	2005	Enrollment occurred from November 6, 2001 through July 8, 2002, The last patient de-enrolled on December 20, 2002	3-6 months	*Pts with HbA1c values between 8.0%-9.4% at the time of recruitment with either Type 1 or Type 2 Diabetes.	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Leu	2005	NR	DIABETES	NR	NR	Mean: 51

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Leu	2005	Predominantly Caucasian	NR	NR	Unclear	Type 2 Diabetes: 37 pts Type 1 Diabetes: 13 Pts with Type 1 Diabetes were more likely to participate in the study;1 in 4 participated Pts with Type 1 Diabetes were younger (average age is 46 yrs) The rate of participation between pts referred by a PCP or an Endocrinologist was the same 19 pts had Hb1Ac checked within 3 months prior to the study enrollment

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Leu	2005	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Leu	2005	Wireless two way pager based automated messaging system offering appointment reminders, medication reminders, blood glucose testing reminders, exercise reinforcement, dietary reinforcement, meal time reinforcement, and lab result reporting were offered along with custom reminders of time and birthdays, messages sent to pts via email, pt information stored in the diabetes registry. Responses processed by a constantly running program that forwarded unexpected responses to investigator	Group 1 (Pager): all of the above, training on the use of pager provider, investigator could be reached anytime. Pts had contact numbers and also the number of the UWPN clinic and instructions to dial 911 for emergencies. Group 2 (No pager): Pts in pager group could interact with the health care team by sending and receiving paper messages Pts in control group could page the investigator	Pager	Send and receive short text messages, Pt could respond to a message with a canned response or by typing in a small rudimentary keyboard.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Leu	2005	NR	Pts in the pager group received instructions on how to use the pager.	NR	HbA1c No pager (n= 19) vs. pager (n=18) Prior to enrollment: 8.5% vs. 8.5% Preliminary interview: 8.2% vs. 8.3% Exit interview: 7.9% vs. 8.2% Difference (Mean +/- SD)= - 0.3+/- 1.12% vs. - 0.13 +/-0.93% Blood pressure (% hypertensive) No pager (n= 19) vs. pager (n=18) Preliminary interview 68% (17/25) vs. 64% (16/25) Preliminary (stayed enrolled) 71%(15/21) vs. 62%(13/21) Exit interview 76%(16/21) vs. 38% (8/21)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Leu	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Leu	2005	Messaging system sent 21,764 messages out of which 12,025 sent to the patient. 1,676 replies, out of which 114 were non-canned 2 pts utilized the system by replying to as many messages as they can i.e. 770 of 884 (87%) and 708 of 830 (85%). System statistics in detail given in tabular form, not listed here.	NR	Attitudes towards technology: pager (post) Messages Annoying to comforting: 7.7 Unhelpful to helpful: 7.0 Inconvenient to convenient: 8.5 Not useful to useful: 7.8 Patient felt not cared for to cared for by the health care team: 8.5

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Leu	2005	Attitude towards the health care team Pager vs. No Pager Overall satisfaction with diabetes related care Pre: 8.5 vs. 8.5 ; Post: 8.8 vs. 7.9 Clear treatment plan Pre: 8.6 vs. 7.8; Post: 8.8 vs. 8.3 Possible side effects of medications are clear Pre: 8.2 vs. 8.5; Post: 8.5 vs. 7.8 Questions concerning diabetes answered Pre: 7.8 vs. 8.4; Post: 8.5 vs. 8.1	NR	Attitude towards diabetes Pager vs. No pager Plan for hypoglycemia Pre: 8.4 vs. 7.3; Post: 8.3 vs. 7.8 Health: poor to excellent Pre: 6.2 vs. 6.5; Post: 6.8 vs. 7.0 Diabetes.- unmanageable to manageable Pre: 6.2 vs. 6.4; Post: 7.2 vs. 7.0 Glucose monitoring Unimportant to important Pre: 8.2 vs. 8.3; Post: 8.0 vs. 8.3 Not done to regularly Pre: 7.8 vs. 6.8; Post: 8.0 to 7.2 Difficult to easy Pre: 8.4 vs. 7.3; Post:8.6 vs. 7.6 Treatment plan Realistic to Unrealistic Pre: 7.5 vs. 8.2; Post: 8.1 vs. 8.1 Health care better at end of study: No to yes No pager (post) vs. pager(post) 5.8 vs. 7.2

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Leu	2005	NR	Poor to good family support: Pager group (post)= 8.0	Pager group: 3 withdrew (1 did not use pager, 1 lost the pager, 1 stopped because he felt he received too many pages) and 1 patient passed away from complications of stroke. Experimental group: 3 withdrew and 1 was lost to follow up.

Author	Year	Adverse Effects	Other
Leu	2005	NR	The different message types requested are given, not listed here There is also a table with the message system statistics Messages were annoying: 44% (8/18) Messages were from my physician: 13%(2/15) Messages were not applicable: 12% (2/17) Pager worked (no problems): 71% (15/21) Enjoyed using the pager: 79% (15/19) Want to continue program now that study is over: 68% (13/19)

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Levetan	2002	American Diabetes Association program 3mos prior to enrollment	Penn Medical Laboratory, Washington D.C.	Homes	RCT	N=150

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Levetan	2002	6 mos	NR	*Completing an ADA recognized diabetes education program during the 3mos period before study enrollment	*History of renal insufficiency with Creatinine level > 1.5mg/d *Women who were pregnant at the time or planning a pregnancy during the study period *Pts using insulin pumps *Illiterate pts *Pts receiving blood transfusion within past 30 days *Pts with underlying illness affecting chances of survival during study period	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Levetan	2002	NR	DIABETES	NR	CG: 30 IVR: 35 p=0.71	CG: 60 IVR: 57 p=0.25

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Levetan	2002	African American CG: 83 IVR: 89 p=0.32	NR	Education (% no college) CG: 44 IVR: 47 p=0.62	NR	Systolic BP (mmHg) CG: 143 IVR: 142 p=0.85 Diastolic BP (mmHg) CG: 83 IVR: 83 p=0.80 Duration of diabetes (years) CG: 3 IVR: 5.5 p=0.10 HDL (mg/dl) CG: 41 IVR: 42 p=0.57 LDL (mg/dl) CG: 116 IVR: 115 p=0.98 HbA1c (%) CG: 8.39 (±2.03) IVR: 8.85 (±2.48) p=0.25 Microalbuminuria (%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Levetan	2002	NR	NR	NR	NR	DiaLOG (Diabetes List of Goals)

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Levetan	2002	Computer-generated customized report presented as an 11"x17" laminated color poster with magnets, with a bulleted list of personalized goals and recommended steps for achieving the goals	IVR: 75 Received computer-generated poster as well as 1 phone call from a health educator discussing the poster and the plan Pts also received a color report that was designed for the pts' medical record; in addition to graphic display of HbA1c, information included pts' BP, lipid, and microalbumin status, and date for pts' next dilated retinal examination	Computer-generated report (poster)	Education, goal setting, encouragement, knowledge

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Levetan	2002	NR	NR	NR	Changes from baseline at follow-up Weight (lb) CG: +1.0 IVR: +1.54 Systolic BP (mmHg) CG: -4 IVR: -4 Diastolic BP (mmHg) CG: -5 IVR: -4 HDL (mg/dl) CG: +3 IVR: +3 LDL CG: -7 IVR: -5 Changes in HbA1c from Baseline Baseline (%) CG: 8.39 (±2.03) IVR: 8.85 (±2.48) End of Study (%) CG: 7.79 (±1.91) IVR: 7.78 (±2.22) Change from Baseline (%)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Levetan	2002	NR	NR	Pt Characteristics at Baseline Heard of an "A-One-C" test (%) CG: 52 IVR: 42 p=0.47 Changes from baseline at Follow-up Heard of a "A-One-C" test (%) CG: -5.1 IVR: +14.3

Author	Year	Use of Technology	Usability	HIT Satisfaction
Levetan	2002	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Levetan	2002	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Levetan	2002	NR	NR	CG 1 death 3 pts developed debilitating syndromes and dropped 7 pts declined F/u IVR 1 death 2 lost laboratory specimens 7 pts declined F/u 1 developed debilitating illness Final # of pts: 128

Author	Year	Adverse Effects	Other
Levetan	2002	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Lieberman	2003	WWW	NA	WWW	Cross-sectional cohort study	N = 1455 Non-abuse: 248 Alc. Abuse: 1207
Lorig	2006	Website postings	NR	Homes	RCT	N=958 CG: 501 IVR: 457

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Lieberman	2003	March 2001 - April 2003	NA	*Internet connection *Registration with alcoholcheckup.com *Informed consent	Unable to provide consent or "understand text" (NR how this was measured)	NR
Lorig	2006	18 mos	12 mos	*Age ≥18 yrs *Physician's diagnosis of heart disease, chronic lung disease or type 2 diabetes *Access to a computer with internet and e-mail capabilities *Agree to 1-2 hours per week of log on time spread over at least 3 sessions/week for 6 weeks *Able to complete online questionnaire	Active treatment of cancer within 1 year; participated in the small-group Chronic Disease Self-Management Program	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Lieberman	2003	NR	ALCOHOL DEPENDENCE/USE	NR	Non-abuse: 54.5% Alc. Abuse: 52.8%	Mean Non-abuse: 35.5 Alc. Abuse: 34.8
Lorig	2006	NR	HEART DISEASE, HYPERTENSION, LUNG DIASEASE, DIABETES, ARTHRITIS	NR	Usual Care: 28.4%; Intervention: 28.8%	Mean (SD) Usual Care: 57.6 (±11.3) IVR: 57.4 (±10.5)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Lieberman	2003	NR	NR	NR	NR	Mean drinks/week: Non-abuse: 9.6 Alc abuse: 36.4 (p<.001); Age first drink: Non-abuse: 17.2 Alc abuse: 16 (p<.001);
Lorig	2006	Caucasian Usual Care: 88.7%; Intervention: 87.3%	NR	Mean years (SD) CG: 15.8 (±3.16) IVR 15.4 (±3.00)	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Lieberman	2003	NR	NR	NR	NR	alcoholscheckup.com
Lorig	2006	NR	NR	NR	NR	Internet-based Chronic Disease Self- Management Program (CDSMP)

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Lieberman	2003	Information tailored to data entered for 5 questionnaires; feedback scores on alcohol screening instruments, drinking compared to national averages	NR	WWW	Tailored information
Lorig	2006	Interactive web-based English-language instruction, web-based bulletin board discussion groups, and the book *Living a Healthy Life with Chronic Conditions*. Book contains all program content, as well discussions of the major types of chronic diseases, medication, and also has illustrations of suggested exercises. Each week for 6 weeks, participants are asked to log on at least 3 times for a total of 1 to 2 hours. Participation includes reading the week's content on web pages, posting an action plan on the bulletin board, checking in with a buddy via e-mail, and participating in any self-tests and activities.	Usual Care: received usual care (whatever care they had been receiving or chose to receive) Intervention group: usual care + the intervention above. Online moderator training: participation in workshop and then co-leading a workshop with a previously trained moderator. Moderators also have online manual that gives daily and weekly instructions as to moderator duties.	Website	Provide content on web pages, bulletin board, buddy email, self-tests and activities

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Lieberman	2003	NR	NR	NR	NR
Lorig	2006	Moderator Training; see intervention	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Lieberman	2003	NR	NR	Asked in information was new and "unexpected" to them Non-abuse: 8.3 Alc abuse 9.4: (p<.001); Correlation between unexpected information and helpfulness: 0.254 (p<.001)
Lorig	2006	Mean (SD) Changes at 1 year: Physician Visits (during past 6 months): NS Emergency Visits (during past 6 months): Significant Usual Care: -0.144 (±1.82), Intervention:-0.00 (±1.06) (p=.030). no longer significant when 6 month data is included (p=0.141). Days in hospital (during past 6 months): NA	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Lieberman	2003	NR	NR	Perceived helpfulness overall: Non-abuse 8.9 Alc. Abuse 10.4 (p<.001); Among alc. Abusers, helpfulness of comparative drinking rates 3.8, SOCRATES screening tool feedback 3.3., AUDIT screening feedback 3.3;
Lorig	2006	Average log in: 26.5 times (±22.8) Range: 0-177	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Lieberman	2003	NR	NR	Higher perceived helpfulness correlated with higher SOCATES scores (Pearson corr 0.295, p<.001), ability to recognize the problem (Pearson 0.3, p<.001), ambivalence about need to make a change (Pearson 0.3, p<.001), and having taken steps to change (Pearson 0.156, p<.001).
Lorig	2006	NR	Online/ usual care NS (trend p=.06) **All subjects**: baseline self-efficacy and increases at 6 months were associated with pain, fatigue, disability, illness intrusiveness, health distress, and global general health at 1 year (p< .001) and shortness of breath (p = .007) M (SD) Changes at 1 year: Self- efficacy: trend Usual Care: 0.200 (1.82) Intervention: 0.406 (1.98) (p=0.051) (effect size= .096)	Mean (SD) Changes in Health Behaviors at 1 year: Aerobic exercise: NS Usual Care: Significant Stretch/strength exercise: CG: 1.16 (±49.6) IVR: 11.9 (±60.4) (p=0.032) (effect size=0.308) Communication with physician: NS Practice stress management: NS

Author	Year	Quality of Life	Support	Withdrawals
Lieberman	2003	NR	NR	NR
Lorig	2006	M (SD) Changes in Health Indicators at 1 year Health distress: Significant Usual Care: -0.193 (1.07) Intervention: -0.377 (1.11) (p=.013) (effect size=.160) Self-reported global health: NS Illness intrusiveness: NS Disability: NS Fatigue: Significant Usual Care: -0.358 (2.09) Intervention: -0.720 (2.14) (p=.011) (effect size= 0.151) Pain: Significant Usual Care: -0.047 (2.46) Intervention: -0.367 (2.72) (p= .008) (effect size= 0.106) Shortness of Breath: Usual Care: -0.216(2.40) Intervention: -0.537 (2.41) (p= .020) (effect size =0.097)	NR	UC: 15%, IVR: 22.5% Reasons NR

Author	Year	Adverse Effects	Other
Lieberman	2003	NR	NR
Lorig	2006	NR	Exploratory comparison of intervention group to original study of small group CDSMP. Health indicators, health behaviors, self-efficacy and health utilization are compared

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Ma	2006	Diabetes Center, The Queen Elizabeth Hospital	Specialty outpatient clinic	Homes	Phase I: Use case study; Phase II: Cohort	Phase I: N = 14 Clinicians: 5 Patients: 11 Phase II: N = 17 Clinicians: 5 Patients: 12
McClure	2006	2 Health plans, Group Health Cooperative and Henry Ford Health System	Recruitment through the health plans (letters sent to smokers identified in EHR, and health plan newsletters)	WWW	Cohort study (recruitment study)	N = 1866
McDaniel	2002	Inner-city community health center	Indianapolis, Indiana	Clinic	Cohort	N=110

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Ma	2006	NR	Phase II: 3 months	Patients: *Diagnosed with diabetes in the past year in the hospital database *If no home internet, willing to use library Internet with assistance Providers: *Involved in diabetes management	NR	NR
McClure	2006	Sept 2004 - July 2005 (recruitment)	NR	*GHC or HFHS member *Smoked 100 lifetime cigarettes *Current 10+ cig/day *Ready to quit next 30 days *Age 21-70 *Home/work access to Internet *E-mail account used 2x/week or more	Enrolled in smoking treatment program; medical contraindication to nicotine therapy	NR
McDaniel	2002	NR	1 week	*Female *Smokers *Attend inner-city community health center	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Ma	2006	NR	Phase I, Patients: 10 of 11 had TYPE 2 DIABETES, 1 had TYPE 1 DM Phase II, Patients: All TYPE 2 DM	NR	Phase I, Patients: 7 of 12 (58.3%)	Range Phase I, Patients: 38-62 Phase II, Patients: 35-65
McClure	2006	NR	SMOKING	NR	N = 40.5%	Mean: 46.3
McDaniel	2002	NR	YES: SMOKING	NR	0.00%	41.5 (±12.4) Range: 18-71

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Ma	2006	NR	NR	NR	NR	NR
McClure	2006	Caucasian: 79.6%	NR	HS or less: 24.2% Vocational/tech: 11.9% Some College: 56.3%	NR	NR
McDaniel	2002	African-American: 23% Caucasian: 68%	NR	35% did NOT have HS diploma	YES: attending inner-city community clinic	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Ma	2006	NR	NR	NR	NR	Violet Technology
McClure	2006	Insured with participating health plan	NR	NR	NR	Project Quit
McDaniel	2002	NR	NR	NR	NR	A New Beginning

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Ma	2006	Diabetes Information Profile (DIP): info tailoring and priority algorithms; Quiz Service: quiz tailoring and priority algorithms; Agenda Service: agenda algorithms.	NR	Web portal	Patient profile data collection, information and quizzes tailored to profile (boolean filtering based on profile data) and priority weights (filtering using rules based on patient data, knowledge [level 1, 2, or 3], frequency of information review, and pt-reported information preferences); quizzes filtered based on patient data
McClure	2006	Recruitment study, not an intervention study; Project Quit is a tailored interactive tobacco treatment website plus nicotine patch therapy.	NR	Website	Web-based cognitive behavioral counseling, tailored interactive site
McDaniel	2002	Computer program designed to give tailored smoking cessation messages in a format that would be relevant and acceptable to the users based upon the information entered by the pt	IVR: 100	Computer program	Smoking cessation

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Ma	2006	Available	NR	NR	NA
McClure	2006	NR	NR	NR	NA
McDaniel	2002	NR	NR	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Ma	2006	NA	NA	NA
McClure	2006	NA	NA	NA
McDaniel	2002	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Ma	2006	Patients, Phase II: Login times N=82, Individuals 2 to 15 (Median: 6) Use of InfoService all 12 patients: 82 out of 257 information items visited for 10 sec or greater; Use of QuizService, 5 of 12 pts: individuals did 5 to 110 quiz questions, (Mean: 61.8) Use of AgendaService, 1 of 12 pts	Phase II, patients N=9 (agree with the statements below): Easy to use: 7 Relevant to DM: 7 Tailored info meets needs: 6 Tailored info useful: 7 Tailored agenda useful: 7 Tailored agenda easy to follow: 6 Would recommend to others: 6 Would continue to use: 5	Focus Group, patients: Experienced patients found the tailored information less useful because they knew it. Focus Group, professionals: less valuable for more experienced patients or those who have diabetes in control; should add HgA1c and weight tracking; provide summary feedback on quiz results.
McClure	2006	3256 visited project website 1866 enrolled in study Recruitment of site visitors: 69% from mailed letters, 21% from newsletter, 9% from other (provider referral, etc.) Estimated 1.6% and 2.5% of smokers enrolled in study (from health plan 1 and 2)	NR	NR
McDaniel	2002	NR	Initially, non-applicable information would be presented to certain pt Avg. time to complete program: 13.9 minutes (Range 7.2-88.8 minutes)	Satisfaction Range of 14-70 Mean: 60.2 (±6.3)

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Ma	2006	NR	NR	NR
McClure	2006	NA	NA	NA
McDaniel	2002	NR	NR	Cut down on cigarettes: 52% Quit Smoking for 24 hrs: 15% Called a smoking cessation program: 6% Talked to a doctor about quitting: 15% Read information about quitting: 24% Discussed quitting with friends/family: 40%

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Ma	2006	NR	NR	Phase 1: 1 of 12
McClure	2006	NA	NA	NA
McDaniel	2002	NR	NR	N=10

Author	Year	Adverse Effects	Other
Ma	2006	NR	Health professional feedback on program:
McClure	2006	NA	NR
McDaniel	2002	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
McKay	2001	Pts recruited by e-mail postings to diabetes specific UseNet groups, list serves, web sites and online community groups inviting them to participate in an internet based Physical activity(PA) program	NA	Homes	RCT	N= 78 IVR: 38 CG: 40

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
McKay	2001	6 week recruitment period	2 mos	*Diagnosis of Type 2 Diabetes *Age ≥ 40 years *Physical activity level below the current minimum recommendation by the American college of sports medicine (ACSM) and CDC (i.e. 30 mins of cumulative moderate intensity activity for 5 or more days/week)	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
McKay	2001	NR	TYPE 2 DIABETES	NR	N = 47%	Mean: 52.3

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
McKay	2001	Caucasian: 82%	NR	Completed college: 50%	NR	Employed full time: 62% Taking insulin: 22% Diagnosed with diabetes for more than a year: 83% Had one or more co morbid condition: 75%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
McKay	2001	NR	NR	NR	NR	D-net active lives PA intervention

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
McKay	2001	Multi-level, socio ecological model of diabetes self management and follow up support for behavioral change. The pts in the intervention group received goal setting and personalized feedback, identified and developed strategies to overcome barriers, received and could post messages to an on line personal coach and were involved in peer group support activities.	Control group - received graphic feedback comparing baseline PA level to ACSM recommendations for moderate level PA -received PA safety precautions -Access to information only website Intervention group - received graphic feedback comparing baseline PA level to ACSM recommendations for moderate level PA - received 5 steps to action personalized PA plan that consisted of Benefits of PA (i.e. personal motivators), Goal setting, Activity exploration, Schedule of weekly activity, Barriers to PA and tips to overcome barriers. - received support from personal coach that consisted of 5 tailored messages over 8 week period, correspondence as required by pts, referral	Computer	Live chat, links to resources sites, messages, graphic feedback of PA levels, communications with personal coach

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
McKay	2001	NR	NR	NR	Physical activity summary Moderate to vigorous exercise (min/day) Intervention vs. control Unadjusted; Baseline- 5.6 +/- 6.2 vs. 7.3 +/- 6.2 Unadjusted; follow up- 17.6 +/- 15.3 vs. 18.0 +/- 17.3 Log transformed; Baseline- 0.60 +/- 0.47 vs. 0.75 +/- 0.45 Log transformed; follow up- 1.03 +/- 0.57 vs. 1.12 +/- 0.42 Time---- F (1,64)= 29.59 (p<0.001) Group X time-------F (1,64) = 0.01 (p=0.938); n2= 0.000 Walking (min/day) Intervention vs. Control Unadjusted; baseline- 6.4 +/- 6.2 vs. 8.4 +/- 8.4 Unadjusted; follow up- 12.5 +/- 9.5 vs. 16.8 +/- 22.8 Log transformed; baseline- 0.68 +/- 0.45 vs. 0.78 +/- 0.46 Log transforms; follow up- 0.96 +/- 0.48 vs. 1.01 +/- 0.49 Time---------- F (1,64)= 15.62, (p<0.001) Group X time--------F = 0.08 (p=0.781), n2=0.001

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
McKay	2001	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
McKay	2001	IVR vs. CG Web site activity analysis: 341 logons (1.1 logons/pt/week) vs. 105 logons (0.3 logons/pt/week) Total web pages viewed: 9962 vs. 1811 Pts average session duration: 3 mins vs. 11 mins Usage during first 2 weeks and last 2 weeks IVR: 204 logons (2.7/pt) and 40 logons (0.5/pt) CG: 77 logons (0.9/pt) and 7 logons (0.09/pt) IVR pts had 5938 page views (156.3/pt) within the behavior change focused active lives area and 310 page views (8.2/pt) within the diabetes specific information library area. IVR pts posted 80 messages (2.1/pt) to personal coach and 42 messages(1.1/pt) to peer support grp area	NR	Intervention vs. control Satisfaction: 4.9 (±1.4) vs. 3.7 (±1.7), Student's t value= 2.07, p=0.047 Program's relevance to pts needs: 5.1 (±1.2) vs. 4.1 (±1.2), t= 1.96, p=0.058 Ease of use, helpfulness of PA section- results did not differ significantly In the intervention group, 88% found personal coach helpful and 35% found peer support helpful

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
McKay	2001	NR	Depressive symptoms (CES-D) Intervention vs. control Baseline; 16.9 +/- 11.6 vs. 17.6 +/- 10.4 Follow up; 14.9 +/- 12.5 vs. 19.9 +/- 14.2 Time------- F (1,64)= 0.06 (p=0.809) Group X time--------F(1,64) = 2.77 (p=0.101), n2=0.042	NR

Author	Year	Quality of Life	Support	Withdrawals
McKay	2001	NR	NR	Out of 40 control pts, only 33 (82.5%) completed the post assessment survey Out of 38 intervention pts, only 35 (92.1%) completed the survey

Author	Year	Adverse Effects	Other
McKay	2001	NR	The total number of logons was used to determine the association between program use and the three outcome measures. ANOVA results given for the same, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
McMahon	2005	Volunteer (solicited by mail and telephone)	VA Boston Healthcare System (4 hospital-based clinics and 10 community-based outpatient clinics)	Homes	RCT	N = 104 CG = 52 Intervention = 52

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
McMahon	2005	October 2001-April 2003	None	*HbA1C(>=) 9.0% *>18 yrs old *Ability to understand written and spoken English *"Willingness to use glucose-and blood pressure-monitoring devices" *Required to have a VA-based PCP *Access to a telephone	Lacking any/all of the stated criteria above	Mean age: 63(+)7

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
McMahon	2005	NR	DIABETES	NR	CG: 100% Intervention: 99%	CG: 63(±) 7 Intervention: 64(±)7

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
McMahon	2005	NR	NR	CG: College or Above: 67% High school graduate: 19% Some HS: 6% Below HS: 2% Intervention: College or above: 59% HS graduate: 22% Some HS: 12% Below HS: 6%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
McMahon	2005	NR	NR	English	Believe that care management has been studied in diabetic patients, but that results have been mixed; believe that with increased use of internet in chronically ill, Internet may help improve QoL and quality of condition	MyCareTeam

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
McMahon	2005	Website displayed blood pressure and glucose monitoring outcomes in table and graphical form for patients and care management providers, contained web-enabled diabetes educational modules, provided links to other diabetes resource websites, and allowed secure chat/e-mail between patient and care provider. Information submitted was also reviewed by a certified diabetes educator and advanced practice nurse (made recommendations to patient and PCP).	CG: usual care with PCP Intervention: usual care + notebook computer, glucose meter, blood pressure monitor, and access to MyCareTeam website *Intervention group received computer training and support by the study staff (mean 2.3hrs per subject). Allowed to send e-mails to PCP and other experts	Internet, Telephone	Education and self-management skills, blood pressure monitoring was recommended at least 3 times weekly, and glucose monitoring was individualized to each patient

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
McMahon	2005	NR	Training time was dependent on comfort with computers/internet and devices provided	Additional education provided at regularly scheduled clinic visits	BEFORE STUDY: Mean A1C (%) CG: 9.9 (+-)0.8 Intervention: 10.0 (+-) 0.8 Blood Pressure (mmHg) Systolic, Diastolic: CG: 139(+-)20, 80(+-)7 Intervention: 141(+-)21, 81(+-)7 Lipids (mg/dl): LDL cholesterol CG: 97(+-)21 Intervention: 100(+-)35 HDL cholesterol CG: 40(+-)8 Intervention: 43(+-)14 Triglycerides CG: 204 (+-)140 Intervention: 178(+-)112

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
McMahon	2005	Clinic visits at 0, 3, 6, 9, and 12 months for both groups Intervention Uploads: Medians: 1, 18, 31 Persistent User: Log-in every 3 months (n = 30) Intermittent User: Log-in > 3mos (n = 22)	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
McMahon	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
McMahon	2005	NR	NR	AFTER STUDY Overall: P < 0.001 Changes in A1C at 12mos CG: -1.2(±)1.4% Intervention: -1.6(±)1.4% P < 0.05 Persistent Users: -1.9(±)1.2 vs. Intermittent: -1.2(±)1.4 P = 0.051 CG: P <0.05 Persistent Uploaders: -2.1(±)1.1 vs. Lowest: -1.1(±)1.7 P < 0.05 Changes in BP at 12mos Hypertensive Patients Systolic BP CG (n = 35): -7(±)21 mmHg Intervention: (n = 37): -10(±)17 P < 0.01 Diastolic BP CG: -6(±)11 P = 0.058 v. baseline Intervention: -5(±)13 P = 0.053 v. baseline Hypertensive Patients at the end of the study CG: n = 37 Intervention: n = 28 Changes in Lipid Profiles

Author	Year	Quality of Life	Support	Withdrawals
McMahon	2005	NR	NR	N = 20 CG: Lost to follow-up: 11 Withdrew Consent: 1 Intervention: Lost to follow-up: 7 Discontinued intervention: 1

Author	Year	Adverse Effects	Other
McMahon	2005	NR	Hypoglycemic episodes CG: 33 events in 11 participants (Median: 2/pt) Intervention: 46 events in 13 participants (Median: 3/pt)

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
McPherson	2006	Pediatric outpatient respiratory clinics	3 United Kingdom hospitals	Homes	RCT	N=101
McTavish	1994	Inner city Chicago	Cook county hospital	Homes	Pilot study	N= 8

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
McPherson	2006	1 years	6 months	*Had scheduled follow-up appointment at 1 of 3 clinics in the study period *Parental consent and child assent	Did not have a diagnosis of asthma, were not currently receiving treatment for asthma, or were assessed by parents or clinician to have significant learning or behavioral difficulties	NR
McTavish	1994	Oct 1, 1993-Jan 15, 1994	15 weeks	*All African American women were stage 1 or stage 2 cancer pts	NR	No

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
McPherson	2006	NR	YES: ASTHMA	NR	54.00%	Median, Mode CG: 9, 7 IVR: 11, 8
McTavish	1994	Inner city Chicago African American women	BREAST CANCER	NR	All women	Range: 36-66 yrs 6 of the 8 women were 55 yrs or younger

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
McPherson	2006	White CG: 86.3% IVR: 90%	NR	NR	NR	Mean duration of asthma CG: 6.64 (±3.12); 1-14 IVR: 6.91 (±3.64); 3mo to 13
McTavish	1994	African American	All women were on public assistance	Half never completed high school and 3 had prior computer experience	Urban (inner city)	Five had lumpectomies and two had mastectomies within the past year (5 had surgery within the past 6 months) Only 1 women had CHESS prior to deciding what surgery to have.

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
McPherson	2006	NR	NR	NR	NR	The Asthma Files
McTavish	1994	NR	NR	NR	NR	CHESS

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
McPherson	2006	Interactive computer game with a secret-agent theme; as "secret agents" users are encouraged to explore all of the sections, finding out as much about self-management as possible by listening to voiceovers, completing quizzes, and engaging with interactive problem solving tasks	CG: 51 IVR: 50	Computer game	To provide education about asthma to children
McTavish	1994	CHESS: web based information, discussion group, ask an expert, and interactive services (tailored action plan, decision aides and health tracking)	Pilot study group with CHESS intervention	Computer	Forum, question and answers, library, expert communication, action plan.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
McPherson	2006	NR	NR	NR	6 month Follow-Up Courses of Steroids, Mean IVR: -2.22, p=0.026 Days off school, Mean IVR: 2.1, p=0.034
McTavish	1994	NR	A CHESS staff member gave approx. 1 hour of instruction and orientation	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
McPherson	2006	NR	NR	Mean change in Asthma Knowledge Assessment score CG: 1.55 (0.65-2.48) IVR: 3.97 (3.02-4.92)
McTavish	1994	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
McPherson	2006	1-10 times	NR	35 of 37 Felt that the game was a good way to learn about asthma, and the majority (31/37) believed that they had learned more about their asthma from using the package.
McTavish	1994	CHESS was used 886 times within the 15 wk period On avg, each woman used CHESS 7 times/ wk and was on the system for more than 1 hour/wk Use of social support components: 55% Information components: 41% Problem solving components: 4% Service: number of uses (minutes) Discussion groups: 442 (5046) Ask an expert: 227 (1487) Questions and Answers: 83 (617) Personal stories: 43 (504) Instant library: 48(341) Decisions and conflicts: 20 (208) Getting help/support: 18 (76) Action Plan: 5 (48)	Overall value of CHESS: 7.00 with three services rated below 7.00 AP (action plan) rated lowest at 6.50 Overall CHESS for ease of use: 5.80 and 6 of the services rated above 6.00 in ease of use AP rated lowest in terms of ease of use: 4.80 DG (disc. groups)was the most used despite the lower ease of use core CHESS is extremely user friendly and lack of computer experience is not a barrier	Women felt acceptance, understanding and relief while using CHESS,

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
McPherson	2006	NR	NR	NR
McTavish	1994	NR	Experienced low levels of negative emotions such as stress, boredom, fear, sadness, indifference, helplessness, and anger,(all less than 3.0) elation and empowerment were low (2.25 and 2.2) while anxiety was high (4.5)	NR

Author	Year	Quality of Life	Support	Withdrawals
McPherson	2006	NR	NR	11 lost to follow-up
McTavish	1994	NR	NR	NR

Author	Year	Adverse Effects	Other
McPherson	2006	NR	NR
McTavish	1994	NR	Comparison table given- use of CHESS components by percent of total uses in two study population.

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Meigs	2003	NR	Hospital based staff resident practice. (The adult Medicine clinic)	Unclear	RCT	N= 598 IVR: 307 CG: 291
Nakagawa	2000	Waitlist of OCD patients wanting BT	NR	Homes	Cohort with historical control	N = 43 Grp 1: 23 Grp 2: 20

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Meigs	2003	May 1997-April 1999	NR	NR	NR	NR
Nakagawa	2000	NR	3 weeks	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Meigs	2003	NR	TYPE 2 DIABETES	NR	Patients with type 2 Diabetes Grp 1 vs. Grp 2: 44.9% vs. 50.5%	Mean (SD) Grp 1: 68 (±12) Grp 2: 67 (±12)
Nakagawa	2000	NR	OCD	NR	Gp 1: 49% Gp 2: 55%	Mean Grp 1: 28.6 Grp 2: 27.9

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Meigs	2003	Grp 1 Caucasian: 71% Black: 19.2% Other: 9.8% Grp 2 Caucasian: 71.1% Black: 18.9% Other: 10.0%	NR	NR	NR	Mean duration of diabetes (SD) Grp 1 vs. Grp 2 ; 9.9 (±5.5) vs. 9.7 (±5.6), p= 0.8 Diabetes therapy % Grp 1 vs. Grp 2 Insulin; 30.6 vs. 36.4, p= 0.1 Oral hypoglycemic medications; 60.9 vs. 63.2, p= 0.6 Diet and exercise only; 17.9 vs. 10.0, p= 0.005 Any lipid lowering medication; 30.9 vs. 38.1 , p= 0.06 Any antihypertensive medication; 79.2 vs. 79, p= 1.0 Hyperlipidemia; 56.4 vs. 59.8, p=0.4 Hypertension; 83.1 vs. 76.0, p= 0.03 Smoking; 15.6 vs. 14.8, p= 0.8 Any micro vascular complication; 45.3 vs. 50.2, p= 0.2 Any cardiovascular
Nakagawa	2000	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Meigs	2003	Payor Commercial < 65 Grp 1: 12.4% Grp 2: 11.0%, p= 0.2 IIMO < 65 Grp 1: 17.6% Grp 2: 19.6% Medicare Grp 1: 60.9% Grp 2: 54.3% Medicaid or other Grp 1: 9.2% Grp 2: 15.1%	NR	NR	NR	Diabetes Disease management Application (DMA)
Nakagawa	2000	NR	NR	NR	NR	BT STEPS

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Meigs	2003	Web based decision support tool, displaying interactive patient specific clinical data, treatment advice, and links to other web based care resources	Grp 1: received the intervention- DMA provides a single screen view of patient specific information, enabling decision support at the time of patient contact. It displays trended and tabular real time electronic laboratory data interactively linked to evidence based treatment recommendations, facilities to aid encounter work flow, and links to additional patient and provider care resources. Grp 2: not given the intervention- no additional details provided	Computer	Decision support system, links to other resources, Lab data in trended and tabulated form
Nakagawa	2000	Computer driven, telephone interview system using interactive voice response	Group 1: BT STEPS intervention Group 2: Matched waiting list controls	Computer/internet + telephone	Four step self-assessment and five step self-intervention

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Meigs	2003	Staff members were systematically exposed to the intervention, receiving formal pre intervention training and two interactive feedback sessions during the intervention year	NR	NR	Glycemic control outcomes Grp 1 vs. Grp 2 at least one HbA1c test in the last 12 months Preintervention: 264/86% vs. 256/88% Change: +1.6 % vs. - 1.0%, p= 0.3 Mean number of HbA1c tests/year Preintervention: 1.7 (0+.1) vs. 1.8 (+0.1) Change: + 0.3 vs. - 0.04, p= 0.008 HbA1c< 7% Preintervention: 51/21.7% vs. 61/26.6% Change: +1.7% vs. - 2.8%, p= 0.2 Mean HbA1c (% hemoglobin) Preintervention: 8.4 (0.1) vs. 8.1 (0.1) Change: - 0.23 vs. + 0.14, p= 0.09 Cholesterol control outcomes Grp 1 vs. Grp 2 At least 1 LDL chol test, last 12 months Preintervention: 177/57.7% vs. 167/57.4% Change: +7.2% vs. + 3.4%, p= 0.5 Mean number of LDL chol tests /year Preintervention: 0.8 (0.1) vs. 0.9 (0.1)
Nakagawa	2000	NR	5 minutes with coordinator explaining how to use system	NR	NR

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Meigs	2003	NR	NR	NR
Nakagawa	2000	Grp 1 completed fewer clinician guided ERP sessions than Grp 2 (8 versus 22)	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Meigs	2003	NR	NR	NR
Nakagawa	2000	NR	NR	9 patients in Grp 1 reported being far more satisfied with the clinician guided ERP versus the BT STEPS (P<0.001)

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Meigs	2003	NR	NR	NR
Nakagawa	2000	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Meigs	2003	NR	NR	Preintervention year- diabetic patients N= 1595 Pts exclusions Not in study group: 621 Study patients not seen during intervention year: 225 Clinic chart not found: 36 Patient ineligible: 115
Nakagawa	2000	NR	NR	3 from Grp 1 2 prior to starting, due to being taken off waiting list and 1 during trial because of marked improvement

Author	Year	Adverse Effects	Other
Meigs	2003	NR	Demographics related to staff providers given, not listed here Intracorrelation coefficients to assess inter abstractor variability given, not listed here The author also discusses power issues, not given here
Nakagawa	2000	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Nguyen	2003	NR	NR	Homes	Cohort	N= 16 Grp 1: 7 Grp 2: 9
Nguyen	2005	Grp 1: was recruited from a pool of individuals who previously participated in a face-to-face DSMP, which would allow testing of a "booster" effect. Grp 2: recruited from all other sources (pulmonary practices, Better Breather groups, pulmonary rehabilitation programs, and online COPD groups)	NR	Homes	Nonrandomized between group	N = 23 Grp 1: 12 Grp 2: 11

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Nguyen	2003	NR	3 months	*Subjects in Grp 1: recruited from a database of patients who participated in face-to-face Dyspnoes Self management program (DSMP) *Subjects in Grp 2: recruited from all other sources and had no relationship with the investigators	NR	Yes
Nguyen	2005	NR	3 months	*Active use of a computer and Internet/web *Diagnosis of COPD (bronchitis emphysema, irreversible asthma) *ADL limited bydyspnea *Approval from a health provider to start an exercise program *Ability to speak and write English *Resident of the San Francisco Bay area or southern California.	NR	Yes

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Nguyen	2003	NR	YES	NR	NR	Mean (Range) Grp 2: 69.1 (55-82)
Nguyen	2005	YES	COPD	NR	N = 50%	Mean (SD) 69.1 (±7.0) Range: 55-82

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Nguyen	2003	NR	NR	NR	NR	NR
Nguyen	2005	African-American: 1pt (6%) Caucasian: 13pts (81%) Native American: 1pt (6%) Other: 1pt (6%)	NR	High school: 4pts (25%) Some college: 4pts (25%) College or greater: 8pts (50%)	NR	81% retired or disabled

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Nguyen	2003	NR	NR	NR	NR	iDSMP
Nguyen	2005	NR	NR	English	NR	Dyspnea Self-Management Program

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Nguyen	2003	*Nurse facilitated and peer supported internet based dyspnoea self management program *Weekly structures self management education via live text chat *Exercise monitoring, goal setting and feedback *Pulmonary function and symptom monitoring (pts monitor lung function with air watch and data uploaded into the site *Peer and professional communication via chats, bulletin boards, email	Grp 1: pts from database who participated in Face to Face DSMP allowing a test of booster effect Grp 2: iDSMP - no relationship with investigator in order to evaluate the program as primary intervention Home visits conducted and process metrics tracked	Computer	Communication, chat, emails, symptom monitoring, self management education
Nguyen	2005	Website to help individuals with COPD better manage their condition by being informed of activities that help or exacerbate their condition	Group 1: "boosters" had previously participated in some DSMP Group 2: Primary intervention, no prior DSMP	Dyspnea Self-Management Program	Logon to website at least 3 times/week, 2 weekly chat sessions, online bulletin board and email support, individualized exercise plans

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Nguyen	2003	NR	NR	NR	FEV1/FVC: 41 +/- 7% Improvements noted for Dyspnoea (effect size=0.86) Endurance exercise 0.27 for the overall sample
Nguyen	2005	NR	1-2 hours of in home training on web site and spirometry device	AirWatch spirometer	P-values CRQ Dyspnea Grp 1 vs. Grp 2: 0.86 Pooled sample: 0.005 Dyspnea Distress Grp 1 vs. Grp 2: 0.25 Pooled:0 .48 Dyspnea impact Grp 1 vs. Grp 2: 0.43 Pooled: 0.48

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Nguyen	2003	NR	NR	NR
Nguyen	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Nguyen	2003	First month registered most logins (330) compared to 104 in the final month	NR	NR
Nguyen	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Nguyen	2003	NR	Improvement in self efficacy for managing dyspnoea = 0.94	NR
Nguyen	2005	NR	Self efficacy for managing dyspnea 1 vs. 2: .38 pooled: .009 CRQ Mastery 1 vs. 2: .08 pooled: .14	Exercise, self-report, Measured with Medical Outcomes Study SF-36

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Nguyen	2003	NR	Support: 0.32	NR
Nguyen	2005	NR	NR	N=8 Group 1: 2 were too busy,1 overwhelmed, 3 sporadic participation Group 2: 1 dropped due to computer failure, 1 died of pneumonia

Author	Year	Adverse Effects	Other
Nguyen	2003	NR	NR
Nguyen	2005	Computer issues included hand trembles for 3 individuals and paralysis for one, all of whom were able to accommodate their limitations (e.g., using a different mouse). Stiff necks. Patients were sent to a reputable site for computer stretches.	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Noel	2004	NR	VA system	Homes	single blind single site randomized trial	N=104 Grp 1 (IVR): 47 Grp 2 (CG): 57

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Noel	2004	NR	6-12 months	*Documented high use of healthcare resources and barriers to accessing healthcare services due to geographic, economic, physical, linguistic, technological, and/or cultural factors *Pts met these criteria and had been actively receiving nurse case management for at least 6 months preceding the study and during the study	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Noel	2004	NR	DM, CHRONIC LUNG DISEASE, COMPLEX CHF	NR	Total= 97% IG: 42% CG: 55%	Mean Total= 71 IG: 72 CG: 70

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Noel	2004	NR	NR	NR	NR	One morbidity (%), Total vs. IG vs. CG CHF: 57 vs. 30 vs. 27 COPD: 35 vs. 16 vs. 17 DM: 56 vs. 24 vs. 32 Two co morbidities (%), Total vs. IG vs. CG CHF+COPD: 21 vs. 12 vs.10 CHF+DM: 34 vs. 13 vs. 11 COPD+DM: 13 vs. 6 vs. 7 Three co morbidities, Total vs. IG vs. CG CHF+COPD+DM: 11 vs. 6 vs. 5

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Noel	2004	NR	NR	NR	NR	Home telehealth unit

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Noel	2004	Home telehealth units used standard phone lines to communicate with the hospital. FDA approved peripheral devices monitored vital signs and valid questionnaires were used to evaluate quality of life outcomes with out of range data triggering alerts.	The CG received usual home health care services plus nurse case management IG received home telehealth plus nurse case management Home telehealth- user friendly devices with a touch screen interface and step by step instructions using graphics, large text and audio. FDA approved peripheral devices plug into telehealth unit and collect data for temperature, blood pressure, pulse, blood glucose, 3 lead ECG, stethoscope for heart and lung sounds, pulse oximetry and weight, pain level is self reported; data transmitted through telephone lines to VACT's web based intranet system and directly into the facility's electronic database; digital camera used to monitor wound	Home telehealth device	Data input, alerts, disease specific education modules, on screen assessment surveys

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Noel	2004	NR	NR	NR	Diabetic A1C levels; Mean (SD); Baseline IG: 8.30 (±1.61) CG: 7.03 (±1.08) Between groups; t=+3.233,p=0.003, z=0.004 6 months IG: 7.3 (±1.47) , t= + 4.242, p=0.0001, z=0.001 CG: 7.83 (±1.65), - 3.398, p=0.002, z=0.006 Between groups; t= - 1.228, p=0.225, z=0.260

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Noel	2004	Bed days of care (BDOC): Total (n=64) vs. IG (n=26) vs. CG (n=38) Pre: 842 vs. 317 vs. 525 Post: 243 vs. 49 vs. 194 Total visits: Total (n=102) vs. IG (n= 46) vs. CG (n=56) Pre: 1613 vs. 682 vs. 931 Post: 1520 vs. 682 vs. 838 Urgent visits: Total (n=98) vs. IG (n=44) vs. CG (n=54) Pre: 622 vs. 320 vs. 302 Post: 544 vs. 237 vs. 307 Coumadin visits: Total (n=26) vs. IG (n=11) vs. CG (n=15) Pre: 187 vs. 79 vs. 108 Post: 146 vs. 82 vs. 64 RN home visits: Total (n= 21) vs. IG (n=12) vs. CG (n=9) Pre: 223 vs. 119 vs. 104 Post= 197 vs. 94 vs. 103 Cost variables, Mean (SD): VA and non VA BDOC	Cost item ($): IG vs. CG RN/home visits Pre study: 11, 067 vs. 9,672 Post study: 8,742 vs. 9,579 BDOC Prestudy: 273,918 vs. 567,126 Post study: 46,296 vs. 204,474 Coumadin Pre study: 1,185 vs. 1,620 Post study: 1,230 vs. 960 Total visits Pre study: 34,100 vs. 46,550 Post study: 34,100 vs. 41,900 Urgent visits Pre study: 16,000 vs. 15,100 Post study: 11,850 vs. 15,350 Transport (VA costs) Prestudy: 35,811 vs. 44,816 Post study: 32,258 vs. 40,538 Transport, cost patient Prestudy: 18,186 vs. 22,759 Post study: 16,381 vs. 20,586 Telehealth unit IG: 78,302	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Noel	2004	NR	NR	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Noel	2004	QoL-self rated health status, M (SD) Baseline, IG (n)= 47, CG (n)=57 Between grps; p= 0.207, z= 0.208 IG: 81.32 (±13.07) CG: 84.86 (±15.33) 3 months, IG (n)= 47, CG (n)= 57 Between groups; p= 0.755, z= 0.590 IG: 81.34 (±13.71), p= 0.984, z= 0.728 CG: 82.25 (±15.83), p= 0.070, z=0.129 6 months, IG (n)= 47, CG (n)= 57 Between groups; p= 0.353, z= 0.296 IG: 82.47 (±12.89) , p= 0.447, z= 0.392 CG: 85.14 (±16.28), p= 0.885, z=0.944 9 months, IG (n)=15, CG (n)= 27 Between groups; p= 0.596, z= 0.763 IG: 84.40 (±13.23), p= 0.980, z= 0.776 CG: 82.11 (±13.34), p= 0.757, z=0.893 12 months, IG (n)=8 , CG (n)= 14 Between groups: p= 0.506, z= 0.616 IG: 88.00 (±22.16), p= 0.110, z= 0.159 CG: 82.21 (±10.81), p= 0.150,	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Noel	2004	QoL -Cognitive status, M (SD) Baseline, IG (n)= 47, CG (n)=57 Between grps: p= 0.751, z= 0.844 IG: 19.31 (±1.71); CG: 19.42 (±1.51) 3 months, IG (n)= 47, CG (n)= 57 Between groups: p= 0.578, z= 0.440 IG: 19.62 (±1.06), p= 0.227, z= 0.123 CG: 19.46 (±0.169), p= 0.699, z=0.341 6 months, IG (n)= 47, CG (n)= 57 Between groups: p= 0.921, z= 0.157 IG: 19.70 (±1.06) , p= 0.115, z= 0.056 CG: 19.68 (±0.69), p= 0.171, z=0.135 9 months, IG (n)=15, CG (n)= 27 Between groups: p= 0.234, z= 0.441 IG: 19.80 (±0.414), p= 0.028, z= 0.034 CG: 19.56 (±0.892), p= 0.032, z=0.074 12 months, IG (n)=8 , CG (n)= 14 Between groups: p= 0.006, z= 0.019 IG= 20 (±0.00), p= 0.095, z= 0.102 CG= 19.43 (±0.646), p= 0.635, z=0.763 QoL -Functional, M (SD) Baseline, IG (n)= 47, CG (n)=57	NR	The author says that there was diminishing participation beyond 6 months but no more details given

Author	Year	Adverse Effects	Other
Noel	2004	NR	Cognitive status showed significant improvement at 12 months for the few remaining participants in the IG Telehealth added $ 1666 to outcome costs during the 6 months of study Healthcare costs decreased by 58% for the telehealth grp and 47% for the CG.

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Owen	2005	NR	Hematology/Oncology outpatient clinic at a large medical center in the US	Homes	Randomized wait-list control	N = 62 CG: 30 IVR: 32

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Owen	2005	NR	3 mos	At the outset: *Women with histological confirmed clinical stage 1 or 2 breast cancer After randomization: *Small number of pts were stage 0 or stage 3 and because of their strong desire to participate, were included in the study	Recruitment efforts are described in detail in another study (Owen, Klapow, Roth)	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Owen	2005	NR	BREAST CANCER	NR	N = 0%	Mean (SD) CG: 51.3 (±10.5) IG: 52.5 (±8.6)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Owen	2005	Caucasian CG: 100% IG: 95.8%	Mean Annual Income (SD) CG vs. IG CG: $65,000 (±$24,407) IG: $65,000 (±$114,148)	Mean years (SD) CG: 15.3 (±2) IG: 15.8 (±2.2)	NR	Marital status (% Married) CG vs. IG 77.8 vs. 87.5 Distance to clinic (miles)- Mean (SD) CG vs. IG 55.2 (66.3) vs. 107.5 (301.5) Employment status (%) Employed full time- CG vs. IG----- 46.7 vs. 42.9 Employed part time- CG vs. IG------16.7 vs. 14.3 Not employed- CG vs. IG--------36.6 vs. 42.8 Time since diagnosis (months) mean (SD) CG vs. IG--- 31.8(37.6) vs. 23.2 (28.4) Breast conserving surgery (%) CG vs. IG----- 33.3 vs. 27.8

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Owen	2005	NR	NR	NR	NR	Survive website

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Owen	2005	Self guided, internet based coping skills training given to pts in the intervention group	IG: provided with bulletin board for asynchronous group discussions, a dictionary of medical terminology, a database of breast cancer resources and websites, information and coping advice for management of common physical symptoms, a forum for sharing artwork and poetry, and six structured coping skills exercises. They were identification of passive and active coping styles; communication with family and friends; identification of relationships among stress, emotions and behavior; stress management training; assertiveness training; structured problem solving training They also received 39 prompts sent by email summarizing a coping skill exercise and suggesting that the pts post a	Computer	Discussion groups, bulletin boards, forum, email

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Owen	2005	NR	Pts were given brief instructions on using the website	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Owen	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Owen	2005	Average total log ins to the website: 35.5 Hits to the bulletin board: 52.2 Postings sent to the bulletin board: 9.5 Uses of the coping exercises: 73.4 Hrs spent logged in to the website: 3.4 Mins per session over the course of 12 week intervention: 8.2	NR	Coping exercises found most helpful: 68.2% Coping group/bulletin board: 59.1% Information about coping with specific symptoms: 57.2% Either the coping exercises or discussion group was helpful: 82%

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Owen	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Owen	2005	Health related quality of life FACT-Total measure CG vs. IG Pre M (SD) = 81(14.3) vs. 78.3(15.7) post M (SD) = 85.3(11.8) vs. 88.7(10.8) F value- grpX baseline interaction effect- 0.33 (1,45) Treatment effect size- 0.30 EQ-5D thermometer CG vs. IG Pre M (SD) = 78.4 (17.2) vs. 75.6(20.2) post M (SD) = 83.5(17.1)vs. 85.4 (9.9) F value- grpX baseline interaction effect- 16.40 (1,39), p<0.001 Treatment effect size- 0.13 Psychological wellbeing FACT- EWB CG vs. IG Pre M (SD) = 15.4(4.0) vs. 14.8(3.9) post M (SD) = 15.3 (3.6) vs. 16.5(2.6) F value- grpX baseline interaction effect- 1.00 (1,45) Treatment effect size- 0.38, p <0.10	NR	Pts expressing interest in the study- 154 Excluded- 59 (not interested any more, lack of familiarity with computer, participating in a competing trial, could not be reached by phone) Did not complete baseline assessment- 33 Randomized- 62, IG=30 (Received intervention-30; did not participate in intervention, never logged in- 5) Loss to follow up=6 (could not be reached or unwilling to complete follow up assessment) Analyzed=26 (excluded from analysis due to incomplete follow up-6) CG= 30 Loss to follow up= 3 (could not be reached or unwilling to complete follow up assessment) Analyzed= 27 (excluded from analysis due to incomplete follow up data=3) Cross over into intervention group= 18 declined to participate= 11

Author	Year	Adverse Effects	Other
Owen	2005	NR	Pts motivation for enrolling in the study given, not listed here There is a graph showing use of each component of the intervention over time A table showing Pearson correlation coefficients between linguistic variables associated with messages and change scores on dependent variables given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Piette	1997	NR	PAVA Diabetes care clinic, Endocrinology clinic, General Internal Medicine clinic	Homes	Cohort	N= 65

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Piette	1997	NR	NR	*Pts with diagnosis of IDDM or NIDDM *Proficient in English	Pts excluded if psychotic, demented or blind as determined by the diagnosis in the medical record, resided in a congregate care facility, or did not have a working touch tone telephone in their home.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Piette	1997	NR	DIABETES	NR	N = 62 (92.4%)	Range <55: 15 pts 55-64: 20 pts >65: 30 pts

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Piette	1997	Total Caucasian: 61.5% Black: 9.2% Hispanic: 18.5% Asian/Pacific Islander: 10.8% Low income % in the groups <55 yrs Caucasian: 66.7% Black: 6.7% Hispanic: 26.7% Hispanic 55- 64 yrs Caucasian: 50% Black: 20% Hispanic: 20% Asian/Pacific Islander: 10% >65+ yrs Caucasian: 66.7% Black: 3.3% Hispanic: 13.3% Asian/Pacific Islander: 16.7 % Pts taking insulin Caucasian: 55.6% Black: 7.4% Hispanic: 33.3% Asian/Pacific Islander:	VA eligible due to low income: 46.9% Low income: <55 yrs: 43% 55-64 yrs: 38.9% 65< yrs: 53.1% Taking insulin: 46.1% Not taking insulin: 47.4%	NR	NR	Marital status- 53.1% Married , 45.3% not married, 1.6% not applicable Marital status in the groups Less than 55 yrs- 50% married, 42.9% not married, 7.1% not applicable 55-64 yrs- 50% married, 50% not married, 65 + yrs- 56.3% married, 43.7% not married Taking insulin- 46.2% married, 50.0% not married, 3.8% not applicable Not taking insulin- 57.9% married, 42.1% not married Employment status- 10.9% full time employed, 67.2% unemployed/retired, 21.9% other Employment status in the groups Less than 55 yrs-

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Piette	1997	NR	NR	NR	NR	Automated voice messaging system (AVM)

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Piette	1997	AVM system using specialized computer technology to telephone patients, communicate messages, and collect information	n= 65 pts AVM calling protocol designed: *to inquire about diabetic symptoms that may be prognostic of poor glucose control and adverse health outcomes *to inquire about pts problems with glucose monitoring and foot care, *to inquire about adherence to diet and medication schedule and *to give pts the option of listening to health promotion messages regarding diabetic eye care, foot care, cardiovascular health and management of sick days. Pts reporting serious problems reached within 48 hrs. At the end of each AVM call, pts instructed to call the PAVA Out patient clinic about health or health care (contact number provided)	Telephones	Messages, information/education, storage of data.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Piette	1997	NR	NR	NR	Reported health problems Chest Pain < 55 yrs= 20%, 55-64 yrs= 30%, 65+ = 26.7%, Taking insulin= 23.7%, Not taking insulin= 23.7%, Total= 26.2% Foot problems < 55 yrs= 33.3%, 55-64 yrs= 10%, 65+ = 10%, Taking insulin= 22.2%, Not taking insulin= 15.8%, Total= 18.5% Poor glucose control < 55 yrs= 33.3%, 55-64 yrs= 15%, 65+ = 13.3%, Taking insulin= 25.9%, Not taking insulin= 13.2%, Total= 18.5% Hypoglycemic symptoms , p< 0.05 < 55 yrs= 66.7%, 55-64 yrs= 35%, 65+ = 26.7%, Taking insulin= 55.6%, Not taking insulin= 26.3%, Total= 38.5% Hyperglycemic symptoms < 55 yrs= 60%, 55-64 yrs= 50%, 65+ = 36.7%, Taking insulin= 59.3%, Not taking insulin= 36.8%, Total= 46.2% Poor health < 55 yrs= 20%, 55-64 yrs= 10%, 65+ = 10%, Taking insulin= 18.5%, Not taking insulin= 7.9%, Total= 12.3% Reported self care problems Glucose monitoring < 55 yrs= 16.7%, 55-64 yrs= 44.4%,

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Piette	1997	NR	Human calling system-generate 390,000 calls/yr, Assuming 10 mins/call, 26 full time staff required at more than $ 1.2 million /yr. AVM system with multiple phone lines-(costing around $ 90,000) and one all time nurse (costing around $ 22,500) for a total cost of $112,500. (around 10% of human calling system) Assuming system paid for in the first year, program cost for 2nd year would be $ 22,500 ($3/pt) or 2% of the cost of the human calling program	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Piette	1997	NR	NR	Listened to 2+ preventive messages < 55 yrs: 37.5% 55-64 yrs: 74.4% ≥65: 85.6% Taking insulin: 71.5% Not taking insulin: 70% Total: 70.6% Reported AVM was helpful < 55 yrs: 92.9% 55-64 yrs: 100% ≥65: 100% Taking insulin: 94.7% Not taking insulin: 100% Total: 98.1% No difficulty responding < 55 yrs: 100% 55-64 yrs: 100% ≥65: 95.7% Taking insulin: 95.2% Not taking insulin: 100% Total: 98.1% Would like to receive AVM < 55 yrs: 100% 55-64 yrs: 82.4% ≥65: 87.5% Taking insulin: 95% Not taking insulin: 84.4% Total: 88.5%

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Piette	1997	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Piette	1997	NR	NR	Potential eligible pts: 74 Ineligible: 4 Difficulty understanding English: 1 Had memory deficit: 1 Asked to withdraw because he was dissatisfied with the AVM calls: 1 Final sample: 65 pts (2 not accounted for by the author)

Author	Year	Adverse Effects	Other
Piette	1997	NR	Pts ability to respond to AVM calls given, not reported here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Pike KJ	2007	American Cancer Society website	NA	WWW	Randomized trial	N = 6451 6 randomized groups CG: Break Away from the Pack static website with pdf self-help files Grp 1: Oregon Center for Applied Science Grp 2: ProChange Grp 3: QuitNet Grp 4: Smoke Clinic Grp 5: Centre for Addiction & Mental Health
Rami	2006	NR	NR	Homes	Randomized cross over trial	N= 36 Telemedicine-PaperDiary group: 18 PD-TM: 18

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Pike KJ	2007	October 2004 - May 2005	3 months	*Visitors to ACS website responding to online recruitment for study *English speaking *Smoke daily *U.S. residents *Complete online informed consent and intake questions	NR	NR
Rami	2006	NR	6 months	*HbA1c $\geq$8% *Duration of disease >1 year *Age between 10-19 yrs *Willingness and consent to participate in the study *Willingness to attend follow up visits every 3 months	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Pike KJ	2007	NR	SMOKING	NR	N = 30%	Mean: 41
Rami	2006	NR	DIABETES-Type 1	NR	TM-PD Grp: 50% PD-TM Grp: 61%	TM-PD: 14.5 (12.9-19.3), NS PD-TM: 16.2 (10.7-19.0), NS

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Pike KJ	2007	Caucasian: 87%	NR	Some college: 75%	NR	21% use the Internet daily and 66% use Internet more than once/day
Rami	2006	NR	NR	NR	NR	TM-PD vs. PD-TM Duration of diabetes (yrs) 6.4 (1.0-12.8) vs. 6.1 (2.9-11.1), NS BMI 19.0 (15.9-32.6) vs. 17.8 (18.4-28.7), NS HbA1c at start (%) 9.1 (8.0-11.3) vs. 9.3 (8.3 - 11.6), NS

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Pike KJ	2007	NR	English literate	NR	NR	Control: pdf files; ORCAS: tailored presentations with role models; ProChange: tailored feedback on stage of change; QuitNet: personalized content and group support; Smoke Clinic: structured assessment with relapse prevention; Centre for Addiction & Mental Health: tailored content and group support with RN moderated discussion
Rami	2006	NR	NR	NR	NR	VIE-DIAB system

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Pike KJ	2007	Subjects randomized to use one of 6 websites described above	NR	NR	NA
Rami	2006	Feasibility study of a telemedicine support system (VIE-DIAB) and its effect on glycemic control in adolescents with TIDM VIE-DIAB collects and processes data on glycemic control received from mobile phone services (SMS, GPRS, WAP) and from password protected internet connection to the server, daily serum glucose concentrations glyphs displays, once a week automatically generated SMS or personalized message with advice.	TM VIE-DIAB collects and processes data on glycemic control received from mobile phone services (SMS, GPRS, WAP) and from password protected internet connection to the server such as date and time, serum glucose value, insulin dosage, carbohydrate intake, and additional notes. daily serum glucose concentrations glyphs displays, once a week automatically generated SMS or personalized message with advice PD Routine scheme with a daily written protocol	Mobile phones	SMS, data log, free text, serum glucose levels, on screen tailored glyphs

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Pike KJ	2007	NA	NR	NR	NR
Rami	2006	NR	Pts instructed to measure 4 blood glucose values/day All pts informed about technical features of the program, of SMS communications, and all pts received a manual containing these instructions.	NR	Glycemic control improved during TM stage, p<0.05 At the end of the study, HbA1c values reached the same endpoint TM-PD vs. PD-TM; median (range) 9.2 (7.4-12.6) vs. 8.85 (7.3-11.7%)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Pike KJ	2007	NR	NR	NR
Rami	2006	NR	Telecommunication costs was low	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Pike KJ	2007	"Wide variation" in individual website use; 3 sites had higher use (20% or more subjects making 5 or more visits) and 3 had lower use (<10% make 5 or more visits) High vs. low site use Non-ITT quitting: 26% vs. 22.1%	NR	NR
Rami	2006	NR	NR	Overall satisfaction good Pts mainly criticized the additional workload and GPRS access problems- because of these problems, pts rated the system time consuming and only half of them wanted to continue with the system Table showing results of pt satisfaction survey given, not listed here

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Pike KJ	2007	NR	NR	Self-reported, 7-day point prevalence of quitting at 3 months: CG: 22.3% control Exp Grp: 23.5% Intent-to-treat (54% response; assume non-responders smoking): CG: 10.9% Exp Grp: 11%
Rami	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Pike KJ	2007	NR	NR	46% non-response to follow-up survey (online with phone f/u)
Rami	2006	NR	NR	NR

Author	Year	Adverse Effects	Other
Pike KJ	2007	NR	NR
Rami	2006	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Rasmussen	2005	Catchment area of H:S Bispebjerg university hospital	Asthma specialist clinic, GP clinic	Homes	Prospective randomized comparative design (prospective RCT)	N=300 Internet Grp: 100 Specialist Grp: 100 GP Grp: 100

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Rasmussen	2005	NR	6 months	*Combination of respiratory symptoms and at least 1 objective measure of asthma viz *Airway hyper responsiveness to inhaled methacholine less than or =4 µmol *Peak expiratory flow variability (PEF) of equal to or more than 20% and/or minimum of 15% (300mL) increase in FEV1 after bronchodilation	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Rasmussen	2005	NR	ASTHMA	NR	Grp 1: 27% Grp 2: 30% Grp 3: 30% Withdrawals: 14%	Mean (Range) Grp 1 : 28 (18-44) Grp 2 : 30 (19-45) Grp 3 : 30 (20-45)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Rasmussen	2005	NR	NR	NR	Catchment area	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Rasmussen	2005	NR	NR	NR	NR	Physician managed online interactive asthma monitoring tool

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Rasmussen	2005	Electronic diary, action plan for patients, decision support system for physician Pts given a peak flow meter, pts record symptoms, need for rescue medication and PEF values. 3 colored warning system with written action plan Pts fill diary daily and follow instructions given by computer and physician Check online repository at www.mosby.com/jaci	Grp 1: Internet group Grp 2 : Specialist group Grp 3 : GP group Grp 1: details given above, also check online Grp 2: Pts treated acc to severity and taught how to adjust medication, pts given peak flow meter and written action plan that had a 3 color warning system based on symptom score and PEF values Grp 3: Pts asked to contact GP with letter describing study and test results. GP to assess symptoms and tests and decide need for pharmaceutical treatment. pts did not receive treatment or info from study physician	Computer, push-button telephone	Electronic asthma diary, daily recordings of symptoms, PEF values, instructions from physician, decision support for physicians-check online journal

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Rasmussen	2005	None specified as such- but all GPs received a circular about asthma and GINA guidelines by local authority	Pts instructed in the use of internet diary, pts in SP group taught medication adjustment	NR	Improved symptoms -Odds Ratio (95% CI) Grp 1 vs. Grp 2: 2.64 (1.43-4.88), p= 0.002 Grp 1 vs. Grp 3: 3.26 (1.71-6.19), p < 0.001 Grp 2 vs. Grp 3: 1.23 (0.66-2.30), p= NS Improved AQLQ score(Asthma quality of life questionnaire) Odds ratio (95% CI) Grp 1 vs. Grp 2: 2.21 (1.09-4.47), p= 0.03 Grp 1 vs. Grp 3: 2.10 (1.02-4.31), p = 0.04 Grp 2 vs. Grp 3: 0.95 (0.43-2.07) , p= NS Improved FEV1 more than or equal to 300 mL Odds ratio (95% CI) Grp 1 vs. Grp 2: 3.26 (1.50-7.11) , p= 0.002 Grp 1 vs. Grp 3: 4.86 (1.97-11.94), p <0.001 Grp 2 vs. Grp 3: 1.49 (0.55-4.05) , p= NS Improved AHR (airway hyper responsiveness) Odds ratio (95% CI)

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Rasmussen	2005	Acute unscheduled visits by % pts on a monthly basis Grp1 vs. Grp 2 vs. Grp 3 3.7% vs. 2.1% vs. 1.3% (P= 0.05, chi sq) GP group visited physician on avg once (95th percentile, 1-3) Internet grp: used tool on avg 4 times in 2 week block (range, 1-6) Sp group: 1 pt hospitalized due to exacerbation more data on the website	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Rasmussen	2005	Pts in Internet group used tool on average 4 times in 2-week blocks Range: 1-6	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Rasmussen	2005	NR	NR	No asthma Medication Grp 1 (baseline: FU, Mcnemar) vs. Grp 2 (baseline: FU, Mcnemar) vs. Grp 3 (baseline : FU, Mcnemar) 44%:0%, <0.001 vs. 57% :1%, <0.001 vs. 53% : 26%, <0.001 Take Inhaled corticosteroids Grp 1 (baseline: FU, Mcnemar) vs. Grp 2 (baseline: FU, Mcnemar) vs. Grp 3 (baseline : FU, Mcnemar) 21% : 91%, <0.001 vs. 20% : 83%, < 0.001 vs. 17% : 29%, 0.04 Good Compliance Grp 1 (baseline: FU, Mcnemar) vs. Grp 2 (baseline: FU, Mcnemar) vs. Grp 3 (baseline : FU, Mcnemar) 32% :87%, <0.001 vs. 25% :79%, <0.001, 36%:54%, <0.001 Use of action plan Grp 1 (baseline: FU, Mcnemar) vs. Grp 2 (baseline: FU, Mcnemar) vs. Grp 3 (baseline : FU, Mcnemar) +E42% :88%, <0.001 vs. 3%:66%, <0.001 vs. 0% : 6%, NS

Author	Year	Quality of Life	Support	Withdrawals
Rasmussen	2005	NR	NR	N = 47 Grp 1: 15 Grp 2: 12 Grp 3: 20 no significant difference in the dropout rate, P= 0.26, chi sq

Author	Year	Adverse Effects	Other
Rasmussen	2005	Grp1 vs. Grp 2 vs. Grp 3 Dysphonia: 17% vs. 4% vs. 9% Oropharyngeal candidiasus: 18% vs. 3% vs. 4%	Pts characteristics at baseline given, not listed here Viz- symptoms grading AQLQ scores FEV1, % predicted AHR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Reid RD	2007	University of Ottawa Heart Centre	Hospital to Home	Homes	RCT	N = 100 IVR: 50 CG: 50

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Reid RD	2007	November 2004 - May 2005	12 months	*Smoke 5 or more cig/day, *Age 18+ *Hospitalized for acute coronary syndrome or catheterization or percutaneous coronary intervention (PCI)	Live 1 hour or more away	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Reid RD	2007	NR	SMOKING	NR	IVR: 61% CG: 74%	Mean IVR: 54 CG: 53.9

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Reid RD	2007	NR	NR	High school IVR: 91% CG: 70% More than HS IVR: 9% CG: 30%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Reid RD	2007	NR	NR	NR	NR	NR

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Reid RD	2007	All subjects: inpatient bedside counseling by nurse specialist and nicotine therapy, if needed. Experimental: IVR contact post-discharge on day 3, 14 and 30. IVR queries on smoking status, confidence in quitting, use of pharmacotherapy, use of self-help; If subject wanted to quit or had confidence <7 (out of 10), nurse counselor called 3 times over 8 week period.	IVR or Usual Care	Telephone	Subject responses to IVR flag a counselor to call

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Reid RD	2007	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Reid RD	2007	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Reid RD	2007	IVR contact 3 days: 35/50 14 days: 36/50 30 days: 34/50	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Reid RD	2007	NR	NR	Self-report not smoking at 52 weeks: unadjusted: IVR: 46% CG: 34.7% (OR 1.6, CI 0.7-3.6, p=0.25) Adjusted for age, education, diagnosis, prior quitting: OR 2.34, CI 0.92-5.92, p=.07)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Reid RD	2007	NR	NR	1 control subject died

Author	Year	Adverse Effects	Other
Reid RD	2007	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Robertson	2006	NR	One public hospital and public and private clinics	Homes	Cohort	N= 144

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Robertson	2006	NR	12 mos	*Currently receiving treatment for depression under the care of a mental health professional *Previously or currently satisfying the diagnostic criteria for a major depressive episode *Access to a computer and the internet *Willing to use the internet as a part of the treatment *Willing to provide informed consent *Sufficient cognitive functioning *Proficiency in English *Age $\geq$ 18 yrs	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Robertson	2006	NR	DEPRESSION	NR	N = 37.5%	Mean (Range): 42 (19-64)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Robertson	2006	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Robertson	2006	NR	NR	NR	NR	Recovery Road

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Robertson	2006	E-health system , to be used as an adjunct to treatment by pts and clinicians. The system facilitates self management and provides patients with a secure online consultation system, automated patient administered progress monitoring questionnaires with feedback, systematic psychoeducation, and evidence based therapy.	Patient side 12 e0sessions for 12 months, e- progress monitoring and progress report, e-psychological therapy-psychoeducation, e-consultation system, e-medical record, e-diary, pt controlled privacy settings, adherence reminders to complete recovery road sessions and to take medicines. Clinician side Patient progress monitoring outcomes, access to online questionnaires, flags to identify at risk pts, patient brochures, e-consultations, e-medical record. Later on in the study, automated reminders and case management system added.	Computer	progress reports, online consultation, therapy, etc

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Robertson	2006	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Robertson	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Robertson	2006	NR	NR	The author mentions that satisfaction ratings were obtained from pts in public and private sectors using an online questionnaire majority of pts surveyed were satisfied and said that it increased their knowledge of depression and enhanced their relationships with the clinicians All clinicians reported that they were satisfied with the system, 83% reported that it helped the relationship with the patient, 100% reported that it helped the pt to better manage their condition

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Robertson	2006	NR	Mean DSS was severe at session 1 and declined to mild by session 8, a large reduction in depression severity (d (within-subject)= 1.03) 58% of pts had subclinical levels of depressive symptomatology at session 8.	The rate of adherence decline was greater for pts who received only automated reminders than those who received case management. By session 8, adherence for case management was 34% higher than automatic reminders. A Cox regression survival analysis revealed a significant hazard ratio of 2.43 (95% CI=1.01-5.84) for automated reminders relative to case management when controlling for baseline depression severity. Medication adherence at each session ranged from 91% at session 1 to 100% at session 6.

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Robertson	2006	NR	NR	Of the 144 pts referred, 7 withdrew prior to using the system and 23 did not complete the session, data from 2 pts were lost due to technical difficulties

Author	Year	Adverse Effects	Other
Robertson	2006	NR	Graphs depicting adherence to recovery road across sessions and depression severity of the patient given.

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Robertson	2005	NR	Private psychiatric practices, public psychiatry services, and general practice	Homes	Cohort	N= 98 Grp 1 (Standard automated email reminders): 69 Grp 2 (Case management): 29

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Robertson	2005	NR	12 months	*Previously or currently satisfying the diagnostic criteria for a major depressive episode *Access to a computer and internet *Willing to use the internet as part of treatment *Willing to provide informed consent *Sufficient cognitive functioning *Proficiency in English *Age ≥ 18 yrs	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Robertson	2005	NR	DEPRESSION	NR	N = 43.87%	Range: 19-64

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Robertson	2005	NR	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Robertson	2005	NR	NR	NR	NR	Recovery Road

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Robertson	2005	Pts provided with education, progress monitoring, e- consultation, e- diary and online evidence based therapy.	12 month progressive monitoring and treatment over 12 months, pts received progress monitoring questionnaires, progress graphs and summary progress reports. Additional online features included online evidence based therapy, systematic education, a secure e-consultation system, an e diary and a record of currently and previously prescribed medications. Grp 1: had standard automated e mail reminders for all sessions and in response to non-adherence Grp 2: case management consisting of standard automated e mail reminders for all sessions and email and telephone follow up by a case manager in response to non-adherence	Computer	Progress reports, online consultation, therapy, etc

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Robertson	2005	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Robertson	2005	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Robertson	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Robertson	2005	NR	NR	Adherence After first 8 sessions, Grp 1: 55% Grp 2: 84% For both grps adherence tended to decline over time Cox regression survival analysis of non adherence to Recovery Road, controlling for baseline depression, revealed a significant hazard ratio of 2.4 (95% CI, 1.0-5.8), alpha < 0.05 for automated reminders relative to case management

Author	Year	Quality of Life	Support	Withdrawals
Robertson	2005	NR	NR	NR

Author	Year	Adverse Effects	Other
Robertson	2005	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Rodgers A	2005	Posters, websites, media articles, email and text messaging mailing lists, in N.Z.	NA	Mobile phone text messaging	RCT	N = 1705 randomized CG: 853 Exp Grp: 852

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Rodgers A	2005	NR	6 months	*Age 16+ *Smoke daily *Ready to quit in 30 days *Able to send/receive text messages *Vodafone owner *Speak English *Informed consent	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Rodgers A	2005	NR	SMOKING	NR	CG: 41.7% Exp: 41.3%	Mean: 22

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Rodgers A	2005	European CG: 63.8% Exp Grp: 62.2% Maori CG: 21% Exp Grp: 20.7% Pacific CG: 3.4% Exp Grp: 3.6%	($New Zealand): < 15000 CG: 25.2% Exp Grp: 25.9% 15000-30000 CG: 40.9% Exp Grp: 42.7% >30000 CG: 32.1% Exp Grp: 30.1%	NR	NR	Cig/day Mean: 15 both groups

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Rodgers A	2005	NR	English literate	English	NR	NR

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Rodgers A	2005	Text messages tailored to preferences, smoking history, barriers to quitting, set around a quit date	Exp Group: 5 per day for 1 week before QD and 4 weeks after, then 3 per week for 26 weeks; 1 free month of text msg for 1 month; Text quit buddy (similar subjects put in touch with each other) CG: text message thanking them and providing contact information every 2 weeks, 1 free month of messaging if completing follow-up.	Mobile phone text messaging	Text messaging, TXT polls, TXT quizzes, TXT buddy

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Rodgers A	2005	NR	NR	NR	Salivary cotinine on random sample of 100 subjects

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Rodgers A	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Rodgers A	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Rodgers A	2005	NR	Confidence in staying quit: Control 20%, Exp 33% (high confidence at 26 weeks);	6-week quit rates CG: 13% Exp Grp: 28% Relative risk 2.2 (1.79 to 2.70, p<0.0001)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Rodgers A	2005	NR	NR	N = 1705 Data available 6 wks: 1624, 95% (withdrawal = 81) 6 mos: 1265, 74% (withdrawal = 359)

Author	Year	Adverse Effects	Other
Rodgers A	2005	Rate of finger pain Control: 48 (5.6%) Exp Grp: 52 (6.1%) Motor Vehicle Accident Control: 43 (5%) Exp Grp: 38 (4.5%)	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Rogers	2001	NR	New York Upstate university in Syracuse- Internal medicine outpatient practices	Homes	RCT	N= 121 Usual care: 61 Home service: 60

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Rogers	2001	May 1999 to April 2000	NR	*Adults with previous diagnosis of essential hypertension and under evaluation for a change in antihypertensive therapy because of 1) elevated blood pressure (systolic equal to or more than 140 or diastolic equal to or more than 90 mm Hg) despite current therapy, 2) undesirable side effects of current antihypertensive medications 3) office systolic pressure of at least 180 mm Hg or diastolic pressure of at least 110 mm Hg with no current use of antihypertensive medications *For pts with DM, heart disease, stroke, nephropathy, peripheral arterial disease, or hypertensive retinopathy; *An office systolic BP of at least 130 mm Hg or an office diastolic of at least 85 mm Hg	Pts younger than 18 yrs, pregnant, had secondary hypertension, or did not have the mental or physical capacity to monitor BP at home	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Rogers	2001	NR	HTN	NR	Home service: 43.3% Usual care: 55.7%	Mean (SD); Home service vs. usual care 62.6 (±10) vs. 60.3 (±11.9)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Rogers	2001	Home service vs. usual care (%) White: 80.7 vs. 91.2 African American:12.3 vs. 7.0 Other: 7 vs. 1.8	NR	NR	NR	Cigarette smoking (%) Current: 7.3 vs. 16.4 Former: 41.8 s 50.9 Never: 50.9 vs. 32.7 Medical history (%) Cardiovascular disease: 13 vs. 20, Stroke or carotid surgery: 9.3 vs. 12.7 Chronic bronchitis, emphysema or chronic obstructive pulmonary disease:13 vs. 14.6 Diabetes: 22.8 vs. 26.3 Mean body mass index (SD), Kg/m2 31.5 (±7.6) vs. 28.9 (±5.2) Mean total physical activity score 7.32 (±1.27) vs. 7.77 (±1.52) Mean intake of highly saturated fatty foods 15.1 (±7.1) vs. 14.2 (±7.2)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Rogers	2001	Private insurance plans or Medicare	NR	NR	NR	Home monitoring service

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Rogers	2001	A home service consisting of automatic transmission of blood pressure data over telephone lines, computerized conversion of the information into report forms, and weekly electronic transmission of the report forms to physicians and patients	Home service: automatic BP recording at home, central processing and electronic reports weekly to pts and physicians; pts instructed to take BP 3 times in the morning before eating or drinking and 3 times in the evening before going to bed , 3 days per week for 8 weeks (could take additional readings if desired) After each reading, device dialed service support center and transmitted data. Results displayed in report form and faxed to the physician, both pt and physician received weekly reports and a summary report at the end.(physicians adjusted medications thru phone calls/office visits or both if required) Usual care: Pts assigned to usual care were treated for	Home monitoring service	Data input, data transmission, data in report format

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Rogers	2001	NR	NR	NR	Mean systolic BP Home service: decreased by 4.9 mm Hg (95% CI: - 1.61 to - 8.12, p=0.005) Usual care: 0.1 mm Hg decrease (95% CI: - 3.43 to 3.17, p>0.2) Mean diastolic BP Home service: decreased by 2 mm Hg (CI: 0.14 to - 4.04, p= 0.072) Usual care: 2.1 mm hg increase (CI: - 0.21 to 4.37, p=0.08) Average mean arterial pressure Home service= decreased 2.8 mm Hg (CI: - 0.59 to - 5.05 mm Hg; p=0.016) Usual care: 1.3 mmHg increase (CI: - 1.01 to 3.67 mm Hg, p>0.2) Statistically significant differences seen in Mean diastolic pressure (difference): 4.1 mm Hg (CI: 0.93 to 7.13 mm Hg, p= 0.012) Mean systolic pressure (difference): 4.8 mm Hg (CI:0.10 to 9.36 mm Hg, p=0.047) Mean arterial pressure (difference): 4.1 mm Hg (CI:0.91 to 7.38, p=

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Rogers	2001	One office visit during the trial Home service: 73.2% Usual care: 60% Significant difference seen in median length of follow up time Home service: 79 days Usual care: 72 days	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Rogers	2001	NR	NR	Pts satisfied with their medical care In both grps, 94% pts said that they agreed with the statement " I feel I am receiving good medical care" 96% of home service and 89% of usual care strongly agreed to the statement that "I feel my doctor had all the information necessary to diagnose or treat me"

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Rogers	2001	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Rogers	2001	NR	NR	Pts identified as possible candidates= 167 cancelled appointment=9, did not keep scheduled appointment=8, found to be ineligible=2 Pts approached by study manager= 148 declined=17 Pts fitted with device=131 declined to continue=2, cannot tolerate device=8 Pts randomly assigned=121 Home service=60 completed=56 Did not complete=4 (withdrew=3, discontinued coz of health problems=1) Usual care= 61 completed trial=55, did not complete=6 (withdrew=4, discontinued coz of health problems=1, lost to follow up=1)

Author	Year	Adverse Effects	Other
Rogers	2001	NR	The decrease in BP with home service evident in both men and women, in younger and older patients and in each ethnic group (graph given, values difficult to pinpoint) Medication dose change Home service: 33.3% Usual care: 6.6% p<0.001 Type of antihypertensive medication changed in Home service: 40% Usual care: 27.9% p= 0.159 Significant main outcomes obtained when only pts who participated in the trial for 4 months were included Difference between the two study groups for Mean arterial: p=0.023 Diastolic: p= 0.024 systolic-p= 0.047

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Ross SE	2004	Outpatient clinic	Specialty clinic	Homes	RCT	N = 107 IVR: 54 CG: 53

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Ross SE	2004	September 2001-September 2002	12 mos	*Heart failure patients *Ages 18+ *Speak English *Have used Web browser in the past	Patients who were physicians, nurses or physician assistants	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Ross SE	2004	YES: Safety Net Insurance Exp Grp: 19% CG: 19%	CHF	NR	Exp: 80% CG: 74%	Mean Exp Grp: 57 CG: 55

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Ross SE	2004	Caucasian Exp Grp: 92% CG: 88%	<45,000/year Exp Grp: 56% CG: 50%	College Graduate Exp Grp: 53% CG: 44%	NR	Home computer Exp Grp: 96% CG: 94%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Ross SE	2004	Safety Net Insurance Exp Grp: 19% CG: 19%	NR	NR	NR	System Providing Access to Records Online (SPPARO)

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Ross SE	2004	Web access to medical record, educational guide, secure messaging	Exp: Access to SPPARO; Control: Usual care	WWW	PHR: clinical notes, lab and test results

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Ross SE	2004	NR	Exp: Written user guide provided; Con: None. Offered SPPARO after study was completed	NR	Mortality Exp Grp: 6pts (11%) CG: 6pts (11%)

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Ross SE	2004	Utilization during Study Year 2002: % Patients Hospitalized Exp Grp: 20% CG: 23% N Hospitalizations Exp Grp: 22 CG: 21 % going to ER Exp Grp: 20% CG: 13% N ER visits Exp Grp: 20 CG: 8 N Heart Failure Clinic Visits Exp Grp: 324 CG: 325	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Ross SE	2004	SPARRO use highest first 3 months, then averaged 24% of exp. subjects used the program each months N Subjects reviewing record components (cumulative): Notes 41, Labs 37, Radiology 21, Educational guide 27, e-messages 41. Use of e-messaging plus phone messaging Exp Grp: 63 plus 287 CG: 267 phone Total messages first 6 months by group Exp Grp: 150 CG: 88 (p=.05); Total messages second 6 months by group Exp Grp: 109 CG: 103 (p=.66); Message categories Appt schedule: 20% Refill meds: 15% Question on meds: 14% Test results: 12% Feeling ill: 8% Help interpreting tests: 3%.	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Ross SE	2004	Satisfaction ratings 0 to 5: How well doctors understand your problems Baseline: 4.5 6 Month IVR vs. CG: 4.4 vs. 4.4 (Diff 0, CI -0.3, 0.2); 12 Month IVR vs. CG: 4.6 vs. 4.2 (Diff +0.4, CI 0.1, 0.6) p=0.02; How well doctors explain what they are doing and why? Baseline: 4.2 6 Month IVR vs. CG: 4.5 - 4.1 (Diff +0.4, CI 0.1, 0.7); 12 Month IVR vs. CG: 4.5 - 4.1(Diff +0.4, CI 0.1, 0.7) p=0.02;	Scored 0 to 100: Baseline 85; 6 month Exp-Control: 88 - 84 (Diff +4, CI -3, 9) 12 Month Exp-Control 91 - 85 (Diff + 6, CI -1, 11) p=0.08	Medication Adherence (0 to 4): Baseline 3.4; 6 Month Exp-Control: 3.5 - 3.4 (Diff +0.1, CI -0.2, 0.4; 12 Month Exp-Control: 3.6 - 3.4 (Diff +0.2, CI -0.1, 0.6), p=0.15' General Adherence (0 to 100): Baseline 82: 6 Month Exp-Control: 81 - 78 (Diff +2.3, CI -3.7, 8.3); 12 Month Exp-Cont: 85 - 78 (Diff +6.4, CI 1.8, 10.9), p=0.01

Author	Year	Quality of Life	Support	Withdrawals
Ross SE	2004	Scored 0 to 100 Baseline: 56 6 month Exp Grp: 64 CG: 59 (Diff +5, CI -5, 13) 12 month Exp Grp: 64 CG: 62 (Diff +2, CI -7, 11), p=0.63	NR	NR

Author	Year	Adverse Effects	Other
Ross SE	2004	None reported; 1 subject disagreed with medical record relating to alcohol use and requested amendment be made.	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Rotondi AJ	2005	Rehabilitation hospitals	NA	Homes	Cohort	N = 17

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Rotondi AJ	2005	NR	6 months	TBI patient (traumatic brain injury): *Age 18+ *Was inpatient in rehab hospital *Lives with a female significant other *Speaks English well enough to answer data collection questions FSO (female significant other) of patient: *Age 18 + *Lives as significant other *Speaks English well enough to answer data questions	Excluded if not possessing above requirements	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Rotondi AJ	2005	NR	NR	TBI	Patient: 100% FSO: 0%	Mean (Range) Patient: 50.2 (26-67) FSO: 46.4 (24-65)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Rotondi AJ	2005	NR	Family income <$30,000: 61.8%	Less than High school Patient: 45.5% FSO: 22.7%	NA	FSO with no prior computer experience: 23.5%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Rotondi AJ	2005	NR	English literate	NR	NR	WE CARE (web-enabled caregiver access to resources and education)

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention*	
				Type of Device*	Functions*
Rotondi AJ	2005	Home computer with Internet access, support group, education and information libraries	NR	Computer + Internet	Support groups (patient only, caregiver only, both); ask an expert; Q&A Library; Reference library; community resources library and event schedule

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Rotondi AJ	2005	Help modules; no stated staff training discussed; technical support available	NR	NR	NA

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Rotondi AJ	2005	NA	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Rotondi AJ	2005	Evaluation of FSO/Caregiver: Proportion of "hits" to site functions (hits = page view for 1 minute or more) Support group: 68.6% Community services library: 20.1% Q&A library: 5.2% Number of "hits" for 17 users: 838 (±1015) Range: 26-3679 Median: 454.	FSO reports of Ease of Use (1 to 5 point scale, 5=extremely): Overall: 4.1 Compared to other websites: 4.2 Support group: 3.8 Reference library: 3.7 Community resources: 3.5 Ask expert: 3.7 Q&A library: 3.7 Event calendar 3.6. FSO report of Value (1 to 5 scale, 5=extremely valuable): Overall 3.9 Compared to other sites: 3.9 Support group: 3.8 Reference library: 3.4 Community resources: 3.3 Ask expert: 3.4 Q&A library: 3.5 Events calendar: 2.5.	FSO reaction to site: Helpful: 75% extremely, 18.8% very Satisfying: 43.8% extremely, 31.3% very Wonderful: 100% extremely Dull: 0% extremely, 0% very, 6.3% moderately PSO Emotions while using site: Supportive: 7.7% extremely, 76.9% very Motivation: 7.7% extremely, 38.5% very, 15.4% moderately Understanding: 26.7% extremely, 33.3% very, 26.7% moderately

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Rotondi AJ	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Rotondi AJ	2005	NR	Categories (frequencies) of Support Messages by FSO Self-disclosure: 32.3% Provide emotional support: 29.1% Request information or clarification: 6.8% Provide advice/offer solution: 6.2% Interpretation: 5.2% Request for feedback: 5.1% Agreement: 4.4% Shared norms/group process: 4.1% Validation/normalization: 3.3% Provide information: 2.3% Identify with group: 1.1% Negative/flaming: 0%.	4 dropped out before computer provided 2 received computer but had no interest in the intervention.

Author	Year	Adverse Effects	Other
Rotondi AJ	2005	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Ruland	2003	Cancer patients attending outpatient department	Outpatient clinic	Outpatient clinic	Randomized trial (pilot study)	N=52 Grp 1 (IG): 27 Grp 2 (IG); 25

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Ruland	2003	2 mos	Same Day	*Age ≥21 yrs *Able to read, write and speak English *No cognitive impairment *Able to provide informed consent *Not too fatigued *Participation approved by patient's physician	New patients coming for their first visit	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Ruland	2003	NR	CANCER	NR	N = 61%	Mean (SD) 56.3 (+11.3) Range: 23-77

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Ruland	2003	NR	NR	Mean years (SD): 12.8 (±2.38) Range: 4-20	NR	Clinician sample N=14 Assigned to Grp 1: 9 Assigned to Grp 2: 5 Clinicians were seeing mean of 3.5 pts (±2.8) Range: 1-9

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Ruland	2003	NR	NR	English	NR	CHOICEs

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Ruland	2003	Comprehensive patient assessment tool for cancer specific symptoms, functional problems, and preferences along physical, psychosocial, emotional and spiritual dimensions SDM/ care planning component that highlights for clinicians which symptoms patients are experiencing, severity, degree of bother and importance to the patient	Grp 1: study explained and informed consent taken, use of touch screen computer explained pts completed CHOICEs assessment on the computer with or without help of interview assistant, pts completed the ease of use questionnaire assessment summaries printed and given to pts and clinicians in subsequent consultations Grp 2: same as above except assessment summaries were neither printed nor given to patient or clinician at any time	Computer	Questions, CHOICEs assessment

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Ruland	2003	NR	Pts were explained the use of the touch screen computer	NR	Pts Mean score for perceived overall health (SD): 6.17 (±2.5) Range: 0-10 Mean selected symptoms (SD): 15.10 (±13.96) Range: 1-50 Number of reported symptoms in IG and CG: No significant difference Out of 16 problem categories in CHOICEs Energy problems with associated symptoms: 63.5% Pain: 53.8% Worries/concern: 50.0% Sleep/rest and mood/feelings: 46.2% Grp differences in congruence b/w Pt reported symptoms and those addressed in the pt consultation Congruence Mean (SD) Grp1 vs. Grp 2 2.84 (±2.98) vs. 7.63 (±7.37) t= 3.11, df- 50 (1), p < 0.01 Importance weighted congruence Mean (SD) Grp1 vs. Grp 2 12.8 (±15.7) vs. 33.0 (±33.7), t= 2.84, df- 50 (1), p< 0.01

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Ruland	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Ruland	2003	Time reqd median of 9 mins (±10.35) Range: 0.5 to 49 mins) 25% of sample used 5 mins or less	Completed assessment on touch pad comp without assistance: 80% Had assistance (reasons- too weak, had disabilities, out of convenience): 20% Reliability of instrument: Cronbach's alpha 0.98 Personal comments of pts added: not reported here Ease of use correlated with previous comp experience: (r=0.42, p<0.01)	No significant grp differences in pt satisfaction t= 0.75 p=0.45 (pt satisfaction scores skewed)

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Ruland	2003	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Ruland	2003	Perceived HRQoL: 6.59 (±2.44) Range: 0-10	NR	73 approached; 14 did not wish to participate; 59 consented; 3 withdrew as received bad news and did not wish to complete questionnaire; 2 were not well; 2 did not like computers

Author	Year	Adverse Effects	Other
Ruland	2003	NR	Number of symptoms reported by pts having influence on number addressed in the consult given- ANCOVA results not reported here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Runge	2006	Volunteer	General Practitioner (GP) offices and outpatient facilities	36 study centers (includes GP offices and outpatient facilities)	Nonrandomized between group	N = 358
Safren	2002	NR	NR	Home/with patient	Cohort	NR
Sciamanna	2004	Public health clinic waiting room	NR	Computer in clinic	Cohort study	N = 150

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Runge	2006	12 months	None	*Ages 8-16 years *Presence of confirmed asthma diagnosis for at least 1 year *No other asthma program participation prior to study entry *Sufficient knowledge of German language was assumed *Obtain informed consent	Outside age range, no asthma, prior participation in an asthma program, not speaking German, no informed consent	NR
Safren	2002	3 months	NR	NR	NR	NR
Sciamanna	2004	October 2001-February 2002	NA	*1 provider at 10 clinic sites *Patient with same day visit with study provider	Non-English speaking	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Runge	2006	NR	ASTHMA	NR	CG: 79.2% SPMP: 54.7% SPMP + IEP: 65.9%	Ages 8-16 Mean Ages: CG = 11.5 (+)2.9 SPMP = 11.1 (+)2.4 SPMP + IEP: 11.0 (+)2.2
Safren	2002	NR	HIV/AIDS	NR	NR	NR
Sciamanna	2004	YES: all	95 (63.3%)	NR	N = 32.43%	Range ≤25: 22 pts (14.7%) 25-34: 24 pts (16.0%) 35-44: 31 pts (20.7%) 45-54: 32 pts (21.3%) ≥55: 41 pts (27.3%)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Runge	2006	German	NR	NR	NR	NR
Safren	2002	American	NR	NR	NR	None
Sciamanna	2004	Caucasian: 123 pts (83.1%) Black: 6 pts (4.1%) Hispanic: 17 pts (11.4%) Other: 2 pts (1.4%)	NR	<HS: 32 (21.3%) HS: 47 (31.3%) HS+: 71 (47.4%)	NR	Exercise <150 min/wk: 51%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Runge	2006	Cost-benefit ratio for each intervention strategy was analyzed from the perspective of health insurance (German)	NR	German	Believe in the positive impact of patient education, but unhappy that only less than 1% of all children in Germany are instructed in a systematic manner per year	Standardized Patient Management Program and Internet based education program (asthmamax.de)
Safren	2002	NR	NR	English	NR	MediMom
Sciamanna	2004	NR	NR	English	NR	NR

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Runge	2006	SPMP: educational sessions about asthma knowledge and asthma self-management skill, IEP: internet educational module with asthma-related quizzes and interactive adventure games incorporating asthma-related situations, schedule chats with asthma experts, on-line peak flow protocol, chat rooms	CG (n=48): baseline clinical visit, second clinical visit after 6mos SPMP (n=86): baseline clinical visit, second clinical visit after 6mos, final clinical visit after 12mos + educational instruction SPMP + IEP (n=44): baseline clinical visit, second clinical visit after 6mos, final clinical visit after 12mos + educational instruction + internet-education program access	Classroom, Internet	Education and self-management skills, also cost-benefit analysis
Safren	2002	Pager system: a clinician or investigator input a patient's medication regimen into an Internet computer program; the patient carried a beeper that had a display window, and when it was time for the patient to prepare or take a pill, the beeper notified the patient with instructions	IVR Grp Control Grp	Pager	Medication reminder
Sciamanna	2004	Computer assessment with tailored printed feedback	NA	Computer	Computerized assessment on smoking and physical activity, 4-5 page report tailored feedback, 1-page provider report

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Runge	2006	NR	NR	NR	Lung Function Tests CG: Baseline PEF = 324+98 First Visit = 341+110* SPMP: Baseline PEF = 347 + 94 First Visit = 366+101* Second Visit = 376 + 97* SPMP + IEP: Baseline PEF = 340 + 86* First Visit = 363 + 89* Second Visit = 368 + 92* *P>0.05 v. baseline visit (Wilcoxon test)
Safren	2002	NR	NR	NR	NR
Sciamanna	2004	NR	None, research associate available for help if needed	31.3% patients used Internet	NA

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Runge	2006	Clinic visits at 0, 6, and 12 month periods, patient outcomes under usual care was also noted, scheduled chats with asthma experts (IEP only)	*See actual paper for Data (not relevant to list since cost is in Euros and based on universal healthcare)	NR
Safren	2002	NR	NR	NR
Sciamanna	2004	NA	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Runge	2006	Average 2hours/mo	Peak flow protocol section, patient chat room, and asthma adventure game were the most used of the site	NR
Safren	2002	Adherence IVR Grp 2 weeks: 70% 12 weeks: 64% CG 2 weeks: 56% 12 weeks: 52%	Reported that younger employees tended to use the e-mail as a communication tool for health counseling more than older employees, and there are different levels of skill and acceptability for e-mail among employees in administrative and manufacturing divisions	NR
Sciamanna	2004	NR	Asked for help using computer: 12% Felt computer easy to use: 81.1%	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Runge	2006	NR	See Quality of Life ratings below	NR
Safren	2002	NR	NR	NR
Sciamanna	2004	Satisfaction with provider visit significantly related to having a chronic condition, being a nonsmoker, and having a provider who reviewed the report with the patient	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Runge	2006	KINDL Questionnaire: 75.5+11.78 CG: T_0 = 76.5 T_1 = 74.9 SPMP: T_0 = 75.0 T_1 = 77.2 T_2 = 79.3 SPMP + IEP: T_0 = 75.3 T_1 = 77.3 T_2 = 80.5	Regular physician check-ups, scheduled chats with asthma experts (IEP only), chat rooms with peers (IEP only), teacher-classmates (SPMP and/or IEP only)	N = 124 (34.6%) Relocation of patients: 6 Withdrawal of Caregiver consent: 6 Nonattendance of scheduled follow-up visits: 11 No returning of mail questionnaires: 41 Relocation of personnel in two study center: 41 Reasons not documented: 41
Safren	2002	NR	NR	NR
Sciamanna	2004	NR	NR	NR

Author	Year	Adverse Effects	Other
Runge	2006	NR	*Outcomes not abstracted: cost-benefit ratio due to reasons listed below
Safren	2002	NR	Adherence was assessed through a pill bottle system that recorded each time a patient opened the bottle to take out a pill. Could underreport if patient took out more pills, like to go on vacation
Sciamanna	2004	Patients: 266/208/150	24.8% patients had privacy concerns using computer

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Sciamanna	2005	Secure website	NR	WWW	Randomized Group	N = 121 Grp 1: 57 Grp 2: 64

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Sciamanna	2005	NR	NA	*List of people with self-reported OA from a marketing organization and had knee pain 3+ months, saw doctor for knee pain, and told diagnosis of osteoarthritis	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Sciamanna	2005	NR	OSTEOARTHRITIS OF THE KNEE	NR	N = 23.1%	Mean: 47.8

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Sciamanna	2005	Caucasian: 86.8% Black: 6.6% Native American: 2.5% Hispanic: 3.3% Other: 5%	NR	≥College: 25.6%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Sciamanna	2005	NR	NR	NR	NR	myexpertdoctor.com

Appendix H. Data Table

		Intervention*			
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Sciamanna	2005	Computer assessment with tailored feedback about OA and OA care	Group 1: satisfaction with OA care before using website; Grp 2: satisfaction with OA care after using website	Secure website	Computer assessment on OA, satisfaction with care; computer personalized feedback about OA quality of care and treatment recommendations

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Sciamanna	2005	NR	NR	Uses Internet for health at least several times per month: 65.5%	NA

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Sciamanna	2005	NA	NR	NA

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Sciamanna	2005	NR	Easy to use: 97.5%	Website ratings: 23.1% excellent, 52.9% very good, 24% good; Website could: *help get better care: 77.7% *help manage OA: 86.8% *help talk to doctor: 81.8% *better understand OA: 90.1%

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Sciamanna	2005	Overall satisfaction with medical care: Grp 1: 67.9% Grp 2: 69.5% No difference in satisfaction in technical quality, physician manner, doctor-patient communication, or time spent with doctor	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Sciamanna	2005	NR	NR	NR

Author	Year	Adverse Effects	Other
Sciamanna	2005	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Shapiro	2007	NR	NR	Homes	Randomized wait-list control	N= 66 Grp 1 (CBT): 22 Grp 2 (CD-ROM): 22 Grp 3: (Waiting list [WL]): 22

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Shapiro	2007	NR	2 month	*Age range between 18-60 *Current diagnosis of DSM IV BED based on the SCID broadened to include individuals with sub threshold BED who acknowledged engaging in at least two objective binge eating episodes/month *BMI equal to or more than 27 Kg/m^2 *Regular access to IBM compatible computer.	Current AN or BN; current severe depression or active suicidal intent; any developmental or learning disorder or cognitive impairment contraindicating CBT or the effective use of a computer and currently taking medication for the treatment of obesity. Individuals currently taking psychoactive medication were not excluded provided their medication dose was stable and their eating behaviors had remained stable during the course of medication treatment.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Shapiro	2007	NR	EATING DISORDER	NR	CBT: 9.09% CD-ROM: 9.09% WL: 4.55% Total: 7.58%	Mean (SD) CBT: 39.14 (±11.43) CD-ROM: 40.41 (±10.61) WL: 39.09 (±13.48) Total: 39.55 (±11.73)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Shapiro	2007	Black (not Hispanic) CBT: 31.82% CD-ROM: 27.27% WL: 22.73% Total: 27.27% White (not Hispanic) CBT: 68.18% CD-ROM: 63.64% WL: 77.27% Total: 69.7-% Asian CBT: 0 CD-ROM: 4.55% WL: 0 Total: 1.52% Other CBT: 0 CD-ROM: 4.55% WL: 0 Total: 1.52%	NR	NR	NR	Never married CBT: 36.36% CD-ROM: 33.33% WL: 22.73% Total: 30.77% Married CBT: 31.82% CD-ROM: 28.57% WL: 27.27% Total: 29.23% Monogamous relationship and living with partner CBT: 31.82% CD-ROM: 38.10% WL: 50% Total: 40% BMI Mean (SD) CBT: 37.72 (±9.45) CD-ROM: 39.63 (±7.88) WL: 34.70 (±6.61) Total: 37.35 (±8.20) No BED CBT: 28.57% CD-ROM: 28.57% WL: 33.33% Total: 30.16%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Shapiro	2007	NR	NR	NR	NR	CD-ROM based cognitive behavioral treatment

Appendix H. Data Table

Author	Year	Intervention			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Shapiro	2007	CD-ROM based cognitive behavioral treatment for binge eating disorder focusing on balanced nutrition, regular exercise, psychoeducation, individualized interactive CBT exercises, tracking system applicable to a broad range of adult men and women from all races and background.	Grp 1= Group CBT; 10 weeks of group treatment for weekly 90 min sessions in small grps. Facilitated by PhD level psychologist and consisted of psychoeducation on healthy nutrition, daily food and behavior diaries, identifying thoughts, feelings and behaviors related to binge eating episodes, challenging and restructuring thoughts and techniques for avoiding unhealthy behavior. Grp 2= CD-ROM based cognitive behavioral program for treatment of obesity that focuses on balanced nutrition, regular exercise, psychoeducation, basic concepts , techniques and examples of CBT, individualized interactive CBT exercises, helpful guidelines for slip control and relapse prevention, tracking system to monitor utilization and applicable to a broad range of adult men and women from all races	Computer	individualized interactive cognitive behavior exercises, education

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Shapiro	2007	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Shapiro	2007	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Shapiro	2007	At the follow up, 66.7% of those in the CD-Rom condition reported that they had used the same at least once or twice after completing the program	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Shapiro	2007	NR	NR	At baseline, individuals in the CD-ROM reported more binge eating days and fast food consumption and also had a higher weight and BMI than those in the WL condition. At post treatment, no significant difference between the groups. In terms of abstinence, in CD Room grp, 13.3% and 12.5% were binge free at post treatment and follow up respectively. In the group CBT, 7.7% and 22.2% were binge free at post treatment and follow p respectively. In the WL, no pt was binge free at post treatment. Table 2 gives values of outcome variables summarized above

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Shapiro	2007	NR	NR	Drop out rates prior to the end of 10 weeks, CD-ROM= 31.5%, Group CBT= 40.9%, WL= 9% Overall difference was statistically significant($p<0.05$) with significantly more dropouts in the group condition than the WL ($p<0.03$) and no difference between either CD-ROM and group or CD-ROM and WL.

Author	Year	Adverse Effects	Other
Shapiro	2007	NR	Changes in binge days over time (CDROM vs. Group CBT vs. WL) Baseline LS means (SD) 2.85 (0.21) vs. 2.76(0.23) vs. 2.77 (0.18) Post treatment LS means (SD) 2.42 (0.18) vs. 2.12(0.18) vs. 2.71(0.13) Two month follow up LS means (SD) 2.00 (0.30) vs. 1.49(0.31) vs. 2.65(0.18) No pair wise p values were significant but the interaction term for treatment group by visit was significant($p<0.04$) 75% of those who completed the WL condition chose to receive the CD-ROM over group treatment

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Shaw	2007	(5) NCI's Cancer Information Service, hospitals, clinics, public health departments, and Medicaid program.	NR	Homes	RCT	N = 231 Exp (HCI): 18 CG (RC): 17

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Shaw	2007	Detroit: June 2001 - April 2003 Wisconsin: May 2001 - April 2003	4 months	*Poverty Level <= 250% of the federal poverty level *Within 1 year of diagnosis or had metastatic breast cancer *Not homeless *Able to read and understand an informed consent letter	Homeless	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Shaw	2007	YES: Low-Income: <=250% of the federal poverty level	METASTIC BREAST CANCER	NR	N = 0%	Mean (SD): 51.58 (±11.81)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Shaw	2007	N = 231 Caucasian: 144 pts (62.3%) African–American: 83pts (35.9%) Other: (1.7%)	NR	N = 231 Some junior high: 2pts (0.9%) Some high school: 24pts (10.4%) High school degree: 72pts (31.2%) Some college: 69pts (29.9%) Associate or technical degree: 28pts (12.1%) Bachelor's degree: 28pts (12.1%) Graduate degree: 8pts (3.5%)	Detroit cohort: Unknown Wisconsin cohort: Rural	On average, women had been diagnosed 4 months before the start of the DDPP study with more than two-thirds of them being in the relatively early stages of cancer.

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Shaw	2007	NR	Must be able to read and understand an informed consent letter	NR	NR	CHESS

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Shaw	2007	CHESS: a browser which automatically collects data on an individual keystroke level as participants used the system. This capability enabled us to track each user's code name, data, time spent and URL of every Web page requested. The key variables of interest are four measures of CHESS service use: information, discussion group, ask an expert, and interactive service.	Group 1: 231 subjects all received same treatment. After submitting their pretest, all study participants were loaned a computer and given Internet access for 4 months. They also received personal training to learn how to use the computer and the Internet, but the majority of time was spent on learning how to use CHESS. Interactive Services, one of four services offered by CHESS; There may be prompts from the computer, but the computer is not, for the most part, guiding the user.	Home computer + Internet	To serve as platform for study intervention (CHESS) and

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Shaw	2007	NR	They also received personal training to learn how to use the computer and the Internet, but the majority of time was spent on learning how to use CHESS.	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Shaw	2007	NR	NR	In the current study, the change in information competence from the pre to post-test was statistically significant Pre- test Mean: 2.37 (±0.69) Post-test Mean: 2.83 (±0.64), |t| = 10.21, P < 0.001) Effect size calculated via Cohen's d = 0.69 Pre-test reliability a = 0.75 Post-test reliability a = 0.79 As expected, pre-test level of the dependent variable had a strong, significant relationship with the dependent variable (health information competence) (b = 0.455 or 463, P < 0.01) Interaction between information and interactive services was significant (b = 0.206, P < 0.01). Interaction between information services and discussion group use (b = 0.163, P < 0.01) was also significant The first and second interaction effect blocks explained additional significant variances (2.1%) and(2.6%), respectively, in information competence

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Shaw	2007	Key variables of interest are four measures of CHESS service use: Information Mean: 35.46 (±56.78) Median: 16.89 Range: 475.4 Discussion group Mean: 506.18 (±1369.35) Median = 62.59 Range: 12743.8 Ask an expert Mean: 27.96 (±51.64) Median: 6.46 Range: 432.0 Interactive service Mean: 27.85 (±52.86) Median: 9.88 Range: 500.7	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Shaw	2007	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Shaw	2007	NR	NR	286 recruited 231 (81%) completed both pre-test and post-test surveys. Withdrawal: 55, or 19%.

Author	Year	Adverse Effects	Other
Shaw	2007	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Shegog	2001	6 clinics and 7 schools in a large urban area	Houston, TX	Clinic	RCT	N=76

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Shegog	2001	1 year	NR	*Been diagnosed as having asthma by their health care provider *Age 7-13	Did not have a diagnosis of asthma or was outside of the age range	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Shegog	2001	NR	YES: ASTHMA	NR	65.00%	Mean: 10.7 Range: 8-13

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Shegog	2001	White non-Hispanic: 47.9% African American: 40.8% Hispanic: 7.0% Other: 2.8% Asian: 2.6%	NR	School Grades As&Bs: 73.2% Bs&Cs: 23.9% Cs&Ds: 2.8%	Children recruited from schools and clinics in a "large urban area"	Asthma Severity Low: 15.5% Mild: 38.0% Moderate: 35.2% Severe: 11.3%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Shegog	2001	NR	NR	NR	NR	Watch, Discover, Think and Act (WDTA)

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Shegog	2001	Theory-based application of CD-ROM educational technology for pediatric asthma self-management education	IVR: 38 CG: 33	Computer game	To provide education about asthma to children

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Shegog	2001	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Shegog	2001	NR	NR	Knowledge questionnaire Pretest Mean (SD) CG: 15.7 (+5.8) IVR: 18.6 (+5.1) Posttest Mean (SD) CG: 17.8 (±6.3) IVR: 21.1 (±5.4) Posttest Scores Self-regulation CG: 0.06 (±0.3) IVR: 3.3 (±1.3) Prevention CG: 1.8 (±1.0) IVR: 2.7 (±1.1) Treatment CG: 1.5 (±0.8) IVR: 2.7 (±1.4)

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Shegog	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Shegog	2001	NR	Pretest CG: 51.6 (±9.7) IVR: 53.4 (±9.7) Posttest CG: 51.5 (±10.7) IVR: 56.5 (±9.8)	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Shegog	2001	NR	NR	Lack of availability for follow-up: 4 Refusal to participate further: 1

Author	Year	Adverse Effects	Other
Shegog	2001	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Skeels	2006	HIV clinic and Community based HIV organization	Outpatient clinics	Clinic	Cohort	N= 30

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Skeels	2006	NR	1 week	NR	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Skeels	2006	NR	HIV	NR	NR	NR

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Skeels	2006	NR	NR	Middle school /High school: 10 pts Some college: 15 pts College graduate: 4 pts ≥Masters Degree: 1 pt	NR	Used computer few times or never: 7 pts Experienced users: 11 pts

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Skeels	2006	NR	NR	NR	NR	Computer assessment and treatment education for HIV + (CARE+)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Skeels	2006	Goal - to improve ART adherence and to lower risk of secondary infections Pts answer tailored risk assessment questions about social support, sexual behavior etc., CARE+ provides personalized feedback (identifies areas of trouble and areas where they are doing well), skill building videos, risk reduction plan focused on ART adherence or reducing risk of secondary infections. Used in clinic prior to meeting provider, printout of plan received to keep or discuss with provider.	Pts explained on how to navigate CARE+ Questionnaire to collect demographic and background info, use of CARE+ observed. Semi structured interview to identify usability issues and assess views on computer counseling	Tablet PC	Tailored assessment, personalized plan

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Skeels	2006	NR	Explained as to how to navigate CARE+	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Skeels	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Skeels	2006	NR	All 30 completed the CARE+, 5 had experience using Tablet PC before Many participants had positive comments- not listed here Three main issues identified by observation and interview *Seeing the screen (eyesight impairment due to HIV medication, lighting probs) *Target acquisition (difficulty with selecting buttons in CARE+ screens) *Difficulties tapping More details (pts responses) given but not listed here	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Skeels	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Skeels	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Adverse Effects	Other
Skeels	2006	NR	Attitudes toward CARE Issues discussed in the interview Honesty, judgment, embarrassment, compassion, trust, privacy, accessibility convenience, sympathy, importance of human dialogue and interaction miscommunications , preference for computer counseling or person to person counseling. (Detailed response The author also mentions that the follo

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Smith	2000	Rural-at least 25 miles away from 6 major cities of Montana	Certified diabetes educator centers	Homes	RCT	N=30 Computer: 15 Non-computer: 15

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Smith	2000	NR	10 months	*Female *Diabetes- type 1 or 2 *Ages 35-60 yrs *Able to read and write English *Possess the sight and dexterity to use a computer (not necessarily be computer literate) *Have a telephone in their home *Live at least 25 miles out of 6 major cities in Montana	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Smith	2000	YES: rural	DIABETES	NR	N = 0%	Mean: 46.7

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Smith	2000	NR	NR	NR	Rural: at least 25 miles away from 6 major cities of Montana	Married: 80% Employees: 60%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Smith	2000	NR	NR	NR	NR	Women to women diabetes project

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Smith	2000	5 month computer intervention involved installing comp/software, providing each women with a health info notebook on general health and specific diabetes info. 4 components (1) Conversation area- pts encouraged to converse with each other about anything, comments open and available, monitored by CDE, CDE did not actively participate unless invited by pts or to redirect inappropriate participation (2) Mailbox- pts speak privately with each other or to the nurse monitor. (3) Health chat area- structured, electronic classroom, open for all, questions specific to dealing with diabetes encouraged and articles from health info notebook discussed, active role by CDE	Computer Group: all of the above Non computer group: hard copy of all materials computer group was given (health info notebook and computer-generated info)	Computer	Chats, questions, post messages, mailbox

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Smith	2000	NR	Computer group trained in the use of software and how to log in and connect to the system At the first visit, confidentiality and support group participation were reviewed and protocol of the project explained A toll free line available to contact the study team (both groups)	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Smith	2000	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Smith	2000	Mean minutes logged on per month Month 1: 129 Month 2: 68 Month 3: 78 Month 4: 44 Month 5: 37 Conversation area: each woman used 111 times over the course of 5 months Mailbox: each woman used around 40 times over the course of 5 months Health chat: accessed 38 times by each	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Smith	2000	NR	Psychosocial adjustment to illness scale Computer group vs. non computer group 77.79 vs. 80.24	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Smith	2000	Raw mean scores Quality of life Computer group: 17.1755 Non-Computer group: 17.9014	Raw mean scores Personal resource questionnaire Computer Grp: 121.76 Non-Computer Grp: 128.53	NR

Author	Year	Adverse Effects	Other
Smith	2000	NR	Supportive/informational conversation given but not reported here Importance of components of the intervention as perceived by pts given, not listed here Attitudes of the pts toward the intervention describes (qualitative responses recorded) not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Southard	2003	Hospital and community physician referral	Cardiac rehabilitation centers	Homes	RCT	N = 104 CG: 51 Exp Grp: 53

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Southard	2003	NR	6 months	*Coronary heart disease *CHF *Possessing both	No a priori criteria reported; excluded subjects including a relative of a subject, lack of MD referral, failure to complete blood tests	Yes: Mean age = 62

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Southard	2003	NR	CARDIOVASCULAR DISEASE	NR	N = 75%	Mean Exp Grp: 61.8 Usual Care: 62.8

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Southard	2003	Not Caucasian Exp Grp: 1.9% UC: 3.9%	Exp Grp <20000: 1.34% 20000-40000: 19.2% 40000-60000: 13.5% 60000-80000: 17.3% 80000-100000: 9.6% >100000: 5.8% Usual Care <20000: 5.9% 20000-40000: 25.5% 40000-60000: 17.6% 60000-80000: 17.3% 80000-100000: 9.6% >100000: 7.8%	Exp Grp HS: 26.4% Trade school: 28.3% >HS: 43.4% CG HS: 25.5% Trade school: 15.7% >HS: 51%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Southard	2003	NR	NR	NR	NR	Online case management, tailored feedback, support group

Appendix H. Data Table

Author	Year	Intervention*			
		Intervention Described	Intervention Groups	Type of Device*	Functions*
Southard	2003	Online case management (once/week for 30 minutes)	NR	Website	Self-monitoring, secure messaging with case manager and dietician, education modules with graphic feedback, online group

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Southard	2003	NR	NR	Ad hoc telephone	Mean values, baseline and follow-up Weight CG: 196.2 to 196.7 Exp Grp: 202.8 to 199.2 (p=.003) BMI CG: 29.2 to 29.3 Exp Grp: 30.9 to 30.3 (p=.003) Systolic BP CG: 130.9 to 128.8 Exp Grp: 131.7 to 129.4 (p=ns) Diastolic BP CG: 72.1 to 71.8 Exp Grp: 74.4 to 72.5 (p=ns) Cholesterol CG: 181.8 to 175.1 Exp Grp: 183.3 to 178.1 (ns) LDL CG: 109.3 to 107.9 Exp Grp: 108.4 to 103.4 (ns) HDL CG: 41.5 to 39.7 Exp Grp: 39.5 to 37.7 (ns)

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Southard	2003	Major cardiovascular event rate CG: 15.7% Exp Grp: 4.1% (Fisher's p = .053)	Estimates for major CVD events: CG: $104,684 Exp Grp: $31,110	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Southard	2003	1-week time analysis with 31 experimental subjects: estimated 10.8 hours of health professional time per 6-month period	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Southard	2003	NR	NR	Minutes of exercise (self-report) per week, baseline and follow-up: CG: 142.4 to 165 Exp Grp: 150.2 to 208.4 (NS)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Southard	2003	NR	NR	NR

Author	Year	Adverse Effects	Other
Southard	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Stinson	2006	Purposive sample	Rheumatology clinic, university-affiliated pediatric tertiary care center	Homes	Cohort	N = 10 Phase I: 10 Phase II: 10

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Stinson	2006	15 days	None	*Between ages 9-18 *Diagnosed with JIA by rheumatologist *Had experienced pain over past 24 hours *Able to speak and read English	Having known major cognitive or psychiatric disorders that might interfere with ability complete self-reported daily pain ratings, having other known major medical disorders (i.e. Crohn's disease) that would be a source of chronic pain, known severe vision problems that would interfere with ability to see e-Ouch screen, known hand deformities that would prevent use of the electronic diary	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Stinson	2006	NR	Juvenile Idiopathic Arthritis [JIA]	NR	Phase I: 20% Phase II: 20%	Mean Age: 13.55 (+)2.68 Phase I: 13.6 (+)2.8 Phase II: 13.5 (+)2.72

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Stinson	2006	NR	NR	School Grade Phase I: Public School (n = 6): 60% HS (n=4): 40% Phase II: Public School (n=6): 60% HS (n=4): 40%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Stinson	2006	NR	NR	NR	Believe that assessment in the form of documentation is the best way to tackle managing pain and effectiveness of therapies	e-Ouch Electronic Pain Diary

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Stinson	2006	Obtains 3 daily pain ratings (upon waking, after school, before bed), uses scroll bar slide (No Pain--Very Much Pain) as well as a slide with front and back view of human body asking viewer to indicate "parts of the body picture" where they hurt at that moment	Phase I: usual care + e-Ouch Pain Diary Phase II: usual care + e-Ouch Pain Diary	Internet, e-Ouch Pain Diary is a PDA	Keep track of severity of pain, medication used, area of pain, and other factors inhibited by pain (social, academic, etc.)

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Stinson	2006	NR	Initial introduction to pain diary, otherwise NR	NR	*See table below

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Stinson	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Stinson	2006	NR	Quotes: "very easy to learn" "very easy to use"	Quotes: "really cool" "better than just getting a book full of blank paper and writing down about your pain each day"

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Stinson	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Stinson	2006	*See table below	NR	NR

Author	Year	Adverse Effects	Other
Stinson	2006	NR	Various changes to the software to improve usability and make the program more efficient with fewer errors *Study also includes table that lists the types of arthritis the pts were experiencing

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Strecher	2006	NR	NR	Homes	RCT	N= 3971 CQ Plan: 1991 CG: 1980

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Strecher	2006	NR	12 months	*Target quit date that was within 7 days of the enrollment date *Provided a valid e-mail address and had internet access for the duration of the study *Were attempting to quit smoking cigarettes (i.e. not smokeless tobacco) *Had been smoking more than 10 cigarettes /day *Had purchased NiQuitin CQ 21 mg *Agreed to be contacted for follow up e-mail and web based questionnaires at 6 and 12 weeks *Age ≥ 18 yrs	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Strecher	2006	NR	SMOKING	NR	N = 43.5% Grp 1 vs. Grp 2: 57.9% vs. 50%	Mean (SD): 36.9 (±10.2) >40 yrs Grp 1: 58.4 Grp 2: 48.6 ≤40 Grp 1: 50.4 Grp 2: 40.3

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Strecher	2006	NR	NR	NR	NR	Subjects smoked an average of 23.5 cigarettes/day (±8.2) Pts had smoked cigarettes for an average of 20.1 yrs (±10.3) Subjects who smoked their first cigarette of the day within 30 mins of waking: 88.4%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Strecher	2006	NR	NR	NR	NR	CQ PLAN (committed quitters stop smoking plan)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Strecher	2006	Tailored web based smoking cessation materials	Grp 1: web based committed quitters stop smoking plan- Info collected in the enrollment questionnaire used to tailor CQ PLAN materials including demographics, smoking history, motives for quitting, expected difficulties quitting, ans situations that were expected to present challenges. Pts also identified a supportive person that would receive an email with tailored advice for supporting the subject. Initial web based cessation guide, three sequential tailored newsletters delivered via the web, and behavioral support messages delivered via internet for a 10 week period. Grp 2: web based control condition- web based materials had a graphic design and navigational structure very similar to the CQ PLAN, cognitive	Computer	Tailored web based smoking cessation materials, e mail messages, newsletters etc

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Strecher	2006	NR	NR	NR	Tobacco related illness Yes: Grp 1 vs. Grp 2 55.6 vs. 38.2 , OR (95%CI)= 2.07 (1.42-3.00), p<0.001 No: Grp 1 vs. Grp 2 51.9 vs. 45.3 , OR(95% CI)=1.30 (1.02-1.66), p<0.05 Interaction OR (95% CI)=1.26(1.01-1.57), p<0.05

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Strecher	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Strecher	2006	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Strecher	2006	NR	Self efficacy, Low ; Grp 1 vs. Grp 2; 49.9 vs. 42.2 , OR (95%CI)=1.36 (1.01-1.85) , p<0.05 High; Grp 1 vs. Grp 2;56.8 vs. 44.8 , OR(95% CI)= 1.63 (1.22-2.19), p<0.001 Interaction OR (95% CI)= 1.09 (0.89-1.35), Motivation to quit high; Grp 1 vs. Grp 2; 54.6 vs. 44.8 , OR (95%CI)= 1.49(1.19-1.93) , p<0.001 Low; Grp 1 vs. Grp 2; 48.4 vs. 38.9 , OR(95% CI)= 1.47 (1.00-2.20), p<0.10 Interaction OR (95% CI)= 1.01 (0.80-1.27) Weight Concern Yes; Grp 1 vs. Grp 2; 55.8 vs. 41.8 , OR (95%CI)= 1.78 (1.18-2.17), p<0.01 No; Grp 1 vs. Grp 2; 52.2 vs. 43.7 , OR(95% CI)= 1.41 (1.12-1.79) , p<0.01 interaction OR (95% CI)= 1.12 (0.89-1.43)	No of cigarettes smoked More than 20; Grp 1 vs. Grp 2; vs. , OR (95%CI)= , p<0.001 ≤20; Grp 1 vs. Grp 2; vs. , OR(95% CI)=, p<0.05 Interaction OR (95% CI)=, p<0.05 First cigarette of the day ≤5 mins; Grp 1 vs. Grp 2; 51.8 vs. 45, OR (95%CI)=1.32(0.96-1.82), p<0.1 No; Grp 1 vs. Grp 2; 53.9 vs. 41.7, OR(95% CI) =1.63 (1.25-2.12),p<0.001 Interaction OR (95% CI)= 1.11 (0.90-1.36)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Strecher	2006	NR	NR	Total= 3971 CQ Plan: 232 never logged on Control: 238 never logged on Out of the 3501 who logged on, 31 withdrew CQ PLAN: 15 Control: 16 A total of 3470 received the 6 week FU survey 1850 responded to this survey Between the 6 an 12 week survey, 15 more withdrew CQPLAN: 8 Control: 7 This left 3455 pts, out of which 1491 responded to the 12 week survey

Author	Year	Adverse Effects	Other
Strecher	2006	NR	Details about Non smoking children and adult smokers given, not listed here Figure depicting mediation pathway of tailored treatment, perceived relevance and smoking cessation given

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Stuart	2003	30 primary care practices	Primary care practices	Home	Randomzied three group	N=647

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Stuart	2003	1 year	NR	*Age ≥18 yrs *English literate *Not currently taking an antidepressant medication *Newly prescribed an antidepressant medication by their primary care provider *Access to a touch-tone telephone *Willingness to participate in the study	Any criteria against the Inclusion criteria	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Stuart	2003	NR	DEPRESSION	NR	NR	NR

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Stuart	2003	American	NR	NR	NR	None

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Stuart	2003	NR	English literate	English	NR	Interactive Voice Response Intervention

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Stuart	2003	Automated telephone answering/reminding system	Grp 1: Education-treatment team education and patient self-care education Grp 2: Education and Call: education listed above + 1 office nurse telephone call within 2 days of the visit when the antidepressant medication was prescribed Grp 3: Education + Call + IVR: education and call listed above + IVR program lasting for 3 months	Telephone	Medication reminder/adherence/encouragement/recording device

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Stuart	2003	NR	NR	Education and call from nurse within 2 days of antidepressant prescribed	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Stuart	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Stuart	2003	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Stuart	2003	NR	NR	No significant differences in patient compliance with their antidepressant medication among the 3 treatment groups

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Stuart	2003	NR	NR	NR

Author	Year	Adverse Effects	Other
Stuart	2003	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Taylor	2006	Walter Reed Army Medical Center	Sleep disorders center	Homes	RCT	N = 114 CG: 58 Telecare: 56
Tsang	2001	Outpatient clinic	Diabetes hospital clinic	Homes	Randomized cross-over study	N = 19 DMS to Control: 10 Control to DMS: 9

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Taylor	2006	October 2002 - March 2003	1 month	*Diagnosed with obstructive sleep apnea syndrome (OSAS) *Prescribed CPAP (continuous positive airway pressure)	Current or previous treatment with CPAP or other therapies such as oral appliance or surgery for OSAS.	NR
Tsang	2001	NR	6 mos	NR "selected 20 patients from diabetes clinic"	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Taylor	2006	NR	OSA	NR	UC: 71% Exp Grp: 66%	Mean CG: 44.6 Exp Grp: 45.8
Tsang	2001	NR	DIABETES	NR	DMS to Control: 50% Control to DMS: 78%	Mean DMS to Control: 30 Control to DMS: 35

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Taylor	2006	Caucasian UC: 60% Exp Grp: 49%; African-American UC: 40% Exp Grp: 42%; Hispanic UC: 0% Exp Grp: 5%; Asian UC: 0% Exp Grp: 5%	0-24999 CG: 20% Exp Grp: 11%; 25000-49000 CG: 21% Exp Grp: 19%; 50000-74999 CG: 25% Exp Grp: 30%; 75000-99999 CG: 20% Exp Grp: 27%; 100000+ CG: 14% Exp Grp: 13%	High school CG: 19% Exp Grp: 20% 2-3 yrs of College CG: 25% Exp Grp: 21%; Technical/Associate Degree CG: 6% Exp Grp 7% Bachelors CG: 25% Exp Grp: 11% Masters Degree CG: 25% Exp Grp: 37% Doctorate+ CG: 0% Exp Grp: 4%	NR	OSAS Severity: Mild CG: 25% UC Exp Grp: 31% Moderate CG: 27% Exp Grp: 35% Severe CG: 48% Exp Grp: 34%
Tsang	2001	NR	NR	NR	NR	DMS-Control vs. Control-DMS: Duration of illness: 5.3 vs. 11.8 yrs (p=.016); Mean BMI: 22.2 vs. 26 HgA1c: 8.56 vs. 8.81

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Taylor	2006	NR (all military-connected)	NR	NR	NR	The Health Buddy
Tsang	2001	NR	NR	NR	NR	"Diabetes Monitoring System" DMS

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Taylor	2006	OSAS library with customized information; Daily questions on sleep and CPAP use, responses monitored and categorized into low/medium/high risk, sleep specialist call patient after 3 days of high-risk responses. High≤4 h CPAP use; Medium= 4+ CPAP use but poor sleep; Low=4+ CPAP use and good sleep.	Experimental group: daily patient-entered data on CPAP use, monitoring by sleep specialist. Usual care: clinic visit 1 month after CPAP started, routine access to clinic specialist as needed.	NR	Computerized questions, condition-specific library
Tsang	2001	DMS: Electronic food diary, blood glucose monitoring, email from and to health professionals; Control: usual communication with diabetes clinic	Group 1: used DMS for 12 weeks, then control for 12 wks; Group 2: had control period for 12 weeks, then DMS for 12 wks	Hand-held electronic diary with touch screen	Food and glucose monitoring with feedback

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Taylor	2006	NR	NR	Usual care from clinic	NR
Tsang	2001	Instruction with 2-week trial period	NR	NR	Mean difference in HgA1c from treatment to control: 0.825% (CI 0.155-1.5) DMS-Control group HgA1c changed from 8.56% to 7.55% (p<0.05) Control-DMS group HgA1c changed from 8.81% to 8.76 to 8.4 (p=.04);

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Taylor	2006	NR	NR	NR
Tsang	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Taylor	2006	NR	Exp group Found HealthBuddy very easy to use: 83% 2 out of 3 reported it a positive experience Had no difficulty using it: 83% Were likely or very likely to continue using it: 75%	Experimental group Satisfied with Health Buddy: 69% Satisfied with communication with clinicians: 71%
Tsang	2001	For all 19 subjects: Frequency of use (transmission/week): <1: 3 1-2: 7 3-4: 4 5-6: 2 ≥7: 3	For all 19 subjects DMS is easy to use: 18 Useful to assess eating: 12 Would recommend: 11 Would use again: 12	NR

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Taylor	2006	NR	NR	Mean hours of CPAP use (hrs): CG: 4.22 Exp Grp: 4.29, p=0.87; CPAP mean proportion (hrs): CG: 50.1% Exp Grp: 46.9%, p=0.61;
Tsang	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Taylor	2006	Functional status, measured by Modified Functional Outcomes of Sleep Questionnaire (MFOSQ, 8 items, ranges from 0 to 32). UC: 2.27 Exp group: 2.03, p=0.76	NR	Usual care: 8 subjects did not complete assessments; 1 subject was withdrawn b/c CPAP use was less than 20 days; Exp. Arm: 7 were withdrawn for not activating HealthBuddy, 1 withdrawn for not using it for 30 day observation period, 1 withdrew b/c of choosing an alternative therapy.
Tsang	2001	NR	NR	N = 1

Author	Year	Adverse Effects	Other
Taylor	2006	NR	NR
Tsang	2001	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Turnin	1992	150 Km radius of Toulouse, France. (no other details about setting given)	NR	Homes	RCT	N= 105 Group A: 54 pts Group B: 51 pts

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Turnin	1992	NR	1 yr	*Good command of French, spoken as well as written *Age ≥18 yrs of age.	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Turnin	1992	NR	IDDM and NIDDM	NR	NR	Grp A: 44.8 (±2.0) Grp B: 45.2 (±2.0)

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Turnin	1992	NR	NR	NR	NR	Diabetes (%); Grp A vs. Grp B Insulin dependent: 69 vs. 76 Non insulin dependent: 20 vs. 10 Not insulin dependent insulinated: 11 vs. 14 Occupation (%) Grp A vs. Grp B Working: 74 vs. 75 Unemployed: 26 vs. 25

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Turnin	1992	NR	NR	NR	NR	Diabeto

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Turnin	1992	A computer assisted diet education system with energy requirement calculation, individualized meal analysis, specially adapted menus and recipes, consultation of the monitoring cardiovascular disease (MONICA) general dietary information, and electronic mail	For the first 6 months, Grp A used diabeto and Grp B were control subjects For the next 6 months, Group B used diabeto and this Grp was followed before and after use of diabeto	Computer	Energy requirement calculation, individualized meal analysis, specially adapted menus and recipes, consultation of the monitoring cardiovascular disease (MONICA) general dietary information, and electronic mail

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Turnin	1992	NR	1 hr demonstration of the operation of the system and then an individualized demonstration of the operation of minitel when creating its dossier. A book of use is also given to the patient.	NR	Body weight Change Study 1: NS Grp A: 64.7 (±2.0) to 64.6 (±1.9) Grp B: 67.5 (±1.6) to 67.4 (±1.6) For overweight pts, no significant change in body weight between the two phases of the study Grp A: 75.8 (±3.2) and 75.3 (±3.1) Grp B: 75.4 (±3.3) and 74.7 (±3.4) Study 2; NS change Change: 68.5 (±1.7) to 67.0 (±2.3) For overweight pts, significant weight improvement Change: 75.4 (±3.5) to 74.1 (±3.6), p<0.01 Biological variations Study 1: Total HbA1 Change Grp A: 10.7 (±0.4) to 10.1 (±0.4) Grp B: 10.8 (±0.4) to 11.0 (±0.2) Fructosamine Grp A: 4.71 (±0.16) to 4.41 (±0.17) Grp B: 4.82 (±0.13) to 4.78 (±0.13) Study 2:

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Turnin	1992	NR	NR	Study 1: Avg test grades significantly improved for Grp A compared with Grp B The average increased from 56 (±1) to 64 (±2) for Grp A, p< 0.0001 The average decreased from 56 (±2) to 54 (±2) for Grp B Details grades of test 1,2, 3 and 4 given, not listed here. A figure showing that patients knowledge increased with the time that they spent with the system Study 2: Avg grades obtained improved significantly from 56 (±1.5) to 62 (±2.5) p<0.0001 Detailed grades of test 1,2, 3 and 4 before and after use given, not listed here.

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Turnin	1992	Each pt used the system 6 times/month for an avg duration of 15 min/session for a total of 90 min/month 9 pts never used the system 4 pts used it more than 3 hrs/month	NR	Interest in dietetics before use (%) Very low: 2.5 Low: 9.2 Medium: 51.2 High: 26.8 Very high: 4.9 Interest in advantages of diabeto Home access 24 hrs Very low: 0 Low: 2.4 Medium: 4.9 High: 46.3 Very high: 39 Free of charge Very low: 0 Low: 0 Medium: 9.8 High: 22 Very high: 61 Individualized Very low: 0 Low: 0 Medium: 34.7 High: 29.3 Very high: 26.8 Two way dialogue Very low: 4.9 Low: 19.5

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Turnin	1992	NR	NR	Study 1; Grp A vs. Grp B Caloric excess Beginning of study, To: 365 (±75) vs. 209 (±37) 6 months, T6: 132 (±81) vs. 238 (±99) Carbohydrate (%) To: 42.2 (±0.8) vs. 40.7 (±0.8) T6: 44.0 (±0.9) vs. 40.7 (+0.7) Carbohydrate deficit(%) To: 39.7 (±0.7) vs. 39.1 (+0.7) T6: 42.9 (±0.9) vs. 40.3 (±0.7) Fat (%) To: 38.3 (±1.0) vs. 38.8 (±0.8) T6: 36.0 (±0.9) vs. 38.5 (±0.8) Fat excess (%) 41.9 (±0.9) vs. 41.4(±0.6) 37.4 (±1.1) vs. 40.0 (±0.7) Study 2; Grp B (beginning vs. 12 months) Caloric excess: 193 (±37) vs. 98 (±49), p<0.05 Carbohydrate (%): 40.3 (±0.9) vs. 42.0 (±1.0), NS Carbohydrate deficit, (%), 38.9 (±0.8)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Turnin	1992	NR	NR	First study 9 pts lost to study in minitel grp (never used the system, 2 for personal reasons, 2 for lack of time, 1 moved and 4 could not be accounted for), In the control grp 1 pt moved and was lost to the study Second study 6 pts dropped out, (5 between 6th and the 12th month)

Author	Year	Adverse Effects	Other
Turnin	1992	NR	The author says that factors favorably influencing the amount of use of the system were the patients interest in dietetics and their amount of free time. Retired people and those not employed made the most use of the system The author also says that the possibility of unlimited use with free access 24 h/day in their own homes was an important factor in motivating the pts to monitor their diet

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
van den Berg	2007	Rheumatology outpatient clinics	3 Teaching hospitals	Homes	RCT	N = 160 Grp 1: 82 Grp 2: 78

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
van den Berg	2007	March 2003-August 2004	12 mos	*Dx of RA *Physical activity of at least 30 mins a day at least 5 days/week *Access to a computer with internet capabilities *Able to cycle on a bicycle ergometer *No cardiopulmonary conditions which would not allow moderately intensive physical activity	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
van den Berg	2007	NR	RHEUMATOID ARTHRITIS	NR	Grp 1: 24%	Median at Baseline Grp 1: 49.5

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
van den Berg	2007	NR	NR	Grp 1: Low education level: 18% Medium education level: 61% High education level: 21%	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
van den Berg	2007	NR	NR	NR	NR	NR

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
van den Berg	2007	Web-based system for reporting physical activity and receiving personalized exercise schedules	Group 1: Intervention group (only one mentioned in this paper) Group 2: General training group (data reported elsewhere)	Web-based intervention	Education, personalized exercise schedule, data input and sending

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
van den Berg	2007	Some Homes visits were offered to assist subjects	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
van den Berg	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
van den Berg	2007	Over the follow-up period, 70% of Grp 1 logged into the system at least once a week	NR	The majority of individuals were satisfied or very satisfied with the system variation and clarity (87% and 94%, respectively). The majority of individuals were satisfied with the frequency of contact with their PT. 55/62 (89%) reported they did not experience any miscommunications between themselves and their PT due to the use of email.

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
van den Berg	2007	NR	NR	Individuals who logged in more frequently participated in more moderate intensity and vigorous intensity physical activity than those who logged in less frequently, at 12 month follow-up (P=0.036 and P=0.001, respectively)

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
van den Berg	2007	RAQoL: Those that reported more often on their physical activity schedules reported significantly greater improvements than those that reported less often (P=0.01)	NR	5 from Grp 1 lost to follow-up

Appendix H. Data Table

Author	Year	Adverse Effects	Other
van den Berg	2007	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Van den Brink	2005	NR	Tertiary health care center	Homes	Cohort	N= 36

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Van den Brink	2005	September 2000-January 2002	6 weeks	*Pts were eligible if they had undergone a laryngectomy, a commando procedure (removal of a tumor in the mouth or throat by splitting the lower jaw) or a neck dissection (removal of the lymph nodes in the neck) *Pts also needed to be able to read and write Dutch *Have a phone at home.	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Van den Brink	2005	NR	HEAD AND NECK CANCER	NR	N = 26 pts (72.2%)	Mean (Range): 59 (38-78)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Van den Brink	2005	NR	NR	No education: 0 pts Elementary school: 6 pts Lower technical school: 14 pts Secondary education: 6 pts Middle technical training: 2 pts High school/College: 3 pts Higher education: 3 pts University level: 2 pts Information about marital status given, not listed here	NR	20 pts (56%) had no experience with computers before participation

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Van den Brink	2005	NR	NR	NR	NR	Electronic health information support system

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Van den Brink	2005	Electronic health information system with four different functions, namely, communication, information, contact with fellow sufferers and monitoring of discharged patients in head and neck cancer care.	The electronic support system consisted of the following features Communication: Pts as well as health care providers able to create messages with the subject and type of message, stored centrally. Each pt had own PO box. Information: specially developed website containing general information on cancer treatment of H and N cancer, rehabilitation after treatment, and links to other relevant websites Contact with fellow sufferers: forum where pts could discuss any subject, either anonymously or with their own name. Monitoring: Pts completed electronic monitoring questionnaires on a regular basis after discharge. E-mail alerts: when an abnormal answer appeared in the questionnaire or pt classifies response as question, an email alert generated and sent to the	Computer	Email alerts, electronic monitoring questionnaires, forum, information

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Van den Brink	2005	Involved health care providers received information on how to use the system and were provided with access passwords	Medical student trained and supervised pts while the patient practice use of the system in the hospital	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Van den Brink	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Van den Brink	2005	Total number of patient sessions: 982 Average: 27.3 (±18.4), Range: 4-69 On average, a pt session lasted 12 mins. 16% took place after office hours Details about usage by health care provider also given, not listed here	Encountered difficulty (technical problems) while using the system: 9 pts (25%) Reasons given: system did not work anymore (3 times), too slow (3 times), password forgotten (once), handling the mouse was difficult (once), computer refused to switch off (once) Additional remarks made by pt quoted- not listed here Felt that being able to contact care providers by means of the system provided a feeling of security: 83% Found that learning how to use the system was not difficult at all: 61%	Use and appreciation of the electronic health information system Monitoring Pts using this functionality: 36 (100%) % of satisfied patient users: 94% (31/33) Mean score (Range): 8.0 (2-10) Ask questions Pts using this functionality: 23 (64%) % of satisfied patient users: 91 (21/23) mean score (Range): 7.8 (1-10) Read messages Pts using this functionality: 27 (75%) % of satisfied patient users: 89 (24/27) Mean score (Range): 7.7 (4-10) Contact with fellow sufferers Pts using this functionality: 3 (8%) % of satisfied patient users: 67 (2/3) Mean score (Range): 6.7 (6-8) Information Pts using this functionality: 22 (61%) % of satisfied patient users: 91 (20/22) Mean score (Range): 7.8 (1-10) Overall score for the system as a

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Van den Brink	2005	NR	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Van den Brink	2005	NR	NR	During the inclusion period, 59 met the criteria for inclusion 20 refused to participate (inclusion of 66%) Computer phobia: 9 times Tiredness/need rest: 4 times Does not like idea of filling paper questionnaires- 2 times Looks after demented parent-1 Moving house- 1 Partner does not allow pt to have access to computer- 1 No time- (company ownership)- 1 Afraid of theft of laptop computers- 1 Moreover; 3 stopped shortly after inclusion 2 were too tired to participate 1 died

Author	Year	Adverse Effects	Other
Van den Brink	2005	NR	A table detailing information about - subjects of questions generating email alerts given, not listed here. Additional remarks made by pts about the system quoted, not listed here List of questions asked in the patient's questionnaire with patient answers given, results from the GP's questionnaire also given

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Van der Meer	2007	NR	19 general practices, (44 GP's) Out patient clinic of department of pediatrics of Leiden University Medical Center, Netherlands	Homes	Cohort	N= 97

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Van der Meer	2007	NR	1 month follow up (monitoring) after which subjects invited to participate in focus groups	*Physician diagnosed asthma *Age 12-17 yrs *Use of inhaled corticosteroids for at least 3 months in the previous year *No serious co morbid conditions that interfered with asthma treatment *Access to internet at home *Ability to understand Dutch	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Van der Meer	2007	NR	ASTHMA	NR	Pts with well controlled asthma: 55.5% Pts with poorly controlled asthma: 41% p=0.51	Pts with well controlled asthma (well): 14.2 (±1.7) Pts with poorly controlled asthma (poor): 14.7 (±1.5) p= 0.36

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Van der Meer	2007	NR	NR	NR	NR	Duration of asthma, Mean years, (%) Well: 7.4 (4.9); Poor: 8.8 (5.1) Current prescription inhaled corticosteroids, n Well: 17; Poor: 17 Details of care provider also given

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Van der Meer	2007	NR	NR	NR	NR	Internet based self management for better asthma control

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Van der Meer	2007	Adolescents with mild to moderate persistent asthma monitored their asthma control on a website with return message containing their FEV1 and peak expiratory flow values expressed as percentages. After 4 weeks of monitoring, pts invited to take part in eight focus groups.(more on Van der Meer et al 2006)	All pts received a hand held electronic spirometer and were trained to perform three maneuvers every morning before receiving medication, and to report FEV1 and peak expiratory flow values by entering them daily into a designated web application or via SMS during a 1 month period. Pts received return message with FEV1 and peak expiratory flow values expressed as a percentage of expected or best value. (Methods described in detail in Van der meer et al, 2006. Following the electronic monitoring study, eight focus group sessions lasting 1- 1.5 hrs were conducted where pts were stratified according to asthma control, gender and age.	Computer, cell phone	Data log in, return messages.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Van der Meer	2007	NR	Trained to perform spirometry three times before medication	NR	Well vs. Poor ACQ score 0.6 (±0.3) vs. 1.9 (±0.5), p<0.01 ATAQ control score 0 (±0) vs. 2 (±1.8), p<0.01 Prebronchodilator FEV1, % Predicted, Mean (SD) 100.7 (±20.9) vs. 90.7 (±17.7), p=0.14

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Van der Meer	2007	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Van der Meer	2007	NR	Majority of the participants felt that sending lung function values and symptom scores via the internet or SMS was easy and fast.	Barriers and benefits of internet based self management: Well vs. Poor, n (%) Internet based monitoring: electronic monitoring is feasible: 15 (83) vs. 15 (88), p=1.00 Recognize benefits of internet based monitoring: 1 (6) vs. 4 (24) , p=0.18 Internet information: need for comprehensive information: 3 (17) vs. 5 (29), p= 0.44 Positive features of internet information: 11 (61) vs. 12 (71), p=0.73 Internet based action plan: able and ready to use internet based action plan: 2(11) vs. 11 (65), p<0.01 No need to use action plan at all: 14 (78) vs. 3 (18), p<0.01

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Van der Meer	2007	NR	Well v. Poor KASE-AQ Attitude: 3.7 vs. 3.8, p=0.55 Self-efficacy: 4.0 vs. 3.6,p=0.046 Intrinsic barriers to current asthma management Negative attitude towards asthma management Well vs. Poor 2 (11) vs. 3 (18), p=0.66 Limited perceived ability to manage asthma Well vs. Poor 3 (17) vs. 11 (65),p<0.01 Barriers and benefits of internet based self management: Internet based medical review Positive attitude towards electronic consultation: 8 (44) vs. 10 (59), p=0.51 Negative attitude toward electronic consultation: 2 (11) vs. 2 (12), p=1.00	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Van der Meer	2007	NR	Intrinsic barriers to current asthma management Negative social influences Well vs. Poor; 0 (0) vs. 3 (18), p=0.11	Invited to participate in one month internet based monitoring study, n=180 No informed consent= 79 Withdrawal from monitoring study= 4 Complete internet based monitoring study=97 Contradictory scores on ACQ and ATAQ control domain= 17 Eligible for focus group discussion= 80

Author	Year	Adverse Effects	Other
Van der Meer	2007	Expressions of acceptance of asthma symptoms given, not listed here	Barriers and drivers for HIT use Attitude towards asthma management: 3 pts with poorly controlled asthma were bothered by face to face medical reviews, since they learned to live with their symptoms and saw no need for regular consultations (driver for HIT use) Views on barriers and benefits of internet based asthma self management: Pts thought that internet based monitoring and reporting was feasible, not time consuming and did not interfere with their daily activities. Also sending lung function values and symptom scores was easy and fast. Pts in the well controlled group had fun doing the measurements but did not think that it is useful and did not observe any benefits from daily electronic monitoring and feedback as they did not have any symptoms at the time. Pts with poorly controlled asthma reported the usefulness of daily monitoring stating that being able to react to changes in asthma were personal benefits of the system. All pts said that the internet is easy to

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Weinert	2005	Clinics where patients with CI visited	Montana, Idaho, North Dakota, South Dakota, Wyoming	Unclear	Three group	N=63
Wilkie	2001	Radiation and medical oncology outpatient clinics.	Large medical center	In clinical exams rooms at radiation and medical oncology outpatient clinics.	Cohort	N = 41 *All completed SymptomReport CG: 19 IVR: 22

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Weinert	2005	2 years	NR	*Live at least 25 miles outside of an urbanized area (city of ≥12,500) *Live with a CI	*Live within 25 miles of urbanized area *No CI	Mean age = 54.1
Wilkie	2001	NR	5 weeks	*Cancer diagnosis Have pain, fatigue, or both *English literate *Ages ≥ 18 yrs *Physically and cognitively able to complete the study	Blind patients and non-English speaking patients were excluded from the study.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Weinert	2005	YES	Diabetes, Rheumatoid condition, Heart disease, Cancer, MS	NR	0	Mean (Range) 54.1 (38-66)
Wilkie	2001	NR	CANCER DIAGNOSIS AND CHRONIC PAIN	NR	N = 10 (24%)	Mean (SD): 52 (± 12.4) Range: 28-78

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Weinert	2005	White: 96.8% Hispanic: 1.6% Native American: 1.6%	0-15,000: 20.6% 15,000-24,999: 12.7% 25,000-34,999: 11.1% 35,000-44,999: 15.9% 45,000-54,999: 19.0% ≥55,000: 18.9%	Mean (SD) 14.5 (±1.95)	YES: lived at least 25 miles outside of urbanized area Number of miles to routine health care: 60.7 (±82.36)	None
Wilkie	2001	Caucasian: 40 pts Asian: 1 pt	NR	HS: 23% Vocational School: 8% Associate Degree: 25% Bachelor's Degree: 25% Master's Degree: 10% Doctoral Degree: 3% Other: 8%	NR	Married: 69% Single: 28% Widowed: 3%

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Weinert	2005	NR	NR	NR	NR	NR
Wilkie	2001	NR	NR	NR	NR	SymptomConsult

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Weinert	2005	Online health teaching units with expert facilitated discussions, internet access, and a self-help social support group	Grp 1: online teaching units + expert facilitated discussion + self-help social support group Grp 2: online teaching units Grp 3: CG	Computer/internet	lessening depression and isolation and bolstering social support, develop computer skills, acquire internet skills
Wilkie	2001	NR	All (41) completed SymptomReport. They then completed the SymptomConsult program. 19 were randomized to choose 1 of 3 computer games. 22 were randomized to view tailored educational materials; reporting pain, safe use of pain medicines, and managing fatigue.	Fujitsu 1600 pentab computer with Windows 98-based SymptomReport program. (touch screen computer)	The SymptomReport program was designed as an interactive, touch-screen method for assessment of pain and fatigue. This is an electronic version of the 1970 edition of the McGill pain questionnaire (MPQ), the pain barriers questionnaire (BQ), and the Schwartz cancer fatigue scale (SCFS-6).

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Weinert	2005	NR	NR	NR	NR
Wilkie	2001	The researcher instructed the patient to read and touch the computer screen to start. The researcher provided assistance in completing the computerized SymptomReport if asked by the patient and then documented the assistance provided.	The researcher instructed the patient to read and touch the computer screen to start. The researcher provided assistance in completing the computerized SymptomReport if asked by the patient and then documented the assistance provided.	NR	NR

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Weinert	2005	NR	NR	Self-rated computer skills at baseline: IVR: 4.66 (±1.75) CG: 5.32 (±2.07) Self-rated computer skills at 18mos: IVR: 5.93 (±1.51) CG: 5.26 (±1.94)
Wilkie	2001	NR	NR	The Symptom Consult program seemed to increase patients' understanding of the symptoms, raise their awareness of pain and fatigue, and enhance compliance with symptom management.

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Weinert	2005	NR	NR	NR
Wilkie	2001	Fewer patients completed the computer items the second time, usually because of time constraints or a desire to skip questions not relevant to their clinical situation.	Average time spent viewing SymptomConsult: 20 minutes. Fatigue intervention: 7 minutes. Each pain intervention component: 1-16 minutes.	The majority of participants (71%) indicated that the computer program was easy, enjoyable, informative, and a good tool.

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Weinert	2005	NR	NR	NR
Wilkie	2001	NR	NR	Intervention provided a chance to think more and helped enrich communication with doctors.

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Weinert	2005	NR	NR	NR
Wilkie	2001	NR	NR	NR

Author	Year	Adverse Effects	Other
Weinert	2005	NR	NR
Wilkie	2001	Patients complained of repetitive questions, especially if the pain questions didn't personally apply.	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Williamson	2006	NR	NR	Homes	RCT	N = 57

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Williamson	2006	NR	2 years	*African American girls between 11-15 yrs *BMI above 85th percentile for age and gender *At least one obese biological parent as defined by BMI>30 *One designated parent who was overweight BMI>27 and was willing to participate in the study *Adolescent's family was willing to pay $300 out of pocket expenses toward the purchase of a computer worth $1000 *Family home had electricity and at least one functional telephone line	NR	No

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Williamson	2006	All African Americans	Obesity	NR	0	Adolescents: 13.2 (±1.4) Parents: 43.2 (±6.2)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Williamson	2006	African Americans	NR	NR	NR	Height (cm) Adolescents: 160 (±8.1) Parents: 162.3 (±6.9) Weight (kg) Adolescents: 93.3 (±22.5) Parents: 101.2 (±18.4) BMI Adolescents: 36.4 (±7.9) Parents: 38.4 (±7.2) Body fat DXA (%) Adolescents: 45.9 (±7.5) Parents: 48.4 (±6.3) BMI Percentile Adolescents: 98.3 (±2.5)

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Williamson	2006	NR	NR	NR	NR	HipTeens

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Williamson	2006	Interactive Internet based lifestyle behavior modification program for African American girls over 2 year period. Web based program providing nutrition education and behavior modification by asynchronous email communication and links to culturally competent websites and interactive components such as weight and activity graphs, food intake monitoring with counselors providing feedback on the same.	Grp 1: Control Grp 2: Behavioral Both the groups had the following: 4 face to face counseling session during the first 4 weeks, Weight graph, email to study staff, links to African American health websites, links to women's health website. In the lessons to be read by adolescents and parents, the control grp had lessons for healthy lifestyle whereas the behavioral grp had lessons promoting dietary and behavioral exercise change. Apart from the above, the behavioral grp had physical activity graph, food monitoring with feedback using traffic light diet, rate your plate exercise for healthy eating habits, behavioral contracting with parent, adolescent, counselor; problem solving to overcome obstacles,	Computer	E mail, links to website, activity graphs, monitoring of daily food intake and physical activity

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Williamson	2006	The counselors were educated on culturally relevant dietary and physical activity issues, and they incorporated this information into face to face and internet counseling sessions.	Adolescents and parents were trained to set up their new computers at home, access and use the website, and use email to communicate with their counselor by the internet.	NR	Grp 1 vs. Grp 2 - 24 months Weight (kg) Adolescents: 6.3 (±1.6) vs. 4.4 (±1.7) Parents: -0.60 (±0.89) vs. - 1.1 (±0.91) BMI Adolescents: 1.2 (±0.65) vs. 0.73 (±0.66) Parents: 0.04 (±0.34) vs. -0.55 (±0.34) Body fat DXA (%) Adolescents: 0.84 (±0.72) vs. -0.08 (±0.71) Parents: 0.51 (±0.46) vs. 0.36 (±0.46) BMI Percentile Adolescents: -0.001 (±0.003) vs. -0.004 (±0.003) Body weight at baseline significant co variate for body weight changes of parents F (1, 54)= 27.2 , p < 0.0001 Baseline BMI percentile significant co variate for changes in BMI percentile, F (1, 54) = 10.89, p< 0.001 significant overall effect of treatment for parental changes in BMI

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Williamson	2006	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Williamson	2006	Figure showing mean website hits, activity graph and weight graph hits given, difficult to get the exact numbers Significant differences in website use between the 2 grps for both adolescents and parents in the first year Adolescents: $F(1,55)= 4.95$, $p< 0.05$ Parents: $F(1, 55)= 4.15$, $p<0.05$ Second year- difference diminish; almost equal in both grps (very reduced web usage)	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Williamson	2006	NR	NR	Dieting and weight concerns of adolescents, Time* treatment approached significance- F (3, 48)= 2.44 , p< 0.08 Adolescents (Control grp) decreased dieting and weight concerns during first 6 months, bt scores returned to baseline levels during the next 18 months Adolescents in both grps reported improvements in exercise and over eating as compared to baseline.(p<0.05) Adol in behavioral grp reported eating less fattening foods as compared to control F (1, 48)= 2.08, p< 0.05 Parents in behavioral grp reported more exercise than the control F (1, 49)= 4.10, p< 0.05 Parents in behavioral grp reported greater reductions in over eating Parents in both grps reported improvements in avoidance of eating fattening foods during 24 month trial in comparison with baseline.

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Williamson	2006	NR	NR	Seven families dropped out of control (24%) and 10 dropped out of treatment (36%) Difference NS

Author	Year	Adverse Effects	Other
Williamson	2006	NR	Baseline characteristics of the sample including height, weight, BMI, Body fat DXA, BMI percentile given, not listed here. Figure showing mean website hits, weight graph hits and activity graph hits given, not listed here Figure showing changes in weight loss behaviors from baseline for both parents and adolescents given, not listed here NS results showing parents in behavioral grp reporting more comfort and interest with computers at baseline showed trends for more website hits and email use during 2nd yr of study Behavioral correlates of changes in adiposity given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Winzelberg	2003	Public service announcements on local radio, in newspapers and flyers in oncology offices in SFBay and LA	NR	Homes	Randomized clinical trial	N = 72 Grp 1: 36 Grp 2: 36
Woodruff	2001	Rural alternative schools	NA	School computer	Pre-post cohort study	N = 26

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Winzelberg	2003	NR	3 mos	*Female *Receiving a primary breast carcinoma diagnosis within 32 mos *Not suicidal *Living in CA *Communicate in written English	NR	YES
Woodruff	2001	NR	3 months	*Age 13 to 18 *Obtain parental consent *Smoked 1 cigarette in past month	NR	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Winzelberg	2003	NR	BREAST CANCER	NR	N = 0%	Mean (SD): 49.5 (±6.2) Range: 30-69
Woodruff	2001	NR	SMOKING	NR	N = 66%	Mean: 15

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Winzelberg	2003	Caucasian: 80% African-American: 4% Asian: 4% Hispanic/Latina: 6% Other: 6%	NR	Some graduate school: 36% Bachelor's Degree: 28% Some college: 28% Trade School: 1% <HS: 7%	NR	Married: 68% Single: 15% Divorced: 11% Widowed: 4% Separated 1% 34% were in a breast cancer support group or individual counseling at baseline
Woodruff	2001	Caucasian: 55% Hispanic: 28% Other: 17%	NR	Alternative school	Rural	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Winzelberg	2003	NR	NR	English	NR	Bosom Buddies
Woodruff	2001	NR	NR	NR	NR	Breathing Room

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Winzelberg	2003	12 week, structured, web based support group moderated by a mental health professional	Group 1: Intervention Group 2: Wait-list control	Website	Support group, online diary, read survivors stories,
Woodruff	2001	Counselor-facilitated chat room All users logged onto weekly, 1-hour sessions for 7 weeks	NR	Website	Chatroom, facilitated by tobacco counselor, using Active World (avatars)

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Winzelberg	2003	NR	Those who were given computers to use for the study were "instructed" on their use	NR	NR
Woodruff	2001	NR	NR	NR	NA

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Winzelberg	2003	NR	NR	NR
Woodruff	2001	NA	NA	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Winzelberg	2003	NR	NR	NR
Woodruff	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Winzelberg	2003	NR	NR	NR
Woodruff	2001	NR	NR	38.9% self-reported not smoking

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Winzelberg	2003	NR	Group experience evaluation (% reporting a lot or a great deal) Getting support and encouragement: 65 Helping others: 56 Learning that problems are not unique: 56 Develop new friendships: 63 Get advice: 55 Express true feelings: 65 Model self after group participants: 30 Confront difficult probs. and fears: 44 Discuss sexual concerns: 44	NR
Woodruff	2001	NR	NR	NR

Author	Year	Adverse Effects	Other
Winzelberg	2003	NR	Psychological: CES-D: F=6.00 (p<0.01) PCL-C: F=8.36 (p<0.01) PSS: F=3.88 (p<0.05) STAI: F=.78 Cancer Behavior Inventory F scores Seeking support: .59 Seeking understanding: 0.03 Coping: 0.19 Affect Regulation: 0.07 Positive Attitude: 0.40 Activity/Independence: 0.00 MiniMac Helpless/hopeless: 0.21 Anxious/preoccupation: 0.90 Fighting spirit: 0.95 Cognitive avoidance: 1.02 Fatalism: 0.45
Woodruff	2001	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Yon	2007	NR	NR	Homes	Cohort with historical control	N= 176 PDA Grp: 61 CG: 115

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Yon	2007	NR	24 months	*Age $\geq$ 18 yrs *BMI > 25 and $\leq$ 39 kg/m^2 *Regular access to a computer (not less than 3 yrs old with CD Rom drive, internet connection, at least 64 megabytes of RAM, 350 MHz processor speed and windows 98 or higher as a computer operating system)	Pts ineligible if they planned a pregnancy or to move from the area within the next 12 months, had a history of major medical or psychiatric problems, took medications that had implications for weight loss, were unable to participate in a mild to moderate exercise program, or unable to regularly attend weekly meetings.	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Yon	2007	NR	OBESITY	NR	Grp 1: 8 (5%) Grp 2: 16 (19%)	Mean age (SD) Grp 1: 48.2 (±8.7) Grp 2: 46.1 (±9.2)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Yon	2007	NR	NR	High school/Vocational school Grp 1: 10% Grp 2: 7% Some college Grp 1: 11% Grp 2: 30% College degree Grp 1: 18% Grp 2: 34% Graduate/Professional degree Grp 1: 22% Grp 2: 44%	NR	Marital status (%), p< 0.001 Grp 1 vs. Grp 2 Married/civil union: 43 vs. 86 Separated/divorced/ widowed: 13 vs. 29 Never married: 5 vs. 0 Computer ability (%) Grp 1 vs. Grp 2 Novice/basic software: 10 vs. 8 Software + internet: 41 vs. 77 Hobbyist: 5 vs. 25 Professional: 5 vs. 5

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Yon	2007	NR	NR	NR	NR	Calorie King's Diet diary

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Yon	2007	Use of the Calorie king software to self monitor food intake and exercise installed in Palmzire 21	Pts given printed lessons for review each week, facilitated by a master' s level grad student, pts instructed to reduce energy intake, individual calorie goals determined, graded goals for programmed physical activity was used, pts encouraged to increase lifestyle exercise, Grp 1: PDA grp-instructed to self monitor food and exercise with the software, pts electronically submitted their food and exercise diary weekly at group meeting by using the hot-sync function, positive feedback self-monitoring behavior and support provided via weekly email messages from the group facilitator to each subject. Grp 2: small paper weekly diaries provided and a book with calorie listings of food. The diary was handed to the facilitator at weekly meetings and positive	PDA	Weight and exercise data

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Yon	2007	NR	Initial orientation and consent, second orientation session for baseline data collection and technical support and assistance for the PDA and calorie King software provided.	NR	Mean weight loss, kg (SD) Grp 1 vs. Grp 2 6.3 (±6.1) vs. 7.2 (±5.2), F (1, 145)= 0.17, p= 0.68 Mean % weight loss (SD) Grp 1 vs. Grp 2 7 (±6.5) vs. 8.3 (±5.8), F (1, 145) = 0.99, p=0.32 All subjects Mean weight loss, kg (SD) Grp 1 vs. Grp 2 5.8 (±6.1) vs. 5.8 (±5.5), F (1,145) = 0.04, p=0.84

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Yon	2007	NR	NR	NR

Author	Year	Use of Technology	Usability	HIT Satisfaction
Yon	2007	Most pts reported making entries regularly throughout or at the end of the day (61%) Pts entered most or all of the food they consumed (80%) and most of all of the programmed exercise (71%)	The following aspects were liked by the pts Ability to look up calorie and nutritional information: 65% Portability: 47% Convenience: 34% Ease of entering food and exercise data: 26% Disliked PDA as unable to find commonly eaten food and it was hard to see the screen: 44$	NR

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Yon	2007	NR	NR	NR

Author	Year	Quality of Life	Support	Withdrawals
Yon	2007	NR	NR	PDA group: 57 completers (7 % withdrew) Control group: 93 completers (19% withdrew)

Author	Year	Adverse Effects	Other
Yon	2007	NR	Correlation between dietary self monitoring and weight loss (ANCOVA results) relationship between attendance and weight loss, relationship between compliance and calorie goals and weight loss and between exercise goals and weight loss given, not listed here

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Zabinski	2001	Public West coast university	NA	Homes	Cohort	N= 4

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Zabinski	2001	NR	10 weeks	*Self reported high body image concerns *Failed to report substantial depressive symptomatology *Did not report thoughts of harming themselves or others	Pts who self reported a past or current eating disorder diagnosis	NR

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Zabinski	2001	NR	NR	NR	N = 0%	Mean (Range): 19.4 (18-20)

Appendix H. Data Table

		Patient Characteristics*				
Author	**Year**	**Ethnicity**	**Income (US$)**	**Education**	**Urban / Rural / Frontier**	**Other**
Zabinski	2001	Caucasians: 2 pts (50%) Asian: 1 pt (25%) Hispanic/Latina: 1 pt (25%)	NR	Freshmen in College: 3 Sophomore in College: 1	Urban	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Zabinski	2001	NR	NR	NR	NR	Internet Relay Chat (IRC)

Appendix H. Data Table

				Intervention*	
Author	**Year**	**Intervention Described**	**Intervention Groups**	**Type of Device***	**Functions***
Zabinski	2001	Chatroom in a public site (yahoo), consisting of electronic newsgroup and a chat room. Forum for pts to discuss reactions to chat, readings and assignments via asynchronous postings moderated by the author	3 components to the treatment. Weekly readings, chat discussions, and summaries of each chat discussions. At the beginning of each week, pts received single page of reading, logged on to the chat room for an hour, moderator assigned homework, and allowed pts to express their feelings, moderator e mailed one page summary of the chat.	Computer	Interactive chat room, asynchronous postings on the net

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Zabinski	2001	NR	Instruction manual and contact number of the research assistant given	NR	Measure - M (SD) Baseline vs. Post Tx vs. 10 week follow up Effect sizes Baseline to Post Tx ; Post Tx to follow up Eating disorder inventory ----bulimia subscale 10.0 (1.4) vs. 10.5 (2.4) vs. 12.0 (7.4) -0.36 ; -0.63 ----Drive for thinness subscale 19.5 (12.5) vs. 20.0 (15.2) vs. 15.8 (6.2) -0.04 ; 0.28 Eating disorders examination questionnaire Global 1.5(1.2) vs. 1.1 (1.0) vs. 0.7 (0.7) 0.33 ; 0.40 Weight 1.8(1.3) vs1.5(1.6) vs. 0.7(0.5) 0.33 ; 0.40 Shape 2.2(1.3) vs. 1.3 (1.3) vs. 0.9 (0.7) 0.69;0.31 Eating 0.7 (1.0) vs. 0.4(0.4) vs. 0.25 (0.4) 0.30;0.25 Restraint

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Zabinski	2001	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Zabinski	2001	Members participated in 79% of the sessions. Pts who missed a chat session contacted moderator for update (contacts unprompted)	Easier for pts to be honest with the computer- acceptability was high.	Pts rated their satisfaction with the program really high Table 2 lists specific responses from the participants with raw scores-not listed here

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
Zabinski	2001	Pts reported that the intervention helped prevent negative attitudes about their weight and shape making them feel bad and to recognize the thoughts and situations that trigger negative feelings or behaviors (4 or higher on 7 point scale) 3 pts also reported that the intervention helped them to challenge negative thought patterns (5 or higher on a 7 point scale). Table 3 gives ratings of perceived change with pt responses, not listed here	NR	NR

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Zabinski	2001	NR	NR	NR

Author	Year	Adverse Effects	Other
Zabinski	2001	NR	Qualitative responses of pts given

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N
Zimmerman	2004	Large tertiary hospital where pts who were admitted for elective CABG over a 9 month period	NR	Homes	RCT	N=52

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly
Zimmerman	2004	NR	6 months	*Age ≥ 65 years *1st CABG surgery *Not visually/hearing impaired *English literate *No apparent physical impairments that would limit their physical functioning after surgery	Any criteria against the Inclusion criteria	YES

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)
Zimmerman	2004	NR	CABG	NR	72%	71.22 (65-79)

Appendix H. Data Table

Author	Year	Patient Characteristics* Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other
Zimmerman	2004	100% Caucasian	NR	NR	NR	NR

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name
Zimmerman	2004	NR	English literate	English	NR	Health Buddy

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*
Zimmerman	2004	CABG patients access web for daily information on recovery, provider can observe patients' progress at home	IVR: 24 UC: 21	Website	Data input, receiving information

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic
Zimmerman	2004	NR	NR	NR	Frequency of Evaluation of Symptoms by Group at 2, 4, and 6 weeks Fatigue 2 week, 4 week, 6 week UC: 6, 11, 8 IVR: 7, 13, 11 Sleep 2 week, 4 week, 6 week UC: 11, 5, 8 IVR: 12, 9, 7 Swelling 2 week, 4 week, 6 week UC: 7, 3, 3 IVR: 11, 8, 9 Shortness of Breath 2 week, 4 week, 6 week UC: 6, 3, 2 IVR: 7, 8, 5 Incisional Pain 2 week, 4 week, 6 week UC: 6, 3, 2 IVR: 8, 6, 6 Appetite 2 week, 4 week, 6 week UC: 8, 6, 4

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge
Zimmerman	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction
Zimmerman	2004	NR	NR	NR

Appendix H. Data Table

Author	Year	Outcomes Health Satisfaction	Self-efficacy	Health Behavior
Zimmerman	2004	NR	NR	Mean Scores of Symptom interference on physical functioning at 2, 4, and 6 weeks Fatigue 2 week, 4 week, 6 week UC: 1, 1.36, 1.12 IVR: 1.6, 1.4, 0.76 Sleep 2 week, 4 week, 6 week UC: 0.84, 0.48, 0.64 IVR: 0.2, 0.6, 0.28 Swelling 2 week, 4 week, 6 week UC: 0.32, 0.12, 0.12 IVR: 0.64, 0.44, 0.36 Shortness of Breath 2 week, 4 week, 6 week UC: 0.52, 0.28, 0.08 IVR: 0.6, 0.76, 0.2 Incisional Pain 2 week, 4 week, 6 week UC: 1.04, 0.76, 0.36 IVR: 0.72, 0.6, 0.56 Appetite 2 week, 4 week, 6 week UC: 0.44, 0.88, 0.84

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals
Zimmerman	2004	Mean Scores of symptom interference on enjoyment of life at 2, 4, and 6 weeks Fatigue 2 week, 4 week, 6 week UC: 1.12, 1.0, 1.08 IVR: 1.32, 0.88, 0.68 Sleep 2 week, 4 week, 6 week UC: 0.92, 0.68, 0.68 IVR: 0.56, 0.6, 0.44 Swelling 2 week, 4 week, 6 week UC: 0.28, 0.12, 0.12 IVR: 0.52, 0.44, 0.36 Shortness of Breath 2 week, 4 week, 6 week UC: 0.52, 0.12, 0.04 IVR: 0.76, 0.56, 0.2 Incisional Pain 2 week, 4 week, 6 week UC: 1.04, 0.76, 0.36 IVR: 0.4, 0.36, 0.32 Appetite 2 week, 4 week, 6 week UC: 0.24, 0.84, 0.76	NR	N=7 3 were readmitted to a healthcare facility and were unable to obtain healthcare data for over a week 1 moved 1 had a rotary telephone 2 did not want to be contacted

Author	Year	Adverse Effects	Other
Zimmerman	2004	NR	NR

Appendix H. Data Table

Author	Year	Patient Recruitment Setting	Clinical Practice Setting	Patient Technology Setting	Study design	N

References

Albisser, A. M., Harris, R. I., Albisser, J. B., & Sperlich, M. (2001). The impact of initiatives in education, self-management training, and computer-assisted self-care on outcomes in diabetes disease management. *Diabetes Technology & Therapeutics, 3*(4), 571-579.

An, L. C., Perry, C. L., Lein, E. B., Klatt, C., Farley, D. M., Bliss, R. L., et al. (2006). Strategies for increasing adherence to an online smoking cessation intervention for college students. *Nicotine & Tobacco Research, 8 Suppl 1* , S7-12.

Andersson, G., Bergstrom, J., Hollandare, F., Carlbring, P., Kaldo, V., & Ekselius, L. (2005). Internet-based self-help for depression: randomised controlled trial. *British Journal of Psychiatry, 187* , 456-461.

Andersson, G., Carlbring, P., Holmstrom, A., Sparthan, E., Furmark, T., Nilsson-Ihrfelt, E., et al. (2006). Internet-based self-help with therapist feedback and in vivo group exposure for social phobia: a randomized controlled trial. *Journal of consulting and clinical psychology, 74*(4), 677-686.

Andersson, G., Lundstrom, P., & Strom, L. (2003). Internet-based treatment of headache: does telephone contact add anything? *Headache, 43*(4), 353-361.

Andrade, A. S. A., McGruder, H. F., Wu, A. W., Celano, S. A., Skolasky, R. L., Jr., Selnes, O. A., et al. (2005). A programmable prompting device improves adherence to highly active antiretroviral therapy in HIV-infected subjects with memory impairment. *Clinical Infectious Diseases, 41*(6), 875-882.

Andrewes, D. G., O'Connor, P., Mulder, C., McLennan, J., Derham, H., Weigall, S., et al. (1996). Computerised psychoeducation for patients with eating disorders. *Australian & New Zealand Journal of Psychiatry, 30*(4), 492-497.

Anhoj, J., & Nielsen, L. (2004). Quantitative and qualitative usage data of an Internet-based asthma monitoring tool. *Journal of Medical Internet Research, 6*(3), e23.

Araki, I., Hashimoto, H., Kono, K., Matsuki, H., & Yano, E. (2006). Controlled trial of worksite health education through face-to-face counseling vs. e-mail on drinking behavior modification. *Journal of Occupational Health, 48*(4), 239-245.

Armstrong, K., Weber, B., Ubel, P. A., Peters, N., Holmes, J., & Schwartz, J. S. (2005). Individualized survival curves improve satisfaction with cancer risk management decisions in women with BRCA1/2 mutations. *Journal of Clinical Oncology, 23*(36), 9319-9328.

Artinian, N. T., Harden, J. K., Kronenberg, M. W., Vander Wal, J. S., Daher, E., Stephens, Q., et al. (2003). Pilot study of a Web-based compliance monitoring device for patients with congestive heart failure. *Heart & Lung, 32*(4), 226-233.

Appendix H. Data Table

Author	Year	Years of Study	Length of follow-up (months)	Inclusion Criteria	Exclusion Criteria	Elderly

References

Albisser, A. M., Harris, self-care on outcomes

An, L. C., Perry, C. L., intervention for colleg

Andersson, G., Bergs trial. *British Journal of*

Andersson, G., Carlbr and in vivo group exp

Andersson, G., Lunds 361.

Andrade, A. S. A., Mc adherence to highly a

Andrewes, D. G., O'C disorders. *Australian &*

Anhoj, J., & Nielsen, L *6* (3), e23.

Araki, I., Hashimoto, H drinking behavior moc

Armstrong, K., Weber management decision

Artinian, N. T., Harder monitoring device for

References, continued

Bachofen, M., Nakagawa, A., Marks, I. M., Park, J. M., Greist, J. H., Baer, L., et al. (1999). Home self-assessment and self-treatment of obsessive-compulsive disorder using a manual and a computer-conducted telephone interview: replication of a UK-US study. *Journal of Clinical Psychiatry, 60* (8), 545-549.

Barnason, S., Zimmerman, L., Nieveen, J., & Hertzog, M. (2006). Impact of a telehealth intervention to augment home health care on functional and recovery outcomes of elderly patients undergoing coronary artery bypass grafting. *Heart & Lung, 35* (4), 225-233.

Barnason, S., Zimmerman, L., Nieveen, J., Schmaderer, M., Carranza, B., & Reilly, S. (2003). Impact of a home communication intervention for coronary artery bypass graft patients with ischemic heart failure on self-efficacy, coronary disease risk factor modification, and functioning. *Heart & Lung, 32* (3), 147-158.

Barrera, M., Jr., Glasgow, R. E., McKay, H. G., Boles, S. M., & Feil, E. G. (2002). Do Internet-based support interventions change perceptions of social support?: An experimental trial of approaches for supporting diabetes self-management. *American Journal of Community Psychology, 30* (5), 637-654.

Block, G., Wakimoto, P., Metz, D., Fujii, M. L., Feldman, N., Mandel, R., et al. (2004). A randomized trial of the Little by Little CD-ROM: demonstrated effectiveness in increasing fruit and vegetable intake in a low-income population. *Preventing Chronic Disease, 1* (3), A08.

Brennan, P. F., Moore, S. M., Bjornsdottir, G., Jones, J., Visovsky, C., & Rogers, M. (2001). HeartCare: an Internet-based information and support system for patient home recovery after coronary artery bypass graft (CABG) surgery. *Journal of Advanced Nursing, 35* (5), 699-708.

Carlbring, P., Gunnarsdottir, M., Hedensjo, L., Andersson, G., Ekselius, L., & Furmark, T. (2007). Treatment of social phobia: randomised trial of internet-delivered cognitive-behavioural therapy with telephone support. *British Journal of Psychiatry, 190* , 123-128.

Cathala, N., Brillat, F., Mombet, A., Lobel, E., Prapotnich, D., Alexandre, L., et al. (2003). Patient followup after radical prostatectomy by Internet medical file. *Journal of Urology, 170* (6 Pt 1), 2284-2287.

Cavan, D. A., Everett, J., Plougmann, S., & Hejlesen, O. K. (2003). Use of the Internet to optimize self-management of type 1 diabetes: preliminary experience with DiasNet. *Journal of Telemedicine & Telecare, 9 Suppl 1* , S50-52.

Cawsey, A. J., Jones, R. B., & Pearson, J. (2000). The evaluation of a personalised health information system for patients with cancer. *User Modeling and User-Adapted Interaction, 10* (1), 47-72.

Chan, D. S., Callahan, C. W., Sheets, S. J., Moreno, C. N., & Malone, F. J. (2003). An Internet-based store-and-forward video home telehealth system for improving asthma outcomes in children. *American Journal of Health-System Pharmacy, 60* (19), 1976-1981.

Appendix H. Data Table

Author	Year	Underserved	Chronic Illness	Disability/ Impairment	Gender (% Male)	Age (years)

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,
intervention for colleg

Andersson, G., Bergs
trial. *British Journal of*

Andersson, G., Carlbr
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6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

Chen, H., Yeh, M., & Chao, Y. (2006). Comparing effects of auricular acupressure with and without an Internet-assisted program on smoking cessation and self-efficacy of adolescents. *Journal of Alternative and Complementary Medicine, 12* (2), 147-152.

Cho, J.-H., Chang, S.-A., Kwon, H.-S., Choi, Y.-H., Ko, S.-H., Moon, S.-D., et al. (2006). Long-term effect of the Internet-based glucose monitoring system on HbA1c reduction and glucose stability: a 30-month follow-up study for diabetes management with a ubiquitous medical care system. *Diabetes Care, 29* (12), 2625-2631.

Christensen, H., Griffiths, K. M., & Jorm, A. F. (2004). Delivering interventions for depression by using the internet: randomised controlled trial. *BMJ, 328* (7434), 265.

Cross, R. K., & Finkelstein, J. (2007). Feasibility and acceptance of a home telemanagement system in patients with inflammatory bowel disease: a 6-month pilot study. *Digestive Diseases & Sciences, 52* (2), 357-364.

Cruz-Correia, R., Fonseca, J., Lima, L., Araujo, L., Delgado, L., Castel-Branco, M. G., et al. (2007). Web-based or paper-based self-management tools for asthma--patients' opinions and quality of data in a randomized crossover study. *Studies in Health Technology & Informatics, 127* , 178-189.

Delgado, D. H., Costigan, J., Wu, R., & Ross, H. J. (2003). An interactive Internet site for the management of patients with congestive heart failure. *Canadian Journal of Cardiology, 19* (12), 1381-1385.

Durso, S. C., Wendel, I., Letzt, A. M., Lefkowitz, J., Kaseman, D. F., & Seifert, R. F. (2003). Older adults using cellular telephones for diabetes management: a pilot study. *MEDSURG Nursing, 12* (5), 313-317.

Earnest, M. A., Ross, S. E., Wittevrongel, L., Moore, L. A., & Lin, C.-T. (2004). Use of a patient-accessible electronic medical record in a practice for congestive heart failure: patient and physician experiences. *Journal of the American Medical Informatics Association, 11* (5), 410-417.

Estabrooks, P. A., Nelson, C. C., Xu, S., King, D., Bayliss, E. A., Gaglio, B., et al. (2005). The frequency and behavioral outcomes of goal choices in the self-management of diabetes. *Diabetes Educator, 31* (3), 391-400.

Ewald, S., vor dem Esche, J., Uen, S., Neikes, F., Vetter, H., & Mengden, T. (2006). Relationship between the frequency of blood pressure self-measurement and blood pressure reduction with antihypertensive therapy : results of the OLMETEL (OLMEsartan TELemonitoring blood pressure) study. *Clinical Drug Investigation, 26* (8), 439-446.

Ferrer-Roca, O., Cardenas, A., Diaz-Cardama, A., & Pulido, P. (2004a). Mobile phone text messaging in the management of diabetes. *Journal of Telemedicine & Telecare, 10* (5), 282-285.

Appendix H. Data Table

Author	Year	Patient Characteristics*				
		Ethnicity	Income (US$)	Education	Urban / Rural / Frontier	Other

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,
intervention for colleg

Andersson, G., Bergs
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Andersson, G., Carlbr
and in vivo group exp

Andersson, G., Lunds
361.

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Andrewes, D. G., O'C
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Anhoj, J., & Nielsen, L
6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

Ferrer-Roca, O., Franco Burbano, K., Cardenas, A., Pulido, P., & Diaz-Cardama, A. (2004b). Web-based diabetes self-care on outcomes control. *Journal of Telemedicine & Telecare, 10* (5), 277-281.

Finkelstein, S. M., Snyder, M., Edin-Stibbe, C., Chlan, L., Prasad, B., Dutta, P., et al. (1996). Monitoring progress after lung transplantation from home-patient adherence. *Journal of Medical Engineering & Technology, 20* (6), 203-210.

Franklin, V. L., Waller, A., Pagliari, C., & Greene, S. A. (2006). A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes. *Diabetic Medicine, 23* (12), 1332-1338.

Frenn, M., Malin, S., Brown, R. L., Greer, Y., Fox, J., Greer, J., et al. (2005). Changing the tide: an Internet/video exercise and low-fat diet intervention with middle-school students. *Applied nursing research : ANR, 18* (1), 13-21.

Gega, L., Marks, I., & Mataix-Cols, D. (2004). Computer-aided CBT self-help for anxiety and depressive disorders: experience of a London clinic and future directions. *Journal of Clinical Psychology, 60* (2), 147-157.

Gerber, B. S., Solomon, M. C., Shaffer, T. L., Quinn, M. T., & Lipton, R. B. (2007). Evaluation of an internet diabetes self-management training program for adolescents and young adults. *Diabetes Technology & Therapeutics, 9* (1), 60-67.

Gerbert, B., Berg-Smith, S., Mancuso, M., Caspers, N., McPhee, S., Null, D., et al. (2003). Using innovative video doctor technology in primary care to deliver brief smoking and alcohol intervention. *Health Promotion Practice, 4* (3), 249-261.

Glasgow, R. E., Boles, S. M., McKay, H. G., Feil, E. G., & Barrera, M., Jr. (2003). The D-Net diabetes self-management program: long-term implementation, outcomes, and generalization results. *Preventive Medicine, 36* (4), 410-419.

Glasgow, R. E., & Toobert, D. J. (2000). Brief, computer-assisted diabetes dietary self-management counseling: effects on behavior, physiologic outcomes, and quality of life. *Medical Care, 38* (11), 1062-1073.

Gomez, E. J., Caceres, C., Lopez, D., & Del Pozo, F. (2002a). A web-based self-monitoring system for people living with HIV/AIDS. *Computer Methods & Programs in Biomedicine, 69* (1), 75-86.

Green, B., et al. (2008). Effectiveness of Home Blood Pressure Monitoring, Web Communication, and Pharmacist Care on Hypertension Control. *JAMA, 299* (24), 2857-2867.

Appendix H. Data Table

Author	Year	Health Insurance Status	Literacy	Language(s)	Health Beliefs	Intervention Name

References

Albisser, A. M., Harris, self-care on outcomes

An, L. C., Perry, C. L., intervention for colleg

Andersson, G., Bergst trial. *British Journal of*

Andersson, G., Carlbr and in vivo group exp

Andersson, G., Lunds 361.

Andrade, A. S. A., Mc adherence to highly a

Andrewes, D. G., O'C disorders. *Australian &*

Anhoj, J., & Nielsen, L *6* (3), e23.

Araki, I., Hashimoto, H drinking behavior moc

Armstrong, K., Weber management decision

Artinian, N. T., Harder monitoring device for

References, continued

Guendelman, S., Meade, K., Benson, M., Chen, Y. Q., & Samuels, S. (2002). Improving asthma outcomes and self-management behaviors of inner-city children: a randomized trial of the Health Buddy interactive device and an asthma diary. *Archives of Pediatrics & Adolescent Medicine, 156* (2), 114-120.

Gustafson, D. H., Hawkins, R., Boberg, E., Pingree, S., Serlin, R. E., Graziano, F., et al. (1999). Impact of a patient-centered, computer-based health information/support system. *American Journal of Preventive Medicine, 16* (1), 1-9.

Gustafson, D. H., Hawkins, R., Pingree, S., McTavish, F., Arora, N. K., Mendenhall, J., et al. (2001). Effect of computer support on younger women with breast cancer. *Journal of General Internal Medicine, 16* (7), 435-445.

Gustafson, D. H., Hawkins, R. P., Boberg, E. W., Bricker, E., Pingree, S., & Chan, C. L. (1994). The use and impact of a computer-based support system for people living with AIDS and HIV infection. *Proceedings - the Annual Symposium on Computer Applications in Medical Care* , 604-608.

Gustafson, D. H., McTavish, F., Hawkins, R., Pingree, S., Arora, N., Mendenhall, J., et al. (1998). Computer support for elderly women with breast cancer. *JAMA, 280* (15), 1305.

Hoch, D. B., Norris, D., Lester, J. E., & Marcus, A. D. (1999). Information exchange in an epilepsy forum on the World Wide Web. *Seizure, 8* (1), 30-34.

Holman, R. R., Smale, A. D., Pemberton, E., Riefflin, A., & Nealon, J. L. (1996). Randomized controlled pilot trial of a hand-held patient-oriented, insulin regimen optimizer. *Medical Informatics, 21* (4), 317-326.

Jan, R.-L., Wang, J.-Y., Huang, M.-C., Tseng, S.-M., Su, H.-J., & Liu, L.-F. (2007). An internet-based interactive telemonitoring system for improving childhood asthma outcomes in Taiwan. *Telemedicine Journal & E-Health, 13* (3), 257-268.

Japuntich, S. J., Zehner, M. E., Smith, S. S., Jorenby, D. E., Valdez, J. A., Fiore, M. C., et al. (2006). Smoking cessation via the internet: a randomized clinical trial of an internet intervention as adjuvant treatment in a smoking cessation intervention. *Nicotine & Tobacco Research, 8 Suppl 1* , S59-67.

Jones, R., Pearson, J., McGregor, S., Cawsey, A. J., Barrett, A., Craig, N., et al. (1999). Randomised trial of personalised computer based information for cancer patients. *BMJ, 319* (7219), 1241-1247.

Jones, R. B., Atkinson, J. M., Coia, D. A., Paterson, L., Morton, A. R., McKenna, K., et al. (2001). Randomised trial of personalised computer based information for patients with schizophrenia.[erratum appears in BMJ 2001 May 5;322(7294):1103]. *BMJ, 322* (7290), 835-840.

Appendix H. Data Table

Author	Year	Intervention Described	Intervention Groups	Intervention* Type of Device*	Intervention* Functions*

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,
intervention for colleg

Andersson, G., Bergs
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Andrewes, D. G., O'C
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Anhoj, J., & Nielsen, L
6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

Joseph, C. L. M., Peterson, E., Havstad, S., Johnson, C. C., Hoerauf, S., Stringer, S., et al. (2007). A web-based, tailored asthma management program for urban African-American high school students. *American Journal of Respiratory & Critical Care Medicine, 175* (9), 888-895.

Kashem, A., Droogan, M. T., Santamore, W. P., Wald, J. W., Marble, J. F., Cross, R. C., et al. (2006). Web-based Internet telemedicine management of patients with heart failure. *Telemedicine journal and e-health : the official journal of the American Telemedicine Association, 12* (4), 439-447.

Kaufman, D. R., Patel, V. L., Hilliman, C., Morin, P. C., Pevzner, J., Weinstock, R. S., et al. (2003b). Usability in the real world: assessing medical information technologies in patients' homes. *Journal of Biomedical Informatics, 36* (1-2), 45-60.

Kenwright, M., Marks, I., Graham, C., Franses, A., & Mataix-Cols, D. (2005). Brief scheduled phone support from a clinician to enhance computer-aided self-help for obsessive-compulsive disorder: randomized controlled trial. *Journal of Clinical Psychology, 61* (12), 1499-1508.

Kenwright, M., & Marks, I. M. (2004). Computer-aided self-help for phobia/panic via internet at home: a pilot study. *British Journal of Psychiatry, 184* , 448-449.

Kim, C., & Kang, D. (2006a). Utility of a Web-based intervention for individuals with type 2 diabetes: the impact on physical activity levels and glycemic control. *CIN: Computers, Informatics, Nursing, 24* (6), 337-345.

Kim, H. (2007). A randomized controlled trial of a nurse short-message service by cellular phone for people with diabetes. *International Journal of Nursing Studies, 44* (5), 687-692.

Kim, H., Kim, N., & Ahn, S. (2006b). Impact of a nurse short message service intervention for patients with diabetes. *Journal of Nursing Care Quality, 21* (3), 266-271.

Kosma, M., Cardinal, B. J., & McCubbin, J. A. (2005). A pilot study of a web-based physical activity motivational program for adults with physical disabilities. *Disability and rehabilitation, 27* (23), 1435-1442.

Kressig, R. W., & Echt, K. V. (2002). Exercise prescribing: computer application in older adults. *Gerontologist, 42* (2), 273-277.

Kwon, H.-S., Cho, J.-H., Kim, H.-S., Song, B.-R., Ko, S.-H., Lee, J.-M., et al. (2004). Establishment of blood glucose monitoring system using the internet. *Diabetes Care, 27* (2), 478-483.

Appendix H. Data Table

Author	Year	Staff Training	Subject Training	co-interventions	Physiologic

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,

Andersson, G., Bergs
trial. *British Journal of*

Andersson, G., Carlbr
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Andersson, G., Lunds
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Andrade, A. S. A., Mc
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Andrewes, D. G., O'C
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Anhoj, J., & Nielsen, L
6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

Labiris, G., Papadopoulis, G., Lentaris, G., Kafentzis, M., & Krakakis, A. (2004). Internet based counseling to remote self-care on outcomes orthopedic patients. *Acta Orthopaedica Scandinavica, 75* (3), 366-367.

LaFramboise, L. M., Todero, C. M., Zimmerman, L., & Agrawal, S. (2003). Comparison of Health Buddy with traditional approaches to heart failure management. *Family and Community Health, 26* (4), 275-288.

Lahm, E. A. (1996). Software That Engages Young Children with Disabilities: A Study of Design Features. [Journal Articles Reports - Research]. Focus on Autism and Other Developmental Disabilities, 11(2), 115-124.

Lee, T.-I., Yeh, Y.-T., Liu, C.-T., & Chen, P.-L. (2007). Development and evaluation of a patient-oriented education system for diabetes management. *International Journal of Medical Informatics, 76* (9), 655-663.

Leu, M. G., Norris, T. E., Hummel, J., Isaac, M., & Brogan, M. W. (2005). A randomized, controlled trial of an automated wireless messaging system for diabetes. *Diabetes Technology & Therapeutics, 7* (5), 710-718; discussion 719-720.

Levetan, C. S., Dawn, K. R., Robbins, D. C., & Ratner, R. E. (2002). Impact of computer-generated personalized goals on HbA(1c). *Diabetes Care, 25* (1), 2-8.

Lieberman, D. Z. (2003). Determinants of satisfaction with an automated alcohol evaluation program. *CyberPsychology & Behavior, 6* (6), 677-682.

Lorig, K. R., Ritter, P. L., Laurent, D. D., & Plant, K. (2006). Internet-based chronic disease self-management: a randomized trial. *Medical Care, 44* (11), 964-971.

Ma, C., Warren, J., Phillips, P., & Stanek, J. (2006). Empowering patients with essential information and communication support in the context of diabetes. *International Journal of Medical Informatics, 75* (8), 577-596.

McClure, J. B., Greene, S. M., Wiese, C., Johnson, K. E., Alexander, G., & Strecher, V. (2006). Interest in an online smoking cessation program and effective recruitment strategies: results from Project Quit. *Journal of Medical Internet Research, 8* (3), e14.

McDaniel, A. M., Hutchison, S., Casper, G. R., Ford, R. T., Stratton, R., & Rembusch, M. (2002). Usability testing and outcomes of an interactive computer program to promote smoking cessation in low income women. *Proceedings / AMIA, Annual Symposium.* , 509-513.

Appendix H. Data Table

Author	Year	Health Service Utilization	Health Care Costs	Knowledge

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,

Andersson, G., Bergst

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Andrade, A. S. A., Mc
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Anhoj, J., & Nielsen, L
6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

McKay, H. G., King, D., Eakin, E. G., Seeley, J. R., & Glasgow, R. E. (2001). The diabetes network internet-based physical activity intervention: a randomized pilot study. *Diabetes Care, 24* (8), 1328-1334.

McMahon, G. T., Gomes, H. E., Hickson Hohne, S., Hu, T. M., Levine, B. A., & Conlin, P. R. (2005). Web-based care management in patients with poorly controlled diabetes. *Diabetes care, 28* (7), 1624-1629.

McPherson, A. C., Glazebrook, C., Forster, D., James, C., & Smyth, A. (2006). A randomized, controlled trial of an interactive educational computer package for children with asthma. *Pediatrics, 117* (4), 1046-1054.

McTavish, F. M., Gustafson, D. H., Owens, B. H., Wise, M., Taylor, J. O., Apantaku, F. M., et al. (1994). CHESS: An interactive computer system for women with breast cancer piloted with an under-served population. *Proceedings - the Annual Symposium on Computer Applications in Medical Care*, 599-603.

Meigs, J. B., Cagliero, E., Dubey, A., Murphy-Sheehy, P., Gildesgame, C., Chueh, H., et al. (2003). A controlled trial of web-based diabetes disease management: the MGH diabetes primary care improvement project. *Diabetes care, 26* (3), 750-757.

Nakagawa, A., Marks, I. M., Park, J. M., Bachofen, M., Baer, L., Dottl, S. L., et al. (2000). Self-treatment of obsessive-compulsive disorder guided by manual and computer-conducted telephone interview. *Journal of Telemedicine & Telecare, 6* (1), 22-26.

Nguyen, H. Q., Carrieri-Kohlman, V., Rankin, S. A., Slaughter, R., & Stulbarg, M. S. (2003). Pilot study of an online dyspnea self-management program for COPD. *AMIA, Annual Symposium Proceedings/AMIA Symposium.*, 951.

Nguyen, H. Q., Carrieri-Kohlman, V., Rankin, S. H., Slaughter, R., & Stulbarg, M. S. (2005). Is Internet-based support for dyspnea self-management in patients with chronic obstructive pulmonary disease possible? Results of a pilot study. *Heart & Lung, 34* (1), 51-62.

Noel, H. C., Vogel, D. C., Erdos, J. J., Cornwall, D., & Levin, F. (2004). Home telehealth reduces healthcare costs. *Telemedicine journal and e-health : the official journal of the American Telemedicine Association, 10*(2), 170-183.

Owen, J. E., Klapow, J. C., Roth, D. L., Shuster, J. L., Jr., Bellis, J., Meredith, R., et al. (2005). Randomized pilot of a self-guided internet coping group for women with early-stage breast cancer. *Annals of Behavioral Medicine, 30* (1), 54-64.

Piette, J. D., & Mah, C. A. (1997). The feasibility of automated voice messaging as an adjunct to diabetes outpatient care. *Diabetes Care, 20* (1), 15-21.

Appendix H. Data Table

Author	Year	Use of Technology	Usability	HIT Satisfaction

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,
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Anhoj, J., & Nielsen, L
6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

Pike, K. J., Rabius, V., McAlister, A., & Geiger, A. (2007). American Cancer Society's QuitLink: randomized trial of self-care on outcomes Internet assistance. *Nicotine & Tobacco Research, 9* (3), 415-420.

Rami, B., Popow, C., Horn, W., Waldhoer, T., & Schober, E. (2006). Telemedical support to improve glycemic control in adolescents with type 1 diabetes mellitus. *European Journal of Pediatrics, 165* (10), 701-705.

Rasmussen, L. M., Phanareth, K., Nolte, H., & Backer, V. (2005). Internet-based monitoring of asthma: a long-term, randomized clinical study of 300 asthmatic subjects. *Journal of Allergy & Clinical Immunology, 115* (6), 1137-1142.

Reid, R. D., Pipe, A. L., Quinlan, B., & Oda, J. (2007). Interactive voice response telephony to promote smoking cessation in patients with heart disease: a pilot study. *Patient Education & Counseling, 66* (3), 319-326.

Robertson, L., Smith, M., Castle, D., & Tannenbaum, D. (2006). Using the Internet to enhance the treatment of depression. *Australasian Psychiatry, 14* (4), 413-417.

Robertson, L., Smith, M., & Tannenbaum, D. (2005). Case management and adherence to an online disease management system. *Journal of Telemedicine & Telecare, 11 Suppl 2* , S73-75.

Rodgers, A., Corbett, T., Bramley, D., Riddell, T., Wills, M., Lin, R. B., et al. (2005). Do u smoke after txt? Results of a randomised trial of smoking cessation using mobile phone text messaging. *Tobacco Control, 14* (4), 255-261.

Rogers, M. A. M., Small, D., Buchan, D. A., Butch, C. A., Stewart, C. M., Krenzer, B. E., et al. (2001). Home monitoring service improves mean arterial pressure in patients with essential hypertension: a randomized, controlled trial. *Annals of Internal Medicine, 134* (11), 1024-1032, I1042.

Ross, S. E., Moore, L. A., Earnest, M. A., Wittevrongel, L., & Lin, C.-T. (2004). Providing a web-based online medical record with electronic communication capabilities to patients with congestive heart failure: randomized trial. *Journal of Medical Internet Research, 6* (2), e12.

Rotondi, A. J., Sinkule, J., & Spring, M. (2005). An interactive Web-based intervention for persons with TBI and their families: use and evaluation by female significant others. *Journal of Head Trauma Rehabilitation, 20* (2), 173-185.

Ruland, C. M., White, T., Stevens, M., Fanciullo, G., & Khilani, S. M. (2003). Effects of a computerized system to support shared decision making in symptom management of cancer patients: preliminary results. *Journal of the American Medical Informatics Association, 10* (6), 573-579.

Appendix H. Data Table

Author	Year	Outcomes		
		Health Satisfaction	Self-efficacy	Health Behavior
References		**References, continued**		
Albisser, A. M., Harris		Runge, C., Lecheler, J., Horn, M., Tews, J.-T., & Schaefer, M. (2006). Outcomes of a Web-based patient self-care on outcomes		education program for asthmatic children and adolescents. *Chest, 129* (3), 581-593.
An, L. C., Perry, C. L.,		Safren, S. (2002). Internet paging system helps improve adherence. Counseling is combined with reminders. *AIDS* intervention for colleg		*Alert, 17* (9), 118-119.
Andersson, G., Bergs		Sciamanna, C. N., Harrold, L. R., Manocchia, M., Walker, N. J., & Mui, S. (2005). The effect of web-based, trial. *British Journal of*		personalized, osteoarthritis quality improvement feedback on patient satisfaction with osteoarthritis care. *American Journal of Medical Quality, 20* (3), 127-137.
Andersson, G., Carlbr		Sciamanna, C. N., Novak, S. P., Houston, T. K., Gramling, R., & Marcus, B. H. (2004). Visit satisfaction and and in vivo group exp		tailored health behavior communications in primary care. *American Journal of Preventive Medicine, 26* (5), 426-430.
Andersson, G., Lunds		Shapiro, J. R., Reba-Harrelson, L., Dymek-Valentine, M., Woolson, S. L., Hamer, R. M., & Bulik, C. M. (2007). 361.		Feasibility and acceptability of CD-ROM-based cognitive-behavioural treatment for binge-eating disorder. *European Eating Disorders Review, 15* (3), 175-184.
Andrade, A. S. A., Mc		Shaw, B. R., Han, J. Y., Baker, T., Witherly, J., Hawkins, R. P., McTavish, F., et al. (2007). How women with breast adherence to highly a		cancer learn using interactive cancer communication systems. *Health Education Research, 22* (1), 108-119.
Andrewes, D. G., O'C		Shegog, R., Bartholomew, L. K., Parcel, G. S., Sockrider, M. M., Masse, L., & Abramson, S. L. (2001). Impact of a disorders. *Australian*		computer-assisted education program on factors related to asthma self-management behavior. *Journal of the American Medical Informatics Association, 8* (1), 49-61.
Anhoj, J., & Nielsen, L		Skeels, M. M., Kurth, A., Clausen, M., Severynen, A., & Garcia-Smith, H. (2006). CARE+ user study: usability and *6* (3), e23.		attitudes towards a tablet pc computer counseling tool for HIV+ men and women. *AMIA, Annual Symposium Proceedings/AMIA Symposium.* , 729-733.
Araki, I., Hashimoto, H		Smith, L., & Weinert, C. (2000). Telecommunication support for rural women with diabetes. *Diabetes Educator,* drinking behavior moc		*26* (4), 645-655.
Armstrong, K., Weber		Southard, B. H., Southard, D. R., & Nuckolls, J. (2003). Clinical trial of an Internet-based case management management decision		system for secondary prevention of heart disease. *Journal of Cardiopulmonary Rehabilitation, 23* (5), 341-348.
Artinian, N. T., Harder		Stinson, J. N., Petroz, G. C., Tait, G., Feldman, B. M., Streiner, D., McGrath, P. J., et al. (2006). e-Ouch: usability monitoring device for		testing of an electronic chronic pain diary for adolescents with arthritis. *Clinical Journal of Pain, 22* (3), 295-305.

Appendix H. Data Table

Author	Year	Quality of Life	Support	Withdrawals

References

Albisser, A. M., Harris

An, L. C., Perry, C. L.,
intervention for colleg

Andersson, G., Bergst
trial. *British Journal of*

Andersson, G., Carlbr
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Andrade, A. S. A., Mc
adherence to highly a

Andrewes, D. G., O'C
disorders. *Australian &*

Anhoj, J., & Nielsen, L
6 (3), e23.

Araki, I., Hashimoto, H
drinking behavior moc

Armstrong, K., Weber
management decision

Artinian, N. T., Harder
monitoring device for

References, continued

Strecher, V. J., Shiffman, S., & West, R. (2006). Moderators and mediators of a web-based computer-tailored self-care on outcomes smoking cessation program among nicotine patch users. *Nicotine & Tobacco Research, 8 Suppl 1* , S95-101.

Stuart, G. W., Laraia, M. T., Ornstein, S. M., & Nietert, P. J. (2003). An interactive voice response system to enhance antidepressant medication compliance. *Topics in Health Information Management, 24* (1), 15-20.

Taylor, Y., Eliasson, A., Andrada, T., Kristo, D., & Howard, R. (2006). The role of telemedicine in CPAP compliance for patients with obstructive sleep apnea syndrome. *Sleep & Breathing, 10* (3), 132-138.

Tsang, M. W., Mok, M., Kam, G., Jung, M., Tang, A., Chan, U., et al. (2001). Improvement in diabetes control with a monitoring system based on a hand-held, touch-screen electronic diary. *Journal of Telemedicine & Telecare, 7* (1), 47-50.

Turnin, M. C., Beddok, R. H., Clottes, J. P., Martini, P. F., Abadie, R. G., Buisson, J. C., et al. (1992). Telematic expert system Diabeto. New tool for diet self-monitoring for diabetic patients. *Diabetes Care, 15* (2), 204-212.

van den Berg, M. H., Ronday, H. K., Peeters, A. J., Voogt-van der Harst, E. M., Munneke, M., Breedveld, F. C., et al. (2007). Engagement and satisfaction with an Internet-based physical activity intervention in patients with rheumatoid arthritis. *Rheumatology, 46* (3), 545-552.

van den Brink, J. L., Moorman, P. W., de Boer, M. F., Pruyn, J. F. A., Verwoerd, C. D. A., & van Bemmel, J. H. (2005). Involving the patient: a prospective study on use, appreciation and effectiveness of an information system in head and neck cancer care. *International Journal of Medical Informatics, 74* (10), 839-849.

van der Meer, V., van Stel, H. F., Detmar, S. B., Otten, W., Sterk, P. J., & Sont, J. K. (2007). Internet-based self-management offers an opportunity to achieve better asthma control in adolescents. *Chest, 132* (1), 112-119.

Weinert, C., Cudney, S., & Winters, C. (2005). Social support in cyberspace: the next generation. *CIN: Computers, Informatics, Nursing, 23* (1), 7-15.

Wilkie, D. J., Huang, H. Y., Berry, D. L., Schwartz, A., Lin, Y. C., Ko, N. Y., et al. (2001). Cancer symptom control: feasibility of a tailored, interactive computerized program for patients. *Family & Community Health, 24* (3), 48-62.

Williamson, D. A., Walden, H. M., White, M. A., York-Crowe, E., Newton, R. L., Jr., Alfonso, A., et al. (2006). Two-Year Internet-Based Randomized Controlled Trial for Weight Loss in African-American Girls. *Obesity, 14* (7), 1231-1243.

Appendix H. Data Table

Author	Year	Adverse Effects	Other

References

Albisser, A. M., Harris self-care on outcomes

An, L. C., Perry, C. L., intervention for colleg

Andersson, G., Bergs trial. *British Journal of*

Andersson, G., Carlbr and in vivo group exp

Andersson, G., Lunds 361.

Andrade, A. S. A., Mc adherence to highly a

Andrewes, D. G., O'C disorders. *Australian &*

Anhoj, J., & Nielsen, L *6* (3), e23.

Araki, I., Hashimoto, H drinking behavior moc

Armstrong, K., Weber management decision

Artinian, N. T., Harder monitoring device for

References, continued

Winzelberg, A. J., Classen, C., Alpers, G. W., Roberts, H., Koopman, C., Adams, R. E., et al. (2003). Evaluation of an internet support group for women with primary breast cancer. *Cancer, 97* (5), 1164-1173.

Woodruff, S. I., Edwards, C. C., Conway, T. L., & Elliott, S. P. (2001). Pilot test of an Internet virtual world chat room for rural teen smokers. *Journal of Adolescent Health, 29* (4), 239-243.

Yon, B. A., Johnson, R. K., Harvey-Berino, J., Gold, B. C., & Howard, A. B. (2007). Personal digital assistants are comparable to traditional diaries for dietary self-monitoring during a weight loss program. *Journal of Behavioral Medicine, 30* (2), 165-175.

Zabinski, M. F., Wilfley, D. E., Pung, M. A., Winzelberg, A. J., Eldredge, K., & Taylor, C. B. (2001). An interactive internet-based intervention for women at risk of eating disorders: a pilot study. *International Journal of Eating Disorders, 30* (2), 129-137.

Zimmerman, L., Barnason, S., Nieveen, J., & Schmaderer, M. (2004). Symptom management intervention in elderly coronary artery bypass graft patients. *Outcomes Management, 8* (1), 5-12.

Appendix I: Study Quality Assessment Table with References

Randomized Controlled Trials

Author	Year	Random assignment?	Treatment allocation concealed?	Groups similar at baseline?	Eligibility criteria specified?
Andersson	2003	Unclear/NR	Unclear/NR	Yes	Yes
Andersson	2006	Yes	Unclear; NR	Yes	Yes
Andersson	2005	No	No	Yes	Yes
Andrade	2005	Unclear	No	Yes	Yes
Andrade	2001	Unclear	NR	NR	No
Araki	2006	Unclear	NR	Yes	Yes
Armstrong	2005	Unclear/NR	Yes	Unclear	Yes
Artinian	2003	Yes	NR	Yes	Yes
Bachofen	1999	No	No	NA	No
Barnason	2006	No; use of lot drawing method	Unclear; NR	Unclear	Yes
Barnason	2003	No; drawing lot used	Unclear; method NR	Yes	Yes
Barrera	2002	Unclear, implied	NR	Yes	Yes
Block	2004	Yes	Unclear; NR	No	Yes
Carlbring	2007	Yes	No	Yes	Yes
Cawsey	2000	NR	NR	NR	Yes
Chan	2003	Yes; random numbers table	NR	Yes	Yes
Chen	2006	No	N/A	Unclear	Minimal
Cho	2006	Yes	No	Yes	Yes

Randomized Controlled Trials, continued

Blinding?	Author	Care provider blinded?	Patient blinded?	High withdrawal/attrition rate?
Unclear; NR	Andersson	No	No	Yes; 14/44 (31.8%)
NR	Andersson	N/A	No	No; 2/64 (3.1%)
Unclear	Andersson	No	No	Yes; 32/117=27%
NR	Andrade	No	No	No
NR	Andrade	No	No	NR
NR	Araki	N/A	No	No; 1 patient excluded from analysis (missing data on lab)
Yes	Armstrong	Yes	Yes	Yes; 5/32 (25%)
NR	Artinian	No	No	NR
Unclear	Bachofen	No	No	No (0.09%)
Unclear	Barnason	No	No	Unclear; NR
Unclear	Barnason	No	No	Unclear; NR
NR	Barrera	N/A	No	Yes; 37/160 (23%); but results of ANOVA showed that those who dropped out were comparable to those who were assessed at T2
NR	Block	N/A	No	No; 10/491 (2%)
Unclear	Carlbring	No	No	No
NR	Cawsey	No	No	NR
No	Chan	No	No	No
NR	Chen	No	No	NR
Unclear	Cho	No	No	NR

Was the rate differential by group?	**Quality Rating**
No; self-help+telephone=7/24 (29.2%), self-help alone=7/20 (35.0%)	Fair
No; treatment=2/32 (6.2%), control=0	Fair
Yes; treatment=21/57 (36.8%) (main reason=treatment too demanding), control=11/60 (18.3%)	Poor
No	Fair
NR	Poor
No	Fair
Unclear	Fair
NR	Fair
NA	Poor
Unclear; NR	Poor
Unclear; NR	Fair
No; 10/40 (25%) in the Support Group condition and 9/40 (22%) in each of the other three conditions	Fair
NR	Fair
No	Fair
NR	Fair-Poor
No	Good
NR	Poor
NA	Good

Christensen	2004	Yes	Yes	No; significantly more years of eduction for one group compared to the others (15.0 vs 14.6 vs 14.4, P=0.04)	Yes

NR	Christensen	No	No	Yes; 111/525 (21.1%)

Yes; Treatment group 1=29/165 (17.6%), Treatment group 2=61/121 (33.5%), control=21/178 (11.8%); but did an ITT	Fair

Randomized Controlled Trials, continued

Author	Year	Random assignment?	Treatment allocation concealed?	Groups similar at baseline?	Eligibility criteria specified?
Cruz-Correia	2007	Yes	NR	NR, but crossover trial with patients serving as their own controls	Yes
Estabrooks	2005	No	No	Yes	Yes
Franklin	2006	Yes	NR	Yes	Yes
Frenn	2003	No	N/A	Yes for evaluable population, NR for initial population	No
Gega	2004	NA	No	Yes	Yes
Glasgow	2000	Unclear	Unclear; NR	Yes	Yes
Glasgow	2003	Unclear; NR	Unclear; NR	No; total cholesterol levels were significantly lower in the one group	Yes
Green	2008	Probably; NR	No; serially-numbered envelopes	No: Significantly fewer females in the one group	Yes
Guendelman	2002	NR	No	Yes	Yes
Gustafson	1994	NR	NR	NR	Yes
Gustafson	2001	Unclear	NR	Yes	Yes
Gustafson	2001	Unclear	Unclear; NR	Unclear	Yes
Gustafson	1999	Yes	Yes	Yes	No

Randomized Controlled Trials, continued

Blinding?	Author	Care provider blinded?	Patient blinded?	High withdrawal/attrition rate?
NR	Cruz-Correia	N/A	No	No; 2/21 (9.5%)
Unclear	Estabrooks	No	No	Yes
NR	Franklin	No	No	Somewhat; 14/92 (15.2%) were lost to follow-up or discontinued intervention
NR	Frenn	No	No	Yes; 34/137 (24.8%) for physical activity and 48/137 (35.0%) for dietary fat analyses
No	Gega	No	No	Yes (29%)
No	Glasgow	No	No	No; 43/320 (13.4%)
Unclear	Glasgow	No	No	Yes; 18%
Yes	Green	No	No	No; 48/778 (6.2%)
No	Guendelman	No	No	No; 9%
NR	Gustafson	No	No	NR
No	Gustafson	NR	NR	Yes; 15.5 % in the control group (23 out of 148) and 17 % in the Intervention group (25 out of 147)
No	Gustafson	No	No	No; 19/265 (7.2%)
NR	Gustafson	No	No	No; 21/219 (9.6%)

Was the rate differential by group?	Quality Rating
Yes: Internet=2/9 (22.2%), Paper=0; but, crossover and analyzed combined treatments periods with noncompleters excluded from both groups	Fair
Yes	Poor
Somewhat; Group 1=3/28 (10.7%), Group 2=6/33 (18.2%), Group3=5/31 (16.1%)	Fair
Unclear; distribution of dropouts NR	Poor
Unclear	Poor
Yes; basic=13/80 (16.2%), basic+telephone=13/80 (16.2%), basic+community resources=5/80 (6.2%), combined=12/80 (15.0%)	Fair
No; differences described as "ns", but data NR	Fair
No	Fair
No; health buddy gorup=4/66 (6.1%), asthma diary=8/68 (11.8%)	Fair
NR	Poor
No	Fair
No; control=7/132 (5.3%), experimental=12/133 (9.0%)	Fair
No; CHESS=13/107 (12.1%), control=8/97 (8.2%)	Fair

Holman	1996	Unclear	Unclear/NR	Unclear/NR	No

No	Holman	No	No	Yes; 16.7% (1 patient)

Yes; 0% in on/off sequence, 33% in off/on sequence	Fair-Poor

Randomized Controlled Trials, continued

Author	Year	Random assignment?	Treatment allocation concealed?	Groups similar at baseline?	Eligibility criteria specified?
Jan	2007	NR	No	Unclear	Yes
Japuntich	2006	Unclear; randomized- no details on approach	Unclear/NR	Yes	Yes
Jones	1999	NR	NR	NR	Yes
Jones	2001	Unclear	NR	Unclear; NR	Yes
Joseph	2007	Yes; random number generator	Unclear	Yes	Yes
Kashem	2006	NR	NR	No; SBP and DBP were significantly higher in the control group	Yes
Kenwright	2004	No	No	Yes	Yes
Kenwright	2005	Yes; random numbers table	No; opaque envelopes contained numbers	Unclear	Yes
Kim	2006	NR	NR	Unclear	Yes
Kim	2007	Yes	NR	Yes for completers (n=51); NR for all randomized participants (n=60)	Yes
Kosma	2005	Unclear/NR	NR	Yes	Yes
Kressig	2002	No	No	NA	Yes
Kwon	2004	Unclear	NR	Yes	Yes

Randomized Controlled Trials, continued

Blinding?	Author	Care provider blinded?	Patient blinded?	High withdrawal/attrition rate?
NR	Jan	No	No	No; 20/184 (10.9%)
No	Japuntich	No	No	Yes; Chess Group: 47.9% Control Group: 43%
NR	Jones	No	No	No; 87/525 (16.6%)
NR	Jones	No	No	Yes; 66/112 (58.9%); but conducted ITT analysis using LOCF method
Unclear	Joseph	No	No	No; 13.0%
NR	Kashem	No	No	NR
No	Kenwright	No	No	Yes; (37% in London clinic)
No	Kenwright	No	No	Yes; Scheduled support- 13.6% Requested support- 59%
NR	Kim	No	No	NR; but 100% included in analyses per Table 2
NR	Kim	No	No	No; 9/60 (15%)
NR	Kosma	NR	Somewhat	Yes 50% non-completers Multiple disabilty groups in study
No	Kressig	No	No	No
NR	Kwon	No	No	No; 9/110 (8.2%)

Was the rate differential by group?	**Quality Rating**
Probably not; of 184 "eligible", 5 families "declined",then 15 more excluded due to "at the request of the participants" or "lack of data due to internet failure": intervention=9/97 (9.3%), control=6/82 (7.3%)	Fair
No	Fair-Poor
Yes; personal computer=22/178 (12.3%), general computer=39/167 (23.3%), booklet information=26/180 (14.4%)	Poor
No	Fair
No	Fair
NR	Fair-Poor
Unclear	Fair
Yes; 45.4% difference. 2-tailed Fisher's exact test score = .004	Fair- Poor
NR	Fair
No; intervention=5/30 (16.7%), control=4/30 (13.3%)	Fair
No	Poor
NA	Fair
No: intervention=4/55 (7.3%), control=5/55 (9.1%)	Fair

Randomized Controlled Trials, continued

Author	Year	Random assignment?	Treatment allocation concealed?	Groups similar at baseline?	Eligibility criteria specified?
LaFramboise	2003	NR	NR	Yes for completers (n=90); NR for all randomized participants (n=103)	Yes
Lahm	1996	No	N/A	Yes	No
Lee	2007	No	No	Probably, unclear	Yes
Leu	2005	Yes	Yes	Unclear	Yes
Levetan	2002	Yes	NR	Yes	Yes
Lorig	2006	Unclear	Unclear- not reported	Yes	Yes
McKay	2001	Unclear; NR	Unclear	Yes	Yes
McMahon	2005	Yes; random variables generator	Unclear	Yes	Yes
McPherson	2006	Unclear; method of sequence generation NR	Unclear	No; computer group was older and had more knowledge at baseline	Yes
Meigs	2003	Unclear	Yes	Yes	No
Noel	2004	Unclear	NR	More patients in intervention group had caregiver (23% vs 0)	Yes
Owen	2005	Yes	NR	No; participants in treatment group were significantly more likely than those assigned to the control group to have received some treatment with a chemotherapeutic agent	Yes
Pike	2007	NR	NR	Yes	Yes
Rami	2006	Unclear	NR	Yes	Yes
Rasmussen	2005	Unclear/NR	No	Unclear	Yes

Randomized Controlled Trials, continued

Blinding?	Author	Care provider blinded?	Patient blinded?	High withdrawal/attrition rate?
NR	LaFramboise	No	No	No; 12/103 (12.6%)
No	Lahm	No	No	No; all 48 experiments completed
NR	Lee	No	No	Yes; 25% to 28.5%, due to failing to return or having invalid test results, differed depending on outcome
No	Leu	No	No	Yes; 8/50 (16%)
NR	Levetan	No	No	No; 22/150 (14.7%)
No	Lorig	No	No	Y: treatment: 22.5%; usual care: 15%
NR	McKay	No	No	No; 10/78 (12.8%)
No	McMahon	No	No	Yes; 19.2%
No	McPherson	No	No	No; 14/101 (13.9%)
No	Meigs	No	No	Unclear
Unclear	Noel	No	No	Unclear; attrition NR
No	Owen	No	No	No; 9/62 (14.5%)
NR	Pike	No	No	Yes; 2951/4651 (45.7%); but also reported results of ITT analysis
NR	Rami	No	No	No; 100% completed
Unclear/NR	Rasmussen	No	No	Yes; 47/300 (15.7%)

Was the rate differential by group?	**Quality Rating**
Unclear; distribution of dropouts NR	Fair
N/A	Poor
No; intervention=36/144 (25%) to 42/144 (29.2%); control=35/144 (24.3%) to 42/144 (29.2%)	Poor
No	Fair
No; 11/75 (14.7%) in each group	Fair
No	Fair
Yes; control=7/40 (17.5%) vs intervention=3/38 (7.9%)	Fair
Yes; Control=23.1%, Intervention=15.4%	Fair
No	Fair
Yes	Poor
Unclear; attrition NR	Fair
No; intervention=6/32 (18.7%) vs control=3/30 (10%)	Fair
No	Fair
No	Fair
No; (15, 12, 20 subjects, respectively; *P*= 0.26)	Fair

Reid	2007	Yes	Yes	No; significantly more patients in the control group completed some post-secondary eduction (P=0.05)	Yes

NR	Reid	No	No	No; 15/100 (15%)

No; UC=8/50 (16%), IVR=7/50 (14%)	Fair

Randomized Controlled Trials, continued

Author	Year	Random assignment?	Treatment allocation concealed?	Groups similar at baseline?	Eligibility criteria specified?
Robertson	2006	NA	No	NA	Yes
Robertson	2005	Unclear	No	Unclear	Yes
Rodgers	2005	Unclear/NR	Yes	Yes	Yes
Rogers	2001	Probably	Yes	No; BMI significantly higher in home service group	Yes
Ross	2004	Yes	Yes	Yes	Yes
Ruland	2003	Unclear/NR	Unclear/NR	Yes	Yes
Sciamanna	2005	Unclear/NR	Unclear/NR	Yes	Yes
Shapiro	2007	Yes Randomized block design	No	No	Yes
Shegog	2001	Unclear	Unclear; NR	Yes	No
Smith	2000	Unclear	Unclear; NR	Unclear; NR	Yes
Southard	2003	Yes	Unclear/NR	Yes	Yes
Stretcher	2006	Yes	NR	Yes	Yes
Stuart	2003	Unclear	NR	NR	Yes
Taylor	2006	Yes	NR	No; significantly more single patients in one group (11% vs 0, p=0.01)	Yes
Tsang	2001	Unclear	NR	No; duration of illness significantly greater for one group	No
Turnin	1992	Unclear	No	Yes	Yes

Randomized Controlled Trials, continued

Blinding?	Author	Care provider blinded?	Patient blinded?	High withdrawal/attrition rate?
Unclear	Robertson	No	No	Yes 22 % loss to follow up
Unclear	Robertson	No	No	Unclear
Yes	Rodgers	No	No	Yes; 440/1705 (25.8%), but performed ITT analysis with all patients with missing data
NR	Rogers	No	No	No; 10/121 (8.3%); dropouts included in analyses
NR	Ross	No	No	Yes for questionnaire returns at 12 months: 26/107 (24.3%), but 15/26 (57.7%) of withdrawals were due to death and all deaths were included in mortality and utilization of health services outcomes
NR	Ruland	No	No	No; 7/59 (11.9%)
Yes	Sciamanna	No	No	N/A; all measurements and interventions were done during a single session
Yes	Shapiro	No	No	Yes
NR	Shegog	No	No	No; 5/76 (6.6%)
Unclear; NR	Smith	No	No	Unclear/NR
No	Southard	No	No	No; 4/104=3.8%)
Unclear	Stretcher	NA	Yes	Yes
NR	Stuart	No	No	NR
NR	Taylor	N/A	No	No; 7/121 (6%)
No	Tsang	No	No	No=1/20 (5%)
Unclear	Turnin	No	No	Yes; (16% in group A and 1.9% in group B in study 1)

Was the rate differential by group?	**Quality Rating**
NA	Fair
NA	Poor
No; control=179/853 (21.0%), active=261/852 (30.6%)	Good
No; home service=4/60 (6.7%), usual care=6/61 (9.8%)	Good
Yes: SPPARO=16/54 (29.6%), Control=10/53 (18.9%)	Good
Unclear; group assignment of withdrawals NR	Fair
N/A	Fair
Yes	Good
NR	Fair
Unclear/NR	Poor
No; SI=4/53 (7.5%), UC=0	Fair
No	Fair
NR	Poor
No; TC=4/62 (6.4%), TM=3/59 (5.1%)	Fair
No: Group 1=0, Group 2=1/10 (10%)	Fair
Yes	Fair

Randomized Controlled Trials, continued

Author	Year	Random assignment?	Treatment allocation concealed?	Groups similar at baseline?	Eligibility criteria specified?
Williamson	2006	Yes	No	Yes	Yes
Winzelberg	2003	Unclear	Unclear/NR	Yes	Yes
Wylie- Rosett	2001	Yes	Unclear	Yes	Yes
Zimmerman	2004	Unclear	No	NR	Yes

Randomized Controlled Trials, continued

Blinding?	Author	Care provider blinded?	Patient blinded?	High withdrawal/attrition rate?
No	Williamson	No	No	Yes; (24% in control and 36% in treatment)
Unclear/NR	Winzelberg	No	No	Yes; 14/72 (19.4%)
Unclear	Wylie- Rosett	No	No	Unclear
Unclear	Zimmerman	No	No	No

Randomized Controlled Trial References

Andersson, G., Bergstrom, J., Hollandare, F., Carlbring, P., Kaldo, V., & Ekselius, L. (2005). Internet-based self trial. *British Journal of Psychiatry, 187* , 456-461.

Andersson, G., Carlbring, P., Holmstrom, A., Sparthan, E., Furmark, T., Nilsson-Ihrfelt, E., et al. (2006). Interne vivo group exposure for social phobia: a randomized controlled trial. *Journal of consulting and clinical psycholo*

Andersson, G., Lundstrom, P., & Strom, L. (2003). Internet-based treatment of headache: does telephone conta

Andrade, A. (2001). HIV adherence strategies take a high-tech route. *AIDS Alert, 16* (8), 97-98.

Andrade, A. S. A., McGruder, H. F., Wu, A. W., Celano, S. A., Skolasky, R. L., Jr., Selnes, O. A., et al. (2005). *A* adherence to highly active antiretroviral therapy in HIV-infected subjects with memory impairment. *Clinical Infec*

Araki, I., Hashimoto, H., Kono, K., Matsuki, H., & Yano, E. (2006). Controlled trial of worksite health education t drinking behavior modification. *Journal of Occupational Health, 48* (4), 239-245.

Armstrong, K., Weber, B., Ubel, P. A., Peters, N., Holmes, J., & Schwartz, J. S. (2005). Individualized survival c management decisions in women with BRCA1/2 mutations. *Journal of Clinical Oncology, 23* (36), 9319-9328.

Artinian, N. T., Harden, J. K., Kronenberg, M. W., Vander Wal, J. S., Daher, E., Stephens, Q., et al. (2003). Pilo device for patients with congestive heart failure. *Heart & Lung, 32* (4), 226-233.

Bachofen, M., Nakagawa, A., Marks, I. M., Park, J. M., Greist, J. H., Baer, L., et al. (1999). Home self-assessm compulsive disorder using a manual and a computer-conducted telephone interview: replication of a UK-US stu 549.

Barnason, S., Zimmerman, L., Nieveen, J., & Hertzog, M. (2006). Impact of a telehealth intervention to augmen outcomes of elderly patients undergoing coronary artery bypass grafting. *Heart & Lung, 35* (4), 225-233.

Barnason, S., Zimmerman, L., Nieveen, J., Schmaderer, M., Carranza, B., & Reilly, S. (2003). Impact of a hom artery bypass graft patients with ischemic heart failure on self-efficacy, coronary disease risk factor modificatior 158.

Was the rate differential by group?	Quality Rating
Yes	Good
No; intervention=8/36 (22.2%), WLC=6/36 (16.7%)	Fair
NR	Fair
No	Fair

f-help for depression: randomised controlled

t-based self-help with therapist feedback and in
gy, 74 (4), 677-686.
act add anything? *Headache, 43* (4), 353-361.

A programmable prompting device improves
ctious Diseases, 41 (6), 875-882.

through face-to-face counseling vs. e-mail on

curves improve satisfaction with cancer risk

ot study of a Web-based compliance monitoring

ent and self-treatment of obsessive-
udy. *Journal of Clinical Psychiatry, 60* (8), 545-

nt home health care on functional and recovery

e communication intervention for coronary
n, and functioning. *Heart & Lung, 32* (3), 147-

Randomized Controlled Trial References, continued

Barrera, M., Jr., Glasgow, R. E., McKay, H. G., Boles, S. M., & Feil, E. G. (2002). Do Internet-based support interventions change percep support?: An experimental trial of approaches for supporting diabetes self-management. *American Journal of Community Psychology, 3*

Block, G., Wakimoto, P., Metz, D., Fujii, M. L., Feldman, N., Mandel, R., et al. (2004). A randomized trial of the Little by Little CD-ROM: c effectiveness in increasing fruit and vegetable intake in a low-income population. *Preventing Chronic Disease, 1* (3), A08.

Carlbring, P., Gunnarsdottir, M., Hedensjo, L., Andersson, G., Ekselius, L., & Furmark, T. (2007). Treatment of social phobia: randomise delivered cognitive-behavioural therapy with telephone support. *British Journal of Psychiatry, 190* , 123-128.

Cawsey, A. J., Jones, R. B., & Pearson, J. (2000). The evaluation of a personalised health information system for patients with cancer. *U User-Adapted Interaction, 10* (1), 47-72.

Chan, D. S., Callahan, C. W., Sheets, S. J., Moreno, C. N., & Malone, F. J. (2003). An Internet-based store-and-forward video home tele improving asthma outcomes in children. *American Journal of Health-System Pharmacy, 60* (19), 1976-1981.

Chen, H., Yeh, M., & Chao, Y. (2006). Comparing effects of auricular acupressure with and without an Internet-assisted program on smo self-efficacy of adolescents. *Journal of Alternative and Complementary Medicine, 12* (2), 147-152.

Cho, J.-H., Chang, S.-A., Kwon, H.-S., Choi, Y.-H., Ko, S.-H., Moon, S.-D., et al. (2006). Long-term effect of the Internet-based glucose r HbA1c reduction and glucose stability: a 30-month follow-up study for diabetes management with a ubiquitous medical care system. *Dial* 2625-2631.

Christensen, H., Griffiths, K. M., & Jorm, A. F. (2004). Delivering interventions for depression by using the internet: randomised controlle *328* (7434), 265.

Cruz-Correia, R., Fonseca, J., Lima, L., Araujo, L., Delgado, L., Castel-Branco, M. G., et al. (2007). Web-based or paper-based self-man asthma--patients' opinions and quality of data in a randomized crossover study. *Studies in Health Technology & Informatics, 127* , 178-18

Estabrooks, P. A., Nelson, C. C., Xu, S., King, D., Bayliss, E. A., Gaglio, B., et al. (2005). The frequency and behavioral outcomes of goa management of diabetes. *Diabetes Educator, 31* (3), 391-400.

Franklin, V. L., Waller, A., Pagliari, C., & Greene, S. A. (2006). A randomized controlled trial of Sweet Talk, a text-messaging system to s with diabetes. *Diabetic Medicine, 23* (12), 1332-1338.

Frenn, M., Malin, S., Brown, R. L., Greer, Y., Fox, J., Greer, J., et al. (2005). Changing the tide: an Internet/video exercise and low-fat die middle-school students. *Applied nursing research : ANR, 18* (1), 13-21.

Gega, L., Marks, I., & Mataix-Cols, D. (2004). Computer-aided CBT self-help for anxiety and depressive disorders: experience of a Lond directions. *Journal of Clinical Psychology, 60* (2), 147-157.

Glasgow, R. E., Boles, S. M., McKay, H. G., Feil, E. G., & Barrera, M., Jr. (2003). The D-Net diabetes self-management program: long-te outcomes, and generalization results. *Preventive Medicine, 36* (4), 410-419.

Glasgow, R. E., & Toobert, D. J. (2000). Brief, computer-assisted diabetes dietary self-management counseling: effects on behavior, phy and quality of life. *Medical Care, 38* (11), 1062-1073.

Green, B., et al. (2008). Effectiveness of Home Blood Pressure Monitoring, Web Communication, and Pharmacist Care on Hypertension *299* (24), 2857-2867.

Randomized Controlled Trial References, continued

ptions of social *0* (5), 637-654.

demonstrated

d trial of internet-

User Modeling and

ehealth system for

oking cessation and

monitoring system on *betes Care, 29* (12),

d trial. *BMJ,*

nagement tools for 39.

al choices in the self-

support young people

et intervention with

on clinic and future

erm implementation,

ysiologic outcomes,

Control. *JAMA,*

Guendelman, S., Meade, K., Benson, M., Chen, Y. Q., & Samuels, S. (2002). Improving asthma outcomes and children: a randomized trial of the Health Buddy interactive device and an asthma diary. *Archives of Pediatrics &*

Gustafson, D. H., Hawkins, R., Boberg, E., Pingree, S., Serlin, R. E., Graziano, F., et al. (1999). Impact of a pat information/support system. *American Journal of Preventive Medicine, 16* (1), 1-9.

Gustafson, D. H., Hawkins, R. P., Boberg, E. W., Bricker, E., Pingree, S., & Chan, C. L. (1994). The use and im people living with AIDS and HIV infection. *Proceedings - the Annual Symposium on Computer Applications in M*

Gustafson, D. H., Hawkins, R. P., Boberg, E. W., McTavish, F., Owens, B., Wise, M., et al. (2001). CHESS: ten consumer health informatics for broad populations, including the underserved. *Medinfo, 10* (Pt 2), 1459-1563.

Gustafson, D. H., Hawkins, R., Pingree, S., McTavish, F., Arora, N. K., Mendenhall, J., et al. (2001). Effect of c breast cancer. *Journal of General Internal Medicine, 16* (7), 435-445.

Holman, R. R., Smale, A. D., Pemberton, E., Riefflin, A., & Nealon, J. L. (1996). Randomized controlled pilot tri regimen optimizer. *Medical Informatics, 21* (4), 317-326.

Jan, R.-L., Wang, J.-Y., Huang, M.-C., Tseng, S.-M., Su, H.-J., & Liu, L.-F. (2007). An internet-based interactive asthma outcomes in Taiwan. *Telemedicine Journal & E-Health, 13* (3), 257-268.

Japuntich, S. J., Zehner, M. E., Smith, S. S., Jorenby, D. E., Valdez, J. A., Fiore, M. C., et al. (2006). Smoking trial of an internet intervention as adjuvant treatment in a smoking cessation intervention. *Nicotine & Tobacco R*

Jones, R., Pearson, J., McGregor, S., Cawsey, A. J., Barrett, A., Craig, N., et al. (1999). Randomised trial of pe cancer patients. *BMJ, 319* (7219), 1241-1247.

Jones, R. B., Atkinson, J. M., Coia, D. A., Paterson, L., Morton, A. R., McKenna, K., et al. (2001). Randomised information for patients with schizophrenia.[erratum appears in BMJ 2001 May 5;322(7294):1103]. *BMJ, 322* (7

Joseph, C. L. M., Peterson, E., Havstad, S., Johnson, C. C., Hoerauf, S., Stringer, S., et al. (2007). A web-base urban African-American high school students. *American Journal of Respiratory & Critical Care Medicine, 175* (9

Kashem, A., Droogan, M. T., Santamore, W. P., Wald, J. W., Marble, J. F., Cross, R. C., et al. (2006). Web-bas patients with heart failure. *Telemedicine journal and e-health : the official journal of the American Telemedicine*

Kenwright, M., Marks, I., Graham, C., Franses, A., & Mataix-Cols, D. (2005). Brief scheduled phone support fro help for obsessive-compulsive disorder: randomized controlled trial. *Journal of Clinical Psychology, 61* (12), 149

Kenwright, M., & Marks, I. M. (2004). Computer-aided self-help for phobia/panic via internet at home: a pilot stu

Kim, C., & Kang, D. (2006a). Utility of a Web-based intervention for individuals with type 2 diabetes: the impact *CIN: Computers, Informatics, Nursing, 24* (6), 337-345.

Kim, H. (2007). A randomized controlled trial of a nurse short-message service by cellular phone for people wit *Studies, 44* (5), 687-692.

self-management behaviors of inner-city
& Adolescent Medicine, 156 (2), 114-120.

tient-centered, computer-based health

npact of a computer-based support system for
Medical Care , 604-608.
ı years of research and development in

omputer support on younger women with

al of a hand-held patient-oriented, insulin

e telemonitoring system for improving childhood

cessation via the internet: a randomized clinical
Research, 8 Suppl 1 , S59-67.
ersonalised computer based information for

trial of personalised computer based
290), 835-840.
ed, tailored asthma management program for
), 888-895.
sed Internet telemedicine management of
Association, 12 (4), 439-447.
m a clinician to enhance computer-aided self-
99-1508.
udy. *British Journal of Psychiatry, 184* , 448-449.

on physical activity levels and glycemic control.

h diabetes. *International Journal of Nursing*

Randomized Controlled Trial References, continued

Kosma, M., Cardinal, B. J., & McCubbin, J. A. (2005). A pilot study of a web-based physical activity motivational program for adults with p
Disability and rehabilitation, 27(23), 1435-1442.

Kressig, R. W., & Echt, K. V. (2002). Exercise prescribing: computer application in older adults. *Gerontologist, 42*(2), 273-277.

Kwon, H.-S., Cho, J.-H., Kim, H.-S., Song, B.-R., Ko, S.-H., Lee, J.-M., et al. (2004). Establishment of blood glucose monitoring system u
Diabetes Care, 27(2), 478-483.

LaFramboise, L. M., Todero, C. M., Zimmerman, L., & Agrawal, S. (2003). Comparison of Health Buddy with traditional approaches to he
management. *Family and Community Health, 26*(4), 275-288.

Lahm, E. A. (1996). Software That Engages Young Children with Disabilities: A Study of Design Features. [Journal Articles Reports - Re
Autism and Other Developmental Disabilities, 11(2), 115-124.

Lee, T.-I., Yeh, Y.-T., Liu, C.-T., & Chen, P.-L. (2007). Development and evaluation of a patient-oriented education system for diabetes n
International Journal of Medical Informatics, 76(9), 655-663.

Leu, M. G., Norris, T. E., Hummel, J., Isaac, M., & Brogan, M. W. (2005). A randomized, controlled trial of an automated wireless messag
diabetes. *Diabetes Technology & Therapeutics, 7*(5), 710-718; discussion 719-720.

Levetan, C. S., Dawn, K. R., Robbins, D. C., & Ratner, R. E. (2002). Impact of computer-generated personalized goals on HbA(1c). *Diab*
8.

Lorig, K. R., Ritter, P. L., Laurent, D. D., & Plant, K. (2006). Internet-based chronic disease self-management: a randomized trial. *Medica*
971.

McKay, H. G., King, D., Eakin, E. G., Seeley, J. R., & Glasgow, R. E. (2001). The diabetes network internet-based physical activity interv
pilot study. *Diabetes Care, 24*(8), 1328-1334.

McMahon, G. T., Gomes, H. E., Hickson Hohne, S., Hu, T. M., Levine, B. A., & Conlin, P. R. (2005). Web-based care management in pa
controlled diabetes. *Diabetes care, 28*(7), 1624-1629.

McPherson, A. C., Glazebrook, C., Forster, D., James, C., & Smyth, A. (2006). A randomized, controlled trial of an interactive educationa
for children with asthma. *Pediatrics, 117*(4), 1046-1054.

Meigs, J. B., Cagliero, E., Dubey, A., Murphy-Sheehy, P., Gildesgame, C., Chueh, H., et al. (2003). A controlled trial of web-based diabe
management: the MGH diabetes primary care improvement project. *Diabetes care, 26*(3), 750-757.

Noel, H. C., Vogel, D. C., Erdos, J. J., Cornwall, D., & Levin, F. (2004). Home telehealth reduces healthcare costs. *Telemedicine journal*
official journal of the American Telemedicine Association, 10(2), 170-183.

Owen, J. E., Klapow, J. C., Roth, D. L., Shuster, J. L., Jr., Bellis, J., Meredith, R., et al. (2005). Randomized pilot of a self-guided internet
women with early-stage breast cancer. *Annals of Behavioral Medicine, 30*(1), 54-64.

Pike, K. J., Rabius, V., McAlister, A., & Geiger, A. (2007). American Cancer Society's QuitLink: randomized trial of Internet assistance. *N*
Research, 9(3), 415-420.

Rami, B., Popow, C., Horn, W., Waldhoer, T., & Schober, E. (2006). Telemedical support to improve glycemic control in adolescents with
mellitus. *European Journal of Pediatrics, 165*(10), 701-705.

Randomized Controlled Trial References, continued

physical disabilities. Reid, R. D., Pipe, A. L., Quinlan, B., & Oda, J. (2007). Interactive voice response telephony to promote smokin pilot study. *Patient Education & Counseling, 66*(3), 319-326.

Robertson, L., Smith, M., Castle, D., & Tannenbaum, D. (2006). Using the Internet to enhance the treatment of 413-417.

ısing the internet. Robertson, L., Smith, M., & Tannenbaum, D. (2005). Case management and adherence to an online disease m *Telecare, 11 Suppl 2* , S73-75.

ɛart failure Rodgers, A., Corbett, T., Bramley, D., Riddell, T., Wills, M., Lin, R. B., et al. (2005). Do u smoke after txt? Resu using mobile phone text messaging. *Tobacco Control, 14*(4), 255-261.

search]. Focus on Rogers, M. A. M., Small, D., Buchan, D. A., Butch, C. A., Stewart, C. M., Krenzer, B. E., et al. (2001). Home mo pressure in patients with essential hypertension: a randomized, controlled trial. *Annals of Internal Medicine, 134*

nanagement. Ross, S. E., Moore, L. A., Earnest, M. A., Wittevrongel, L., & Lin, C.-T. (2004). Providing a web-based online m capabilities to patients with congestive heart failure: randomized trial. *Journal of Medical Internet Research, 6*(2

ging system for Ruland, C. M., White, T., Stevens, M., Fanciullo, G., & Khilani, S. M. (2003). Effects of a computerized system f management of cancer patients: preliminary results. *Journal of the American Medical Informatics Association, 1*

ɔetes Care, 25*(1), 2- Sciamanna, C. N., Harrold, L. R., Manocchia, M., Walker, N. J., & Mui, S. (2005). The effect of web-based, pers feedback on patient satisfaction with osteoarthritis care. *American Journal of Medical Quality, 20*(3), 127-137.

ɑl Care, 44*(11), 964- Shapiro, J. R., Reba-Harrelson, L., Dymek-Valentine, M., Woolson, S. L., Hamer, R. M., & Bulik, C. M. (2007). cognitive-behavioural treatment for binge-eating disorder. *European Eating Disorders Review, 15*(3), 175-184.

vention: a randomized Shegog, R., Bartholomew, L. K., Parcel, G. S., Sockrider, M. M., Masse, L., & Abramson, S. L. (2001). Impact o factors related to asthma self-management behavior. *Journal of the American Medical Informatics Association,*

ıtients with poorly Smith, L., & Weinert, C. (2000). Telecommunication support for rural women with diabetes. *Diabetes Educator,*

ɜl computer package Southard, B. H., Southard, D. R., & Nuckolls, J. (2003). Clinical trial of an Internet-based case management sys *Journal of Cardiopulmonary Rehabilitation, 23*(5), 341-348.

ɛtes disease Strecher, V. J., Shiffman, S., & West, R. (2006). Moderators and mediators of a web-based computer-tailored s patch users. *Nicotine & Tobacco Research, 8 Suppl 1* , S95-101.

and e-health : the Stuart, G. W., Laraia, M. T., Ornstein, S. M., & Nietert, P. J. (2003). An interactive voice response system to en *Topics in Health Information Management, 24*(1), 15-20.

t coping group for Taylor, Y., Eliasson, A., Andrada, T., Kristo, D., & Howard, R. (2006). The role of telemedicine in CPAP compli syndrome. *Sleep & Breathing, 10*(3), 132-138.

licotine & Tobacco Tsang, M. W., Mok, M., Kam, G., Jung, M., Tang, A., Chan, U., et al. (2001). Improvement in diabetes control w touch-screen electronic diary. *Journal of Telemedicine & Telecare, 7*(1), 47-50.

ɪ type 1 diabetes Turnin, M. C., Beddok, R. H., Clottes, J. P., Martini, P. F., Abadie, R. G., Buisson, J. C., et al. (1992). Telematic monitoring for diabetic patients. *Diabetes Care, 15*(2), 204-212.

g cessation in patients with heart disease: a

depression. *Australasian Psychiatry, 14*(4),

anagement system. *Journal of Telemedicine &*

ılts of a randomised trial of smoking cessation

onitoring service improves mean arterial
4(11), 1024-1032, I1042.

ıedical record with electronic communication
2), e12.

to support shared decision making in symptom
10(6), 573-579.

sonalized, osteoarthritis quality improvement

Feasibility and acceptability of CD-ROM-based

of a computer-assisted education program on
8(1), 49-61.

26(4), 645-655.

stem for secondary prevention of heart disease.

smoking cessation program among nicotine

hance antidepressant medication compliance.

ance for patients with obstructive sleep apnea

with a monitoring system based on a hand-held,

expert system Diabeto. New tool for diet self-

Randomized Controlled Trial References, continued

Williamson, D. A., Walden, H. M., White, M. A., York-Crowe, E., Newton, R. L., Jr., Alfonso, A., et al. (2006). Two-Year Internet-Based R Controlled Trial for Weight Loss in African-American Girls. *Obesity, 14* (7), 1231-1243.

Winzelberg, A. J., Classen, C., Alpers, G. W., Roberts, H., Koopman, C., Adams, R. E., et al. (2003). Evaluation of an internet support gr primary breast cancer. *Cancer, 97* (5), 1164-1173.

Wylie-Rosett, J., Swencionis, C., Ginsberg, M., Cimino, C., Wassertheil-Smoller, S., Caban, A., et al. (2001). Computerized weight loss i optimizes staff time: the clinical and cost results of a controlled clinical trial conducted in a managed care setting. *Journal of the Americal Association, 101* (10), 1155-1162; quiz 1163-1154.

Zimmerman, L., Barnason, S., Nieveen, J., & Schmaderer, M. (2004). Symptom management intervention in elderly coronary artery bypa *Outcomes Management, 8* (1), 5-12.

:andomized

roup for women with

ntervention
n Dietetic

ass graft patients.

Appendix I: Study Quality Assessment Table with References

Cohort Studies

Author	Year	Sufficient description of the groups?	Intervention/ treatment reliably ascertained?	Groups comparable?	Adequate adjustment of confounding factors?
Alibisser	2001	No	Unclear; usage metrics NR	Unclear; comparability of baseline characteristics NR, but possible differences in baseline HbA1c levels (9.5 vs 8.5)	No
An	2006	Yes	No	Yes for measured characteristics; unclear for unmeasured factors of motivation and readiness to quit	No
Gerber	2007	Yes	Yes	NA	NA
Kim	2006b	Yes	Yes	Baseline characteristics provided for group; pre-post test one sample	NA
McClure	2006	Yes	Yes	No; newsletter recruitees were more likely to be female, caucasian, and older	No
McTavish	1995	Yes	Yes	NA	NA
Nakagawa	2000	Yes	Yes	Unclear	No
Nguyen	2005	Yes	Yes	Yes	NA
Runge	2006	Yes	No; 45.2% of ITT population did not use the intervention	No; significantly more males in control group (79.2% vs 54.7% vs 65.9%)	Unclear
Safren	2003	No	No	NR	NR
Shaw	2007	Yes	Yes	Yes	Yes
Van den Brink	2005	Yes	Unclear	NA	NA
Van der Meer	2007	Yes	Yes	Yes	NA
Weinert	2005	Yes	Unclear; adherence NR	Unclear; baseline characteristics reported only as combined across groups	No adjustments made

Cohort Studies, continued

Groups assembled at a similar point?	Author	Blind to exposure status?	Follow-up long enough?	High withdrawal/attrition rate?
Unclear	Alibisser	Unclear	Yes; 1 year	Unclear
Unclear	An	Unclear	Unclear	No; 32/304 (10.5%)
Yes	Gerber	Unclear	Yes	No
NA	Kim	NA	No; 12 weeks	44 started;33 completed; 27% did not complete (n=12)
Unclear	McClure	Unclear	Unclear; NR	N/A; outcome measure is response rate
Yes	McTavish	Unclear	Yes	No
Yes	Nakagawa	No	Unclear; 3 weeks	Yes; 52.4%
Unclear	Nguyen	Unclear	Unclear; 3 months	Yes; 7/23 (30.4%)
Yes	Runge	NR	Yes; 12 months	Yes; 34.8%
NR	Safren	NR	Yes; 12 weeks	NR
Yes	Shaw	Yes	Unclear; 4 months	Unclear/NR
Yes	Van den Brink	Unclear	Yes	No
No	Van der Meer	Unclear	Yes	No
Unclear	Weinert	NR	Yes; 18 months	NR

Rate differential by group?	Quality Rating
Unclear	Poor
Yes; for abstinance survey; beta=22/47 (46.8%), RealU=10/257 (3.9%)	Poor
NA	Fair
NA	Fair
N/A; outcome measure is response rate	Fair
NA	Fair
N/A; historical controls selected, in part, based on availability of case notes and outcome data	Poor
Yes; booster group=5/12 (41.7%), primary=2/11 (18.2%)	Poor
Yes; control=20%, SPMP=63%, SPMP plus IEP=18.5%	Poor
NR	Poor
Unclear; NR	Fair
No	Fair
NA	Fair
NR	Poor

Cohort Study References

Albisser, A. M., Harris, R. I., Albisser, J. B., & Sperlich, M. (2001). The impact of initiatives in education, self-management training, and c self-care on outcomes in diabetes disease management. *Diabetes Technology & Therapeutics, 3* (4), 571-579.

An, L. C., Perry, C. L., Lein, E. B., Klatt, C., Farley, D. M., Bliss, R. L., et al. (2006). Strategies for increasing adherence to an online smo intervention for college students. *Nicotine & Tobacco Research, 8 Suppl 1* , S7-12.

Gerber, B. S., Solomon, M. C., Shaffer, T. L., Quinn, M. T., & Lipton, R. B. (2007). Evaluation of an internet diabetes self-management tr adolescents and young adults. *Diabetes Technology & Therapeutics, 9* (1), 60-67.

Kim, H., Kim, N., & Ahn, S. (2006b). Impact of a nurse short message service intervention for patients with diabetes. *Journal of Nursing* (266-271.

McClure, J. B., Greene, S. M., Wiese, C., Johnson, K. E., Alexander, G., & Strecher, V. (2006). Interest in an online smoking cessation p recruitment strategies: results from Project Quit. *Journal of Medical Internet Research, 8* (3), e14.

McTavish, F. M., Gustafson, D. H., Owens, B. H., Wise, M., Taylor, J. O., Apantaku, F. M., et al. (1994). CHESS: An interactive compute with breast cancer piloted with an under-served population. *Proceedings - the Annual Symposium on Computer Applications in Medical C*

Nakagawa, A., Marks, I. M., Park, J. M., Bachofen, M., Baer, L., Dottl, S. L., et al. (2000). Self-treatment of obsessive-compulsive disorde and computer-conducted telephone interview. *Journal of Telemedicine & Telecare, 6* (1), 22-26.

Nguyen, H. Q., Carrieri-Kohlman, V., Rankin, S. H., Slaughter, R., & Stulbarg, M. S. (2005). Is Internet-based support for dyspnea self-m patients with chronic obstructive pulmonary disease possible? Results of a pilot study. *Heart & Lung, 34* (1), 51-62.

Runge, C., Lecheler, J., Horn, M., Tews, J.-T., & Schaefer, M. (2006). Outcomes of a Web-based patient education program for asthmat adolescents. *Chest, 129* (3), 581-593.

Safren, S. A., Hendriksen, E. S., Desousa, N., Boswell, S. L., & Mayer, K. H. (2003). Use of an on-line pager system to increase adherer medications. *AIDS Care, 15* (6), 787-793.

Shaw, B. R., Han, J. Y., Baker, T., Witherly, J., Hawkins, R. P., McTavish, F., et al. (2007). How women with breast cancer learn using in communication systems. *Health Education Research, 22* (1), 108-119.

van den Brink, J. L., Moorman, P. W., de Boer, M. F., Pruyn, J. F. A., Verwoerd, C. D. A., & van Bemmel, J. H. (2005). Involving the patie study on use, appreciation and effectiveness of an information system in head and neck cancer care. *International Journal of Medical Inf* 839-849.

van der Meer, V., van Stel, H. F., Detmar, S. B., Otten, W., Sterk, P. J., & Sont, J. K. (2007). Internet-based self-management offers an c achieve better asthma control in adolescents. *Chest, 132* (1), 112-119.

Weinert, C., Cudney, S., & Winters, C. (2005). Social support in cyberspace: the next generation. *CIN: Computers, Informatics, Nursing,*

:omputer-assisted

)king cessation

'aining program for

Care Quality, 21 (3),

)rogram and effective

:r system for women
Care, 599-603.

er guided by manual

ıanagement in

ic children and

ıce to antiretroviral

ıteractive cancer

ent: a prospective
ormatics, 74 (10),

)pportunity to

23 (1), 7-15.

Appendix I: Study Quality Assessment Table with References

Case Series Studies

Author	Year	Representative sample?	Inclusion explicit?	Did individuals enter survey at a similar point?	Follow-up long enough?
Brennan	2001	Unclear; selection methods NR	NR	Unclear; medical history NR	No; 1 week
Cavan	2003	Unclear; how patients were selected	No;patients described as having Type I Diabetes	No; duration of diabetes ranged from 3 to 29 years	Unclear; 6 months
Cross	2007	Yes	Yes	No; average duration of disease was 5.8, with a SD of 5.1	Yes; 6 months
Durso	2003	No; investigator selected	No	No; 40% took ≥ 9 medications/day, 30% managed with insulin, others treated with oral antidiabetics	Unclear; 3 months
Ewald	2006	Yes	Yes	No; duration of hypertension ranged from 0 to 23 years	Yes; 12 weeks
Ferrer-Roca	2004	Unclear	Yes	Unclear	Yes
Finkelstein	1996	Yes	Yes	Yes	Yes; 12 months
Gerber	2007	No	Yes	No	Yes; 6 months
Gerbert	2003	No	Yes	NR	Yes; single administration
Gustafson	1998	No	Yes	Yes	Unclear; 10 weeks
Labiris	2004	Unclear; recruitment methods NR	No	Unclear; only age and gender reported	Yes; 8 years
Lieberman	2003	No; self-selected volunteers	Yes	Unclear	Yes
Ma	2006	No	No	Unclear; NR	Yes; 3 months
McDaniel	2002	Unclear if selection was consecutive	Yes	No	No; 1 week
Nguyen	2003	Unclear; selection criteria NR	N	Unclear	Unclear; 3 months
Piette	1997	Yes	Yes	No	Unclear; 4 weeks

Case Series Studies, continued

Outcomes assessed with objective criteria?	Author	Quality Rating
Yes	Brennan	Poor
No	Cavan	Poor
Partly; both laboratory and subjective measures used	Cross	Fair
Yes	Durso	Poor
Yes	Ewald	Fair
Yes	Ferrer-Roca	Poor
Yes	Finkelstein	Good
Yes	Gerber	Fair
Partly	Gerbert	Fair
Yes	Gustafson	Fair
Unclear; used "predetermined questionnaires, in Likert-scale forms	Labiris	Poor
Yes	Lieberman	Poor
Yes	Ma	Fair
Yes	McDaniel	Fair
Party	Nguyen	Poor
Yes	Piette	Fair

Appendix I: Study Quality Assessment Table with References

Case Series Studies, continued

Author	Year	Representative sample?	Inclusion explicit?	Did individuals enter survey at a similar point?	Follow-up long enough?
Skeels	2006	Unclear	No	Unclear/NR	No; single session
Stinson	2006	Yes	Yes	N/A	No; 1 session
van den Berg	2007	No	Yes	No	Yes; 12 months
van der Meer	2007	Yes	Yes	N/A	No; 1 month
Wilkie	2001	No	Yes	Unclear	Unclear; 1 month
Woodruff	2001	No	Yes	Unclear	Unclear; 3 months
Zabinski	2001	Unclear	Yes	Unclear	Unclear; 10 weeks

Case Series Studies, continued

Outcomes assessed with objective criteria?	Author	Quality Rating
Yes	Skeels	Poor
Yes	Stinson	Fair
Party: Yes for technology usage, No for satisfaction	van den Berg	Fair
Yes	van der Meer	Fair
Yes	Wilkie	Fair
No	Woodruff	Poor
Yes	Zabinski	Fair

Case Series Study References

Brennan, P. F., Moore, S. M., Bjornsdottir, G., Jones, J., Visovsky, C., & Rogers, M. (2001). HeartCare: an Inte patient home recovery after coronary artery bypass graft (CABG) surgery. *Journal of Advanced Nursing, 35* (5),

Cavan, D. A., Everett, J., Plougmann, S., & Hejlesen, O. K. (2003). Use of the Internet to optimize self-manage with DiasNet. *Journal of Telemedicine & Telecare, 9 Suppl 1* , S50-52.

Cross, R. K., & Finkelstein, J. (2007). Feasibility and acceptance of a home telemanagement system in patients pilot study. *Digestive Diseases & Sciences, 52* (2), 357-364.

Durso, S. C., Wendel, I., Letzt, A. M., Lefkowitz, J., Kaseman, D. F., & Seifert, R. F. (2003). Older adults using pilot study. *MEDSURG Nursing, 12* (5), 313-317.

Ewald, S., vor dem Esche, J., Uen, S., Neikes, F., Vetter, H., & Mengden, T. (2006). Relationship between the and blood pressure reduction with antihypertensive therapy : results of the OLMETEL (OLMEsartan TELemonit *Investigation, 26* (8), 439-446.

Ferrer-Roca, O., Cardenas, A., Diaz-Cardama, A., & Pulido, P. (2004a). Mobile phone text messaging in the m *Telemedicine & Telecare, 10* (5), 282-285.

Finkelstein, S. M., Snyder, M., Edin-Stibbe, C., Chlan, L., Prasad, B., Dutta, P., et al. (1996). Monitoring progre adherence. *Journal of Medical Engineering & Technology, 20* (6), 203-210.

Gerber, B. S., Solomon, M. C., Shaffer, T. L., Quinn, M. T., & Lipton, R. B. (2007). Evaluation of an internet dial adolescents and young adults. *Diabetes Technology & Therapeutics, 9* (1), 60-67.

Gerbert, B., Berg-Smith, S., Mancuso, M., Caspers, N., McPhee, S., Null, D., et al. (2003). Using innovative vid brief smoking and alcohol intervention. *Health Promotion Practice, 4* (3), 249-261.

rnet-based information and support system for
699-708.
ment of type 1 diabetes: preliminary experience

s with inflammatory bowel disease: a 6-month

cellular telephones for diabetes management: a

frequency of blood pressure self-measurement
toring blood pressure) study. *Clinical Drug*

anagement of diabetes. *Journal of*

ss after lung transplantation from home-patient

betes self-management training program for

leo doctor technology in primary care to deliver

Case Series Study References, continued

Gustafson, D. H., McTavish, F., Hawkins, R., Pingree, S., Arora, N., Mendenhall, J., et al. (1998). Computer support for elderly women w *JAMA, 280* (15), 1305.

Labiris, G., Papadopoulis, G., Lentaris, G., Kafentzis, M., & Krakakis, A. (2004). Internet based counseling to remote orthopedic patients *Scandinavica, 75* (3), 366-367.

Lieberman, D. Z. (2003). Determinants of satisfaction with an automated alcohol evaluation program. *CyberPsychology & Behavior, 6* (6)

Ma, C., Warren, J., Phillips, P., & Stanek, J. (2006). Empowering patients with essential information and communication support in the cc *International Journal of Medical Informatics, 75* (8), 577-596.

McDaniel, A. M., Hutchison, S., Casper, G. R., Ford, R. T., Stratton, R., & Rembusch, M. (2002). Usability testing and outcomes of an int program to promote smoking cessation in low income women. *Proceedings / AMIA, Annual Symposium.* , 509-513.

Nguyen, H. Q., Carrieri-Kohlman, V., Rankin, S. A., Slaughter, R., & Stulbarg, M. S. (2003). Pilot study of an online dyspnea self-manage COPD. *AMIA, Annual Symposium Proceedings/AMIA Symposium.* , 951.

Piette, J. D., & Mah, C. A. (1997). The feasibility of automated voice messaging as an adjunct to diabetes outpatient care. *Diabetes Care*

Skeels, M. M., Kurth, A., Clausen, M., Severynen, A., & Garcia-Smith, H. (2006). CARE+ user study: usability and attitudes towards a tal counseling tool for HIV+ men and women. *AMIA, Annual Symposium Proceedings/AMIA Symposium.* , 729-733.

Stinson, J. N., Petroz, G. C., Tait, G., Feldman, B. M., Streiner, D., McGrath, P. J., et al. (2006). e-Ouch: usability testing of an electronic for adolescents with arthritis. *Clinical Journal of Pain, 22* (3), 295-305.

van den Berg, M. H., Ronday, H. K., Peeters, A. J., Voogt-van der Harst, E. M., Munneke, M., Breedveld, F. C., et al. (2007). Engageme with an Internet-based physical activity intervention in patients with rheumatoid arthritis. *Rheumatology, 46* (3), 545-552.

van der Meer, V., van Stel, H. F., Detmar, S. B., Otten, W., Sterk, P. J., & Sont, J. K. (2007). Internet-based self-management offers an c achieve better asthma control in adolescents. *Chest, 132* (1), 112-119.

Wilkie, D. J., Huang, H. Y., Berry, D. L., Schwartz, A., Lin, Y. C., Ko, N. Y., et al. (2001). Cancer symptom control: feasibility of a tailored, computerized program for patients. *Family & Community Health, 24* (3), 48-62.

Woodruff, S. I., Edwards, C. C., Conway, T. L., & Elliott, S. P. (2001). Pilot test of an Internet virtual world chat room for rural teen smoke *Adolescent Health, 29* (4), 239-243.

Zabinski, M. F., Wilfley, D. E., Pung, M. A., Winzelberg, A. J., Eldredge, K., & Taylor, C. B. (2001). An interactive internet-based interven risk of eating disorders: a pilot study. *International Journal of Eating Disorders, 30* (2), 129-137.

Abbreviations for all Quality Assessments

BMI = body mass index
CIT = conventional insulin therapy
CTRL = control
IIT = individualized insulin therapy
ITT = Intention to treat analysis
IVR = interactive voice response
JAMA = Journal of the American Medical Association
NA=not applicable
NR=not reported
NS=not significant
RA = Rheumatoid Arthritis
SD = standard deviation
SDS = standard deviation scores
SI = special intervention
UC = usual care
WLC = weight list control