Department of Veterans Affairs

Quality Enhancement Research Initiative (QUERI)

Strategic Plan

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1. Executive Summary

This is the initial Strategic Plan for the eHealth QUERI. The mission of the eHealth QUERI is to work with VA program offices to implement into practice and evaluate eHealth as a model of care for augmenting efficient, safe, high-quality, continuous, coordinated delivery of evidence-based services to Veterans and families. Our founding operational partner is the My Health*e*Vet program office within the Office of Health Information. Our focus will be to assess and assist the implementation of My Health*e*Vet (MHV) applications, including Secure Messaging and the personal health record and its components; and provide rigorous evaluations of the impact of these applications on Veteran health care processes, utilization, satisfaction, and health outcomes.

To support this mission, we have recruited a practice-based research network of investigators from across VA who have previously participated in the design and evaluation of eHealth tools. We have two major goals, 1) to augment **Access** and **Meaningful Use** of eHealth; and 2) to enhance Veteran **self-management and participation in collaborative care** through the design, evaluation, and implementation of appropriate eHealth tools.

My HealtheVet (MHV) is the VA personal health record (PHR). A PHR is a "set of computer-based tools that allow people to access and coordinate their lifelong health information and make appropriate parts of it available to those who need it."[1] MHV is designed to "empower Veterans to become informed partners in their health care."[2] The MHV website has tiers of access: visitor, registrant, and in-person authenticated user (IPA). IPA'd users have access to many tools[3] (e.g: wellness reminders for preventative care and enhanced prescription drug information). Currently, a limited number of pilot sites allow in-person authenticated users use of secure messaging with providers, and national roll-out will be implemented in 2011.

The eHealth model of care is envisioned to augment, not replace, traditional services such as telephone contacts and in-person clinical visits. eHealth tools can support more continuous care between visits, and allow for completion of routine tasks efficiently so that Veterans and caregivers can get the most out of face-to-face visits. Thus, **Goal #1** strives to support augmented access to VA healthcare services. To achieve this goal, we will work closely with the My Health*e*Vet (MHV) program to understand how to best increase access and meaningful use of MHV tools by veterans, caregivers, and providers. Short-term process measures related to Goal #1 include increasing in-person authentication and overall sustained use of the MHV tools by Veterans, their informal caregivers, and providers. Longer-term outcomes include reductions in missed appointments, and increased total "contacts" with the VA system.

In *Crossing the Quality Chasm*, the Institute of Medicine began to emphasize that care should not occur just within face-to-face visits, but that "access to care should be provided over the Internet" to foster continuous healing relationships.[4] Subsequent reports[5-7] have continued to support the concept of eHealth tools to increase patient access, activate patients in their care, and re-engineer patient-centered care. Thus, **Goal #2** emphasizes the primary function of access to eHealth, increasing support for patient self-management and participation in care. Currently, patients can self-manage their health by refilling their medications through MHV, tracking their vitals, following up on individually tailored "wellness reminders" about health screening, and secure messaging with their provider (where available). Future functionalities will allow patients to set and track health goals, and further support healthy behaviors. Existing and future functionalities of MHV allow veterans to have access to their health information and share that information. The "Blue Button" was launched in the summer of 2010 and over 100,000 unique MHV users have downloaded an extract of information from MHV using the Blue Button. Our QUERI projects will emphasize desirable process measures including improved medication adherence, medication reconciliation, and reduced duplicate testing due to

increased portability and sharing of health information by functions such as the "Blue Button." Further, we plan to evaluate the effectiveness of tools such as Secure Messaging (SM) to enhance communication, change behavior, and result in improved disease prevention and control. Patients value SM,[8-10] and the use of SM is associated with improved quality measures among patients with chronic conditions.[11, 12] Research suggests that SM has multiple advantages including reducing inefficient "telephone tag." Despite these types of SM applications, many clinicians perceive SM as increasing work burden.[13-16] The eHealth QUERI will evaluate SM from the perspective of the provider and the Veteran, understanding the potential impact on workflow and workload.

Highlights of previous work by eHealth Investigators

Over the past decade, our investigators have maintained a funded program in patient-centered technology research and provider-facing Health Informatics studies supported by VA, AHRQ, NIH, and Robert Wood Johnson Foundation. We have evaluated differences[17, 18] and disparities[19-21] in patient eHealth adoption. Our team has been engaged with the MHV program office over the past three years through the Research Infrastructure and Performance Evaluation Work Groups of the MHV Clinical Advisory Board. Drs. Weaver, Hogan, and Smith have conducted a national survey of QUERI and HSR&D investigators related to MHV. This needs assessment guides our plans to consult with disease-focused QUERIs as we launch eHealth QUERI activities. Several of our team members published a manuscript with Kim Nazi from the MHV program office, proposing an initial research agenda for MHV.

The eHealth QUERI plans to continue current strong connections with the disease-focused QUERIs. Current relationships have generated QUERI-funded MHV research including current rapid response projects directed by Drs. Hogan and McInnes. Through the Spinal Cord Injury QUERI, Dr. Hogan is directing a project (RRP 09-129) to understand the issues associated with implementing a campaign to promote use of the MHV system among veterans with spinal cord injuries and disorders (SCI/D) and their healthcare providers, and to assess the effectiveness of two different promotional campaign strategies. Utilizing a 2-phase study design, the RRP's specific objectives are: 1. To understand the factors that influence implementation of the MHV system at VA SCI Centers; 2. To compare two implementation approaches, one characterized by enhanced facilitation and the other characterized by basic facilitation. A second project, funded through the HIV/Hepatitis QUERI (McInnes, RRP 09-192), is pilot testing a training program to increase use of My Health*e*Vet (MHV) for self-management of chronic conditions. Veterans with HIV and Hepatitis have participated in a series of training sessions. Dr. McInnes plans to expand this intervention through distance learning and interactive DVDs in the future. In another project (RRP 08-251), Dr. McInnes assessed the potential of using secure messaging and email for social marketing of HIV testing. He assessed veteran and provider attitudes about MHV for public health messaging. Patients believed that information available electronically could be more convenient and understandable than health information provided verbally during a clinical encounter.

In a recent collaboration, Dr. Houston, Director and Research Coordinator of the eHealth QUERI, and Kim Nazi from the MHV program office approached the Pew Internet and American Life project. They were successful in persuading Pew to include two questions on veteran status and use of VA on a national survey conducted by Pew. After IRB approval was obtained, this information was transferred to the eHealth QUERI. Analyses will compare use of technology and attitudes among veterans receiving healthcare in VA, veterans not using VA, and non-veterans. This small project is one more example of leveraging existing relationships to further understand the potential of eHealth in VA.

Planned Future Work for eHealth QUERI

The eHealth QUERI will conduct innovative implementation science research and consult with other investigators across VA. Since the initial concept paper for the QUERI was approved, consulting has already expanded to include new investigators at the Boston VA, and at the VA National Center for Health Promotion and Disease Prevention.

Core QUERI funds will be used to support our administrative infrastructure and build capacity to respond to ad hoc requests from program. Our investigators will continue to serve on the MHV Performance Evaluation Work Group, and use funds to augment analyses of existing datasets (such as the Pew Data summarized above). Work will be centered in behavioral science, data systems and analyses, economics, and systems engineering scientific cores. These cores will provide consulting services and support subsequent research projects funded through QUERI mechanisms (RRP and SDP) and HSR&D funding.

To most efficiently evaluate eHealth implementation, we will use core funds to enhance access to data available within the VA system of records. Our initial goal is to establish a national cohort of in-person authenticated Veterans, and a matched group that has not used MyHealth*e*Vet. The goal of advancing data systems for eHealth implementation and evaluation will only be possible with the collaboration and partnership of OI&T, PCS Medical Informatics, OQP, OHI and Research. To meet these challenges, the VA Connecticut Informatics group (Dr. Brandt and colleagues at the PRIME REAP) along with partners from OI&T (Bates, Erdos), CHIOs (Atkins) and academic partners from Yale University and the NLM funded informatics fellowship program provide an ideal environment for this aspect of the eHealth QUERI. Dr. Brandt will collaborate with the VA Informatics and Computing Infrastructure (VINCI) as well as work with the Region 4 data warehouse to identify data elements to add to the MHV cohort. This registry of MHV-authenticated (IPA'd) Veterans will serve operational needs, and authentication rates are now a performance measure in some VISNs, as well as QUERI and program office evaluation needs.

Next, we plan a set of high-priority implementation research studies, further detailed under our strategic goals. We have solicited project ideas from affiliated investigators in the proposed research network. Investigators were asked to submit one to two-page concept papers for QUERI projects. These proposed projects are being fully vetted by the Research and Clinical Coordinators.

One set of implementation projects, for submission as rapid response projects, are entitled RAMP-up (Reengineering Authentication for MHV in Phases). RAMP-up is proposed as a portfolio of related projects. Our overall goal for RAMP-up is to test a growing set of implementation enhancements that can produce short-term (e.g. 1 year) and mid-term (e.g. 3 years) IPA gains at VA facilities. RAMP-up is designed to respond to Goal #1 of the QUERI.

Our second portfolio of projects relates to Secure Messaging in healthcare delivery, evaluating workload and workflow of SM. The insights and data generated will provide a foundation for creating *simulations* that can be used to understand the potential effects of new workflows, incentives, and changes in message volume and type, without disrupting actual operations. Also the potential impact of using secure messaging (e.g: for enhancing in-person visits and conducting after-visit follow-up) will be assessed through multi-site interventional studies.

Future studies will evaluate the effectivess of eHealth tools for self-management and behavior change. The QUERI will align with the new focus of VA on prevention, engaging the National Center for Health Promotion and Disease Prevention.

2. Focus and Scope

The eHealth QUERI is being established within the context of the New Models of Care Transformational Initiative. As stated within the 2010 VHA New Models operational plan, "An eHealth Quality Enhancement Research Initiative (QUERI) Center will be established to assess and assist the implementation of My Health*e*Vet (MHV) applications, including Secure Messaging and the personal health record and its components; and provide rigorous evaluations of the impact of these applications on Veteran health care, satisfaction, and health outcomes."

Virtual Care in the operational plan includes Telehealth and Non-Telehealth (eHealth). Telehealth includes telephone outreach, teleconsultation, store and forward technologies, and patient-directed home monitoring devices. eHealth includes the MyHealth*e*Vet Personal Health Record, its functions, and future patient-directed technologies delivered through mobile applications and kiosk systems. Thus, our mission is to respond to our primary operational partner, the MyHealth*e*Vet program office, and other components of New Models of Care.

The eHealth model of care uses effective technologies to connect Veterans with the healthcare system. Importantly, eHealth has great potential to improve the provision of healthcare if the tools selected are accessible, acceptably usable, and integrated to provide Veterans and families a consistent method of interaction with VA.   An exciting core set of tools is now available within My Health*e*Vet. These tools are rapidly expanding, thus requiring rigorous, ongoing evaluation and careful implementation.

3. Significance and Consequences

Increasing access, supporting self-management, and patient-provider collaboration are major goals of the VA transformational initiatives.

"Access to healthcare is an important prerequisite to obtaining quality care,"[22] according to a 2003 report published by the Agency for Healthcare Research and Quality (AHRQ). Patients who have access to a Patient-Centered Medical Home (PCMH) with care that is continuous, collaborative and coordinated by a designated primary care provider (PCP) receive more preventive screenings and have increased rapport with their provider. They are more likely to seek out their primary care provider as a first-line resource as opposed to letting their condition escalate and seeking out an emergency department (ED) for services.[23, 24]   The Institute of Medicine has called for innovations to move from episodic care to continuous, coordinated care,[25] and specifically proposed eHealth applications such as provider-patient electronic communication (e.g.: Secure Messaging) as an important aspect innovation. Thus, eHealth is one component of a new model of care to achieve the goal of continuous access to care.

In addition, self-management is an important factor in improving health, especially with respect to complex, chronic illnesses.[26]   Just as patients afflicted with diabetes mellitus (DM) are taught to monitor their serum glucose levels[27] and adjust their insulin doses independent of provider supervision, patients with human immunodeficiency virus (HIV) are taught medication management skills to help control their chronic condition.[28-30] Development and implementation of these self-management skills through patient education help increase patient autonomy while slowing progression of disease.[31] Ciccone et al. found that care of complex chronic conditions needs to be collaborative and coordinated to effectively improve health.[32]   Engaging the patient to be an active participant in his or her care, along with utilizing a team-based, task-oriented, collaborative approach to shared decision making have been shown to increase favorable self-report and clinician-sought outcome measurements.[33]

4. Evidence Base

Houston and colleagues from the consumer health informatics workgroup of the American Medical Informatics Association proposed a definition of consumer health informatics in 2001, "a subspecialty of medical informatics which studies from a patient/consumer perspective the use of electronic information and communication to improve medical outcomes and the health care decisionmaking process."[34] eHealth is a subdomain of consumer health informatics focused on patient-directed technologies that intersect with clinical care[35], however no universal definition of eHealth exists. eHealth tools are myriad and include computer-tailored health behavior change interventions, online support groups, secure patient-provider electronic messaging systems, transactional systems allowing medication appointment requests, medication refills, and data collection and feedback tools (telehealth technologies and wearable sensor arrays). One key strategy to delivery of eHealth tools is the Personal Health Record (PHR) a "set of computer-based tools that allow people to access and coordinate their lifelong health information and make appropriate parts of it available to those who need it."[1]

The eHealth model of care is only just expanding, and the VA is an international leader. To our knowledge, no personal health record other than MHV has over 200,000 individuals authenticated to use the system. There are many challenges with summarizing evidence for eHealth, including the fact that no standard definition exists. Example definitions, and perceived potential values of eHealth, including reduced cost, improved quality, safety, and self-management are summarized in Table 1.

Table 1: Potential Values of eHealth		
Article Name (Authors)	**Definition of E-Health**	**Perceived Potential Value**
Challenges and Opportunities of eHealth Research (Ahern, D)[36]	"Sophisticated interactive and individually tailored programs through the Internet and Internet-enabled devices for health behavior change and chronic disease management" (pg. S75).	"Driven largely by the need to reduce medical errors and cost through improved efficiency." (pg. S75).
A Framework and Approach for Assessing the Value of personal Health Records (PHR) (Johnston et al)[37]	"PHRs are defined as ' a set of computer-based tools that allow people to access and coordinate their lifelong health information and make appropriate parts of it a available to those who need it.'" (pg. 374)	Reduction in direct medical costs, improvement in health care efficiency, and enhanced quality of care. Enhancing patient-provider communication, increased transparency with patient care lifecycle (insurance coverage, compliance, etc.) Increased patient education on lifestyle choices and treatment options, access to key patient health information (summaries of important exposures/risks/conditions relevant to the patient's medical history) Centralized location for tracking of patient vital statistics, and automated patient reminders for diagnostic tests and practitioner evaluations.
Evaluating eHealth Interventions: The Need for Continuous Systemic Evaluation. (Catwell, L. and Sheikh, A.)[38]	"Consumer-centered model of health care where stakeholders collaborate, utilizing ICTs [information communication technology systems …] to manage, […] arrange and deliver [healthcare.]"	"Substantially reduce costs and improve efficiency." "Reduction in the high number of patients who are inadvertently harmed by medical errors and violations." (pg. 2)

Improvements in health and quality measures

Evidence for eHealth is growing.[12, 39-44] For example, in a recent study, patients using asynchronous online secure messaging (SM) (N = 35,423) with doctors (N = 3,092) were matched (baseline HEDIS measures, age, sex, primary care provider, diagnostic cost group score) to patients who did not use SM.[12]   At follow-up, those using SM had improved on all measures, an average 2.4-6.5 percent over non-SM patients (all p < 0.001). Rates of receipt of services (retinopathy and neuropathy testing) also improved in the SM group as compared with the matched comparison.[12]

Improvements in self-management, patient empowerment, and self-efficacy

Randomized trials of eHealth tools have increased medication adherence in heart failure (general adherence (MOS compliance score 85 vs. 78, p=0.01)[45] and other self-management behaviors)[46]. A recent review identified evidence for improvements in patient empowerment and self-efficacy with web-delivered eHealth tools.[47] In individual studies, compared with usual care, effects of eHealth were seen on the Diabetes Empowerment Scale (2 studies, standardized mean difference [SMD] = 0.61, 95% CI 0.29 - 0.94]), on self-efficacy measured with disease-specific self-efficacy scales (9 studies, SMD = 0.23, 95% CI 0.12 - 0.33), and on mastery measured with the Pearlin Mastery Scale (1 study, mean difference = 2.95, 95% CI 1.66 - 4.24).

Improvements in health system efficiency

Although implementation of eHealth is limited, evidence for enhanced efficiency of care does exist, noting offsets in telephone medicine[15] and in-person visits[48] and increase in provider productivity[14] with the advent of SM. Additional research is needed understanding the potential cost savings of eHealth tools to the VA system. There is also a growing realization that the role that healthcare providers and the larger healthcare system play in the shaping of PHR adoption and use must be accounted for in PHR initiatives [49, 50]. Thus, eHealth has the potential to reengineer both the quality and efficiency of care. However, rigorous evaluation and carefully planning must be undertaken to optimize implementation and effectiveness.

5. Current Practices and Gaps

In 2003, the Veterans and Consumers Health Informatics Office (V/CHIO), a division of the Chief Health Informatics Office (CHIO), in partnership with other relevant VHA offices, launched an integrated web-based PHR called My Health*e*Vet (MHV) with the goals of empowering Veterans to participate in the management of their health, fostering collaboration among healthcare stakeholders, and promoting improved health outcomes. Available at http://www.myhealth.va.gov, MHV brings together health information self-entered by veterans, data extracts from VHA's electronic medical record, self-management tools, health education materials, and links to other online resources.

My Health*e*Vet is based on a tiered access model of access where available system functionality increases at each level.[3] At the most basic level, anyone with an Internet-connected computer can visit MHV and access articles and trusted health education resources. Those who register online and create an account can utilize additional functions. VHA patients who complete an identity verification process ("in-person authentication" or IPA) at a local VHA facility can access the full range of system functionality. New functionalities soon to be released include viewing VHA appointments and notifications, additional EHR data extracts (vitals, labs, allergies), and the delegation of account access to others.

As of July, 2010, MHV had been visited over 42 million times, had over 1 million registrants (85% are Veterans), and over 200,000 in-person authenticated users (MHV Program Office, 2010). Ongoing feedback about MHV is obtained through the American Customer Satisfaction

Index (ACSI) Survey, an online, industry standard survey tool. Recent analysis of over 100,000 responses revealed that the vast majority of system adopters are male (91%), between 51 and 70 years old (68%), served during the Vietnam War (60%), access MHV from home (96%), and use the system to order VHA prescription refills (75%).[3] Reported satisfaction with the system was high (8.3/10.0), and when asked about additional features desired, respondents identified strong desire for the ability to view upcoming VHA appointments (87%), schedule/change their VHA appointments (74%), view information from their VHA medical record (73%), and have online secure communication with their doctor (64%). These features are in varying stages of implementation.

As noted, the MHV PHR is the most widely used national eHealth tool, with over 200,000 authenticated users. Although there are no direct comparison eHealth tools or healthcare systems, other large payers (e.g.: Kaiser.org, and Group Health) have adopted PHRs. A 2010 national survey conducted for the California Health Foundation found that 15% of respondents had renewed a prescription online, 6% had looked at a medical test result)[51]. The current success in adoption of MHV has been driven by the program office. Example strategies for increasing adoptions are described in Table 2. A key role of the eHealth QUERI will be to advance methods for initial adoption and effective and sustained use of the tools.

Table 2: Example Best Practices for Marketing My Health*e*Vet at facilities*
MHV days/fairs conducted at both parent facilities and CBOCs to promote MHV and IPA. Integrate MHV into new patient and staff orientation. Engage employees and volunteers in planning and conducting MHV-oriented events and activities. MHV and IPA information included in appointment letters and prescription bags.
* Excerpt from MHV Implementation white paper

There are current limitations in data systems to measure use of eHealth. In order to measure the impact of program office and QUERI activities, we need detailed measurement systems. In addition to understanding who has been in-person authenticated with MHV, it is important to understand the extent to which eHealth QUERI Veterans continue to use MHV with the eventual goal of assessing the extent to which use of MHV (and specific types of use) is associated with improvement in clinical outcomes.

Linkages between eHealth programs in VA (My Health*e*Vet) and research are in need of expansion. VA researchers, clinicians and operations staff see many possibilities for research and implementation involving MHV. Dr. Fran Weaver and colleagues examined the perceptions that these stakeholders have of MHV, and documented current or planned research involving MHV. An internet-based survey was fielded in conjunction with a recent MHV-related cyber seminar in August 2010. E-mail messages that included a hyperlink to the survey were sent to 465 seminar registrants. Questions focused on MHV perceptions and awareness, current research activities, use of particular features and functionalities of MHV, experience and interest in ehealth technologies, and demographics. 191 individuals (41% response rate) completed the survey; 81.6% were based at a VA facility, 50.8% were engaged in research and 24.6% were affiliated with a QUERI or HSR&D resource center.

Before the cyber-seminar, 43.5% were moderately or very familiar with MHV, 84.8% had visited the website, and 71.7% had discussed MHV with colleagues. Participants were interested in using the following MHV-related data sources: patient self-entered information (43.5%), EMR extracts (39.3%), web-trend reports (35.1%), administrative data (29.3%), and the American Customer Satisfaction Survey (22.5%). Respondents agreed or strongly agreed that MHV can be used to deliver heathcare interventions (61.2%), promote healthy behavior (60.7%), and

understand patient self-management issues (63.7%). Other eHealth technologies that participants have used in their research include: cell phones/text messaging (20%), PDA (10%), social media (8.9%), home telehealth (23.6%), mobile applications (8.4%), virtual reality (7.8%), and meeting support tools. Kiosks, simulation, and interactive voice response systems were also mentioned. Thus, there is a strong interest across VA research, clinical and operations staff in working with MHV and other patient-facing technologies as a means to study, intervene, and measure patient outcomes.

6. Significant Influences on Current Practices and Outcomes

The promise of eHealth and patient-facing eHealth technologies is to improve the patient experience, enhance health outcomes and reduce healthcare costs. Evidence continues to demonstrate that patient eHealth tools are associated with greater satisfaction, and in some instances, improvements in self-care and health outcomes.   However, there are multiple factors influencing eHealth adoption in general, and MHV in particular. Assuming that the successful deployment of patient-facing eHealth tools is defined by patient engagement and usage in an intended manner, a number of assumptions must be met.

First, patients and families/caregivers must be aware of eHealth services. Promotional efforts play a key role in this regard, and also can include peers and clinical staff.   Second, and perhaps most importantly,

Table 3: Factors Influencing MHV Adoption

Factor	Definition	Barriers and Facilitators
Patient Awareness	Patients know about eHealth tools	Marketing (any channels) Promotion (VA, VHA, clinic) Peer/ word of mouth Clinician referral Non-VA promotion (state, etc.)
Patient Expectations	Patients understand and perceive value in eHealth tools	Promotion provides clear value proposition Peer validates benefit Patients "kick the tires" and see immediate benefit
Patient eHealth Access	Internet access	Reduced: rural, low education Increased: family/friend or community access, patient access at VA facility
Patient eHealth Literacy	Knowledge and skills in using eHealth – computer savvy, self-efficacy	Prior computer usage Difficulty of software/program Technical support Program training/education
eHealth Usability	Ease of use of program	Navigation Functionality Human-Computer interaction
eHealth Usage	Penetration of use across patient population (patient adoption)	Includes all factors above/below, also: Ease of authentication, login Opportunity for authentication Technical support
Clinical Adoption	Healthcare Team use patient-facing eHealth intended for shared use (secure messaging, home telemonitoring, health risk appraisal)	Clinical champions Administrative champions Promotion/Marketing Peer/Word of Mouth Incentives/Work Credits Perceived value/benefit Ease of use Patient satisfaction
Clinical Integration	Shared (patient-clinician) eHealth integrated into care delivery	Team participation Efficiency of use Work-reducing or work-neutral Incentives – aligned Integration with workflow

patients must perceive that the use of eHealth tools will be relevant to their health and beneficial to their lives. Promotion (social marketing) and education can positively influence potential users. Third, having Internet access is an obvious requirement, although many patients take advantage of availability through family, friends or their communities. In addition, users of eHealth need to achieve a reasonable level of comfort or self-efficacy, in order to have the capacity to use the programs.   Table 3 lists the many factors influencing HIT adoption, and MHV adoption in particular, and the barriers and facilitators that must be considered in order to improve MHV implementation in VA.

VHA Programs/Operations with a possible impact on eHealth/patient HIT success:.

The primary driver of adoption of eHealth tools in VA is the Veterans/Consumer Health Informatics Office (V/CHIO), and the ongoing VA Transformational Initiatives. Example programs with impact include:

1. Virtual Care non-telehealth. Now aligned with the New Models of Care transformational initiative, this effort piloted and began the national implementation of My Health*e*Vet (MHV) Secure Messaging. Currently deployed in at least one facility per VISN, supported by new Facility and VISN MHV Coordinators, this effort focuses on offering online patient-clinician communication integrated into clinical care. Patient desire for this service is high, and will drive both patient MHV usage and clinical adoption.
2. National Center for Prevention and Health Promotion. NCPHP is supporting Health Risk Appraisal, a future functionality for My Health*e*Vet, will support an interactive, computerized assessment tool for health risks, family history and health screening. Integrated into the electronic record, this tool will provide tailored feedback to patient users and clinical teams (patient must be authenticated for MHV; will probably drive use of MHV by clinicians)
3. Patient Centered Care. Improving the culture of care at the VA that provides the right care at the right time, to meet patient needs through patient and families' "eyes"
4. Patient Aligned Care Team. Goal is to deliver new models of care, focusing on patient preferences and non-face to face care; this will drive use of MHV, Secure Messaging, Telephone Visits and Home Telemonitoring.
5. Business Office (Point of Service Kiosk). Using modular software application delivered through POS touch screen at a variety of facilities' settings, the Kiosk allows patients to update their information, conduct medication reconciliation and, in the future, respond to patient-centered surveys and assessments.
6. Transforming Care through Health Informatics (T16). Prototyping the next generation of electronic records for health teams, termed the AViVA Health Management Platform. Includes examination of current patient-facing applications and identification of future needs to enhance eHealth and patient engagement through the meaningful use of HIT.

eHealth QUERI will work in alignment with these VHA programs and initiatives to increase access and meaningful use of patient-facing health information technologies such as My Health*e*Vet. The QUERI will be equipped to help evaluate and enhance the success of these programs.

7. QUERI Center Goals

If appropriately implemented and utilized, the eHealth model of care has great potential to increase access to services, and increase collaborative healthcare and self-management. Thus, our three-year strategic goals for the eHealth QUERI are:

1) To augment **access** and **meaningful use** of eHealth tools

2) To enhance **veteran self-management and participation** in collaborative care through the design, evaluation, and implementation of appropriate eHealth tools.

The RE-AIM framework has been adopted by the MHV program office as an organizing framework for the study of My Health*e*Vet, and to align best with program, we will also adopt this framework.[3, 52] RE-AIM is appropriate for eHealth evaluation and dissemination.[53] RE-AIM represents the five dimensions, or steps necessary, to translate research into action: Reaching the target population, Effectiveness or efficacy, Adoption, Implementation, and Maintenance.[54]

The ideal theory/model to guide eHealth implementation programs and effectiveness studies is one that focuses on technology implementation, includes organizational concepts, individual provider behavior, *and* Veteran behavior in the context of their family system and community. This challenge is beyond the scope of a single model. Thus, within the first year of the eHealth QUERI, we will work to adapt concepts from the technology acceptance model [55-57], diffusion of innovation theory [58, 59] and newer models[60] that emphasize Veteran/consumer behavior and contextual factors most likely to be important to successful eHealth implementation.

In addition to adding to the field by considering models to emphasize Veteran/consumer behavior, we will also work with our investigators and executive committee to advance analytic methods specifically related to the evaluation of eHealth. These include infodemiology (methods to analyze search and communication behaviors on the Internet)[61] and time series methods for evaluating web trends data (Table 4 and Table 5). These will be incorporated into planned RRP project methods. After our detailed plans in achieving these goals, we offer a set of metrics to gauge our progress towards these goals in Section 8.

Goal #1: ACCESS

Appropriate and efficient access to services is a major goal of VA Healthcare. A State-of-the-Art conference on access was held in 2010. Virtual Care, both Telehealth and eHealth were frequently discussed. Weaver, Houston, Wakefield and Nazi were commissioned to write a white paper on the potential of eHealth for increasing access. The eHealth model of

Table 4: Goal #1 Impacts, Partnerships, Contributions in Years 1-3	
Key Impacts:	Improved Data Systems for measuring eHealth
Primary Partners:	My Health*e*Vet Program Office; My Health*e*Vet VISN and facility coordinators; and Office of Information and Technology (OI&T)
Implementation Science Contributions:	New Metrics and Methods for Analyzing Web Trends Data Combined models of patient and provider eHealth behavior Comparative Effectiveness of implementation strategies for eHealth

care can serve as an augmentation of more traditional clinical contacts (in-person and telephone medicine) with the provider. As Wakefield and colleagues[62] explain, enhancing the communication channels between providers and patients can help overcome geographic barriers and improve the delivery of health services.

Specific Plans: To achieve **Goal #1**, we will work to increase access to and use of eHealth tools, and MHV in particular. This is an area where our QUERI investigators have already made contributions. We have worked to design implementation programs to increase rates of in-person authentication, providing access to the highest level of services through MHV. We have also worked to train veterans with lower literacy to overcome barriers to use MHV. Thus, we have a series of sub-goals designed to address adoption and use of eHealth Tools, and the impact on adoption on overall access to VA healthcare services.

Sub-goals:
1) To collaborate in assessing need, designing and optimizing eHealth tools. We will work with the program office in their design of new tools, and to evaluate implementation and measurement for improvement of eHealth tools. Our group will continue to provide input to the MHV Performance Evaluation Work Group of the Clinical Advisory Group (CAB) to develop surveys to understand Veterans needs. We will also engage national stakeholders that measure use of technology (e.g: Pew Internet and American Life project, NIH Health Information National Trends Survey, VA Office of Quality and Performance SHEP survey) to assure that measures of Veteran Status and use of VA Healthcare are included on these surveys. In this way we can directly compare trends in technology use in and outside VA using national datasets. As the emphasis on systems engineering increases in VA, use of human factors evaluations (e.g.: usability testing) is increasing. We will collaborate with current usability labs across VA, using Morae usability software to conduct in situ evaluations of eHealth tools.

For sub-goal 1, we have recruited Dr. André Kushniruk, an international expert in eHealth usability and use evaluation. Dr. Kushniruk has written extensively on cognitive usability testing using "Think Aloud" protocols.[63-65] In this approach, participants are asked to vocalize thoughts, feelings, and opinions while reviewing a system's content and interacting with a program.. Think Aloud approach gives an insight into how the user approaches the interface and what considerations the user keeps in mind when using the interface. Dr. Kushniruk has been on contract with the Bronx VA conducting usability experiments, and will assist us with advancing the general field of methods associated with eHealth measurement.

2) To enhance data systems and methods to measure adoption and use of eHealth. Existing information systems and newer initiatives such as the Regional Data Warehouses (RDW), the Corporate Data Warehouse (CDW), and the VA Informatics and Computing Infrastructure (VINCI) will provide for MHV-related data to be obtained and integrated both at the local and national level. We propose to use these existing data to create a registry of MyHealth*e*Vet authenticated users and non-users available to QUERI and HSR&D investigators and program offices to track use and impact of MHV.

In addition, we plan to work with the MHV program office to advance methods for evaluating current webtrends data, tracking daily the use of MHV. We will adapt time series and other trend identification analytic techniques to the evaluation of this data.

3) To evaluate the impact and cost of implementation and marketing methods for increasing eHealth access and use. To address access to eHealth, we plan a portfolio of "RAMP-up" projects. Our overall goal for the RAMP-up implementation program is to test a growing set of implementation enhancements that can produce short-term (e.g. 1 year) and mid-term (e.g. 3 years) IPA gains at VA facilities. These projects will be the focus of early RRP and SDP submissions for the QUERI.

4) To evaluate the context in which eHealth implementation is taking place. In order to better understand the contextual factors influencing MHV adoption and implementation across VA, we will conduct ongoing assessments via facility and VISN MHV points of contact of the available

resources dedicated to MHV, local innovations to increase adoption of MHV or its tools such as secure messaging, and facility culture and leadership support related to MHV.

5) <u>To understand use of eHealth tools in high-risk, high-need, and vulnerable populations.</u> Vulnerable veterans(racial/ethnic minorities, low-income, low-literacy, elderly, rural, disabled veterans with or without visual- mobility- or mental-impairments) may have less access to eHealth technologies. Differences in access, such as lower PHR use among minority patients (Roblin, Houston et al.) may further widen disparities . We will work to identify strategies for increasing use of eHealth tools in vulnerable populations. For this goal, we propose to extend the training sessions (Dr. McInnes' RRP) described above to rural veterans through a collaboration with the Iowa City VA Rural Health Center.

6)<u>To understand patient and provider healthcare resource utilization associated with the use of eHealth</u>. This longer-term sub-goal will be conducted to evaluate the impact of sub-goals 1-3 on healthcare utilization.   Longer-term outcomes include reductions in missed appointments, and increased total "contacts" with the VA system, and patient-centeredness and satisfaction measures.

Goal #2: Veteran Self-Management and Collaboration in Care

Health Informatics as a field relates to studying information use, storage, and communication in health and healthcare. Communication of information in healthcare is critical to enhancing quality and safety. In response to the Institute of Medicine Reports, major efforts have focused on communication to providers (through diagnostic and management decision support), and communication between providers (through notes, telemedicine consults, etc).

Table 5: Goal #2 Impacts, Partnerships, Contributions in Years 1-3	
Key Impacts:	Characterizing Workflow and Workload of Secure Messaging Effectiveness of Secure Messaging for Pre-visit Planning
Primary Partners:	MyHealth*e*Vet Program Office; MyHealth*e*Vet VISN and facility coordinators; National Center for Health Promotion and Disease Prevention; Patient Care and Nursing Services; Office of Quality and Performance
Implementation Science Contributions:	New Data that will serve as the basis for simulations of eHealth implementation Understanding of the impact of Secure Messaging and sharable health information (e.g: Blue Button) on collaborative care and self-management

Communication of information is a major component of the criteria for "meaningful use" of health information technology published the U.S. Department of Health and Human Services Office of the National Coordinator for Health Information Technology (ONC). These criteria will determine distribution of the $19 billion in incentive funds in the HITECH act of 2010. The <u>meaningful use criteria now include patients and families</u>, as one rule requires providers to provide patients access to their health records in a timely fashion in the media of patient choice (whether web or paper). As noted in Table 1, enhancing quality, safety, and efficiency by providing patients and families access to health management tools is a key component of eHealth.

Specific Plans: For this goal, we are establishing relationships with Patient Care Services, and the National Center for Health Promotion and Disease Prevention (Drs. Kinsinger and Goldstein).   Dr. Sue Woods is leading patient-directed technologies for the T-16 initiative, and will further assist in integration.

Goal #2 will span the QUERI pipeline, with formative work exploring workload of secure messaging and surveying use of the Blue Button, and implementation projects evaluating the

impact of secure messaging for enhancing self-management (Table 5). Our sub-goals are detailed below.

Sub-Goals:
1) To enhance patient-provider communication through secure messaging.
To accomplish both Goals #1 and #2, we must understand the system, and provider perspectives as well as patient perspectives. From a provider perspective, a variety of individual and organizational-level factors may impede clinical adoption of programs like MHV. Available evidence suggests that some providers may have only limited awareness of eHealth applications and a similarly limited view of their functionalities and benefits.[66-68] Furthermore, use of MHV may add responsibilities to already overburdened clinical staff (or require new staff) in terms of monitoring, management, communication, and the handling of potentially large volumes of data originating from patients[69].

Thus, one step toward enhancing patient-provider communication through secure messaging is to show providers and the healthcare system evidence of the impact of secure messaging from prior studies, and to conduct rigorous evaluations of clinical workload and workflow as secure messaging is rolled out to facilities in FY11. *Over the next year, eHealth QUERI investigators will work with Paul Shekelle, PhD, MPH (West LA VAMC) and the VA Evidence-Based Synthesis Program on a systematic review of secure messaging.* In addition, we propose within the first year to work with the program office to evaluate common types of secure messages and evaluate the workload associated with these messages.

Under this sub-goal, we also plan to conduct interventional studies to evaluate the impact of secure messaging implementation on healthcare communication and self-management. Our primary project will evaluate secure messaging for pre-visit planning. This interventional project will assess the effectiveness of SM prior to an in-person encounter. Pre-visit preparation can increase patient activation, improve the effectiveness of in-person encounters and improve health outcomes in diabetes and hypertension.[70, 71] To provide continuous care, nurses and staff at the Worcester CBOC currently send messages to remind patients of their appointment date/time, to ask them to bring their medications for reconciliation, and to suggest patients create a list of questions to drive a patient-centered agenda. We propose to expand this natural experiment into an intervention with RRP or SDP funding.

2) To enhance patient self-management and collaborative care through the sharing of medical and patient-entered health information.
This goal will evolve as MHV functions expand. For example, for this sub-goal we propose to use our national and regional cohort data to compare outcomes of MHV use, including medication possession ratios. We also plan to survey users of the MHV Blue Button to understand how they use this sharable health information with their family caregivers and non-VA providers. We supported the MHV performance evaluation workgroup in their first survey of Blue Button users and plan a more in-depth prospective study based on the pending results of this survey. Another function soon to be available is delegation of access. The ability to delegate access has been piloted successfully. Patients can delegate access to family caregivers, physicians, and nurses (and researchers), choosing who to share their record. Delegation can be "read only," or "read-write" access. With delegation, veterans' families can refill their medications for the veteran, communicate with providers, and assist with completing journaling. Dr. John Piette is an expert in caregiver support and will work with us to more fully develop and plan for evaluation of delegation as this function is rolled out.

8. Metrics: Creating specific metrics for eHealth brings unique challenges, as compared with metrics for a disease-focused QUERI. The proposed metrics below will need to evolve as projects develop, as we develop closer ties with the disease-focused QUERIs, and as the needs of our program partners change. For Goal #1, we focus on processes related to eHealth, and for Goal #2, we go beyond, even proposing measuring of health outcomes for projects envisioned after our current 3-year funding cycle.

Table 6: Pilot Performance Metrics for eHealth QUERI				Timeline
				FY2011-2016
	Scope	Project	Metric Data Source	
Goal #1: Increase Access and Meaningful Use of eHealth Tools				FY2011-2013
Center Activity/Project Outcomes				
1. Enhance Data Systems for eHealth to study implementation and outcomes of new eHealth applications	West Haven/ Bedford Informatics team	LIP, with OI&T collaboration	Data inclusion into RDW/CDW/VINCI	FY2011-2012
2. Explore barriers to eHealth access (patient characteristics, facility characteristics, usability of MHV)	eHealth QUERI Network	Planned SDP and RRP	SDP and RRP results	FY 2011-2013
3. Work with national surveillance system to assure inclusion of Veteran status and enable comparison of eHealth tool use	eHealth QUERI Network		Health Information National Trends Survey	FY2012
4. Conduct point-of-care implementation program with clinical reminder/My HealtheVet referrals	VAMCs (2)	Planned RRP and SDP	IPA data in CDW from #1, RRP data	FY 2011-2012
4. Develop and evaluate training program for low-literacy and rural Veterans	VAMCs (3)	RRP 09-192	RRP 09-192	FY 2010-2011
5. Develop consistent evaluation/surveillance assessment to be completed by VISN and Facility MHV POCs, detailing available resources, local innovations and facility culture related to MHV	eHealth QUERI and MHV PEWG	Planned IIR		FY 2010
eHealth Process Outcomes				
1. Increase the monthly in-person authentication rate in intervention sites by 20% over control sites	VAMCs (2)	Planned RRP and SDP	IPA data in CDW	FY 2011-2012
2. Evaluate impact of implementation of new functionality on daily use patterns and volume of IPA (Time-series analysis)		LIP	MHV web trends and IPA data	FY 2011-2012
3. Evaluate impact of MHV appointment views on VA missed appointments	Region 4	LIP	RDW and VistA appointments data	
4. Evaluate impact of MHV medication refill function of medication possession rations and medication gaps	Region 4	Planned RRP	RDW and VistA data	FY 2012-2013

Table 6 (cont). Pilot Performance Metrics (Continued)				Timeline
				FY2011-2016
	Scope	Project	Metric Data Source	
Goal #2: Veteran Self-Management and Collaboration in Care				FY2011-2013
Center Activities/Project Outcomes				
1. Create Ontology of Common Secure Message Types	eHealth QUERI Network	Planned RRP	Secure Messaging Administrative Archives and VINCI	FY 2011-2012
2. Assist Dr. Shekelle Evidence Synthesis Systematic Review of Secure Messaging	QUERI RC, CC, IRC			
3. Conduct *time and work* observational study of Secure Messaging using standardized messages	eHealth QUERI Network	Planned RRP	RRP	
4. Survey MHV Blue Button Users to determine usability, uses and use over time	eHealth QUERI and MHV PEWG	LIP	Surveys	FY 2011
5. Conduct implementation study using secure messaging for pre-visit planning	eHealth QUERI Network	Planned RRP	RRP, VistA data	
Clinical Process Outcomes				
1. Compare diabetes control over time in MHV-authenticated veterans and matched comparison group of Non-authenticated Veterans	West Haven/ Bedford Informatics team	Planned CDA	Region 4 RDW and MHV Cohort created in Goal 1	FY 2013
2. Evaluate Variation in Secure Message Performance (Response times, Patient Satisfaction) by triage team configuration	eHealth QUERI Network	Planned RRP	RRP	FY 2011-2012
3. Evaluate impact of Pre-Visit Planning Secure Messaging on communication in in-person physician-patient encounters	CBOCs (6)	Planned RRP	Audiotaped provider-patient encounters	FY 2012
Clinical Outcomes*				
1. Reduce Rehospitalizations for CHF/COPD in intervention facilities using MHV for veterans and caregivers and care-transition platform by 5%, compared with control	VAMCs (3)	Planned SDP	MHV use, surveys, VistA data	FY 2014-2016
2. Increase Rates of Smoking Cessation in intervention CBOCs by 10%, compared with Control CBOCs	CBOCs (10)	Planned SDP	MHV use, Secure Messaging, surveys	FY 2014-2016
* Studies evaluating clinical outcomes will begin after the initial 3-year funding of the eHealth QUERI				

9. Management Plan

The activities of the eHealth QUERI will be managed through the eHealth QUERI Research Coordinating Center at the Bedford VA, and the Clinical Coordinating Center at the Iowa City VA. Dr. Thomas Houston, Director and Research Coordinator, Dr. Stephanie Shimada, Implementation Research Coordinator (IRC), Jennifer Schumann, Administrative Coordinator (AC), and QUERI staff will be located at the Bedford VA. The Clinical Coordinator (CC), Bonnie Wakefield is located at the Iowa City VA.

The role of the <u>Research Coordinator</u> is to oversee all aspects of QUERI scientific, training, and dissemination activities. Dr. Houston will be the primary contact with the MHV program office. With the support of the Administrative Coordinator, he will supervise the financial and administrative aspects of the QUERI. Dr. Houston will work with the Clinical Coordinator to review scientific proposals related to the QUERI strategic plan. Dr. Houston will hold weekly operational calls with the coordinators. He and Dr. Wakefield have worked to identify separate, complementary tasks.

The role of the <u>Clinical Coordinator (CC)</u> in the eHealth QUERI is, by nature of the focus of the QUERI, somewhat different from the role of the disease focused QUERIs. We expect the role to evolve over time as we gain experience with the QUERI, but initially a primary focus of the CC will be to establish and maintain a connection with the local and

Table 7: eHealth QUERI Calls and Meetings
Coordinators Calls: The Research Coordinator, Clinical Coordinator, Implementation Research Coordinator, and Administrative Coordinator will participate in **weekly** operational calls.
eHealth QUERI "All Hands" Calls All eHealth QUERI-affiliated investigators will join the coordinators on **biweekly** calls.
Work-in-Progress Calls: **Monthly** work-in-progress calls will provide a venue for QUERI investigators to update each other on their ongoing research.
Executive Committee Calls: The EC will meet **quarterly**, to provide guidance to the QUERI
Annual Face-to-face Meeting: All coordinators, affiliated investigators, and the EC will meet face-to-face **once a year**.

VISN based MHV Coordinators. Dr. Wakefield has started to participate in the monthly MHV Coordinator Calls. Her participation will enable the QUERI to assess front line implementation issues faced by the coordinators, assist with strategy development and implementation, and ensure two-way communication between the QUERI and the MHV Coordinators. A second role of the CC will be to lead and/or participate as a co-investigator on QUERI-supported projects. Dr. Wakefield will support program evaluation with Keith McInnes. Third, the CC will help facilitate multi-site and multidisciplinary participation on QUERI projects. Specifically, Dr. Wakefield has established good working relationships with Dr. Adam Darkins, Office of Telehealth Services and Ms. Cathy Rick, Office of Nursing Service, two key offices for implementation of eHealth interventions. Dr. Wakefield will also facilitate collaborations with the Office of Rural Health, and specifically with the Rural Health Resource Center at the Iowa City VA Medical Center. Dr. Wakefield also serves as the Co-Director of the VISN 23 PACT Demonstration Lab, and will facilitate collaboration with PACT activities. As appropriate, Dr. Wakefield will represent e-Health QUERI on national VA and non-VA committees and task forces. Finally, the CC will participate in the eHealth QUERI Operations committee.

The <u>Implementation Research Coordinator (IRC)</u> for eHealth QUERI is Dr. Stephanie Shimada. eHealth is a rapidly developing field, with the evidence base for best practices in evolution. Thus, the Implementation Research Coordinator will have a vital role in the success of the QUERI. The IRC will work hand-in-hand with the Director/Research Coordinator, and will oversee the following tasks: a) use of appropriate and state-of-the-art methods for design, implementation, and evaluation of implementation projects; b) planning and executing the spread of best practices to other sites; and c) drawing appropriate lessons from the QUERI's research and developing new methods to contribute to the field of implementation science. Our goal is to use this position to strategically grow, and enhance the eHealth QUERI alignment with

systems engineering initiatives. In 2006, Dr. Shimada joined the Center for Health Quality, Outcomes, and Economic Research (CHQOER) as a post-doctoral fellow after receiving her doctorate in Health Policy from Harvard University. As a Research Health Scientist at CHQOER, she has worked to combine her interests in quality, disparities, and health informatics. She has been mentored by both Dr. Houston and Dr. Sharon Johnson and has recently expanded her interests to include health systems engineering methods. Dr. Shimada has provided service to MHV through the Performance Evaluation Workgroup for the past year and has extensive knowledge of MHV.

The Executive Committee of the eHealth QUERI will provide guidance and input into our scientific program. It is our vision to actively utilize the expertise of the EC members between face-to-face meetings by inviting individual members to participate in as advisors to specific projects. Dr. Russ Glasgow will act as the Chair of our Executive Committee. Members, who will meet quarterly (see Table 7), include:

Russell E. Glasgow, Ph.D., (Executive Committee Chair) Deputy Director for Dissemination and Implementation Science, Division of Cancer Control and Population Sciences, National Cancer Institute

Timothy J Cromwell, RN, PhD, PMP, Director of Standards and Interoperability

Adam W. Darkins MBChB, MPHM, MD, FRCS, Office of Telehealth Services

Joseph J. Erdos, MD, PhD, Lead VA Region 4 Data Warehouse

Mary K. Goldstein, MD, MS, Director, Geriatrics Research Education and Clinical Center (GRECC), VA Palo Alto Health Care System

Kim M. Nazi, FACHE, PhDc, Veterans and Consumer Health Informatics Office (V/CHIO)

Paul Nichol, MD, National Director Medical Informatics, Patient Care Services

James, D. Ralston, MD, Associate Scientific Investigator, Group Health Research Institute

Catherine J. Rick, RN NEA-BC, FACHE, Chief Nursing Officer

Veteran Representative (To be determined)

The management structure of the eHealth QUERI is designed to organize and optimize *scientific, administrative,* and *strategic* functions, bringing together VA research and VA management input.   Further detail is contained in the eHealth QUERI proposal accompanying this strategic plan.

Scientific functions are organized into scientific cores, each supported by eHealth QUERI resources and by in-kind effort made available by participating VA facilities (Table 8).

Our cores are designed to rapidly respond to ad hoc requests from program office. Each core is a pool of expertize that affiliated investigators should/can draw on to get access to each of these respective skill sets. Our capacity for cost evaluations will need to grow as projects. We plan to work closely with Health Economics Resource Center (HERC) and add additional economic core faculty.   Our Data core will initially be focused on increasing access to core measures to be used to track implementation, but once these objectives are met, this core will add additional statistical and measurement expertise to meet the needs of program and projects.

Administrative functions. Day-to-day management will be conducted by Drs. Houston and Wakefield, together with the IRC. The AC will work independently and under the supervision of this management group to assist with and coodinate

Table 8: eHealth QUERI scientific cores
Systems Engineering: led by Drs. Johnson and Tulu will integrate knowledge from VA QUERI implementation science and the systems engineering expertise (e.g: time & motion, simulation, human factors)
Data: led by Dr. Brandt this core will lead our efforts to enhance data systems, provide core analytic support to respond to program office needs, and catalogue measures to standardize across projects.
Economics: led by Dr. Smith, this core will incorporate cost analyses into projects, and collect data (e.g: workflow) to conduct simulation studies to inform future implementation.
Behavioral Science: led by Drs. Woods and Richardson, will integrate experience in health informatics and behavioral science.

budget administration, policies and procedures, and program oversight. The core management group will meet weekly by VANTS conference call. Projects will be tracked and milestones documented using SharePoint/Microsoft Project software. The AC will support communication, facilitate synchronization of project activities horizontally between sites and vertically across personnel hierarchies through team meetings and collaboration software. For the purpose of writing this proposal, we used conference calls, Live Meeting, a listserve, and established a SharePoint site as an internal web portal and collaboration software platform. We plan to expand our communication infrastructure to include an informational WIKI allowing collaborative authorship to support projects and implementation.

Strategic management is of great importance to align short- and medium-term project goals and milestones with longer-term anticipation of upcoming scientific and management needs. The eHeath QUERI Executive Committee has been assembled from VA and non-VA senior scientists and managers in health informatics and related fields, and also includes representatives of VA clinician end-users. *Because the eHealth QUERI will focus on Veteran adoption and access to eHealth, we will also include Veteran representatives, experienced in using MHV, on our EC.* The core management team (the Director/ResearchCoordinator, Clinical Coordinator, Implementation Research Coordinator, and MHV program officer) will participate in direct discussions and will organize, synthesize, summarize eHealth QUERI project results for the EC. Dr. Russ Glasgow, an international expert on eHealth and originator of the RE-AIM framework, is the National Cancer Institute Deputy Director for Dissemination and Implementation Science, Division of Cancer Control and Prevention Science. Dr. Glasgow has agreed to Chair the eHealth QUERI Executive Committee. The core management team will communicate with Dr. Atkins, the MHV program office, and the broader group of participating investigators and operations officers to identify other EC members. We will organize an annual Executive Committee and investigator face-to-face meeting. In addition to management team, we plan biweekly all-investigator eHealth QUERI meetings. These will allow cross-project discussion of progress and challenges, and exchange input from all quarters. We will also have monthly virtual Work-In-Progress meetings held via Live Meeting. To support this function, we are designating one program assistant as communication officer (CO) designed to coordinate all activities. The CO will also be responsible for external communication, and support the Director's interactions with the program office.

Field Sites. We currently have proposed affiliated field sites at Chicago (Hines) VA, Ann Arbor VA, Salt Lake City VA, Iowa City VA, Portland VA and Boston VA. To take full advantage of our geographic diversity and to enhance our existing collaborations, we are conceptualizing the eHealth QUERI as a practice-based research network with field-based investigators. We anticipate that research projects will be initiated by investigators at field sites, and all will have the opportunity implement studies at multiple sites. Investigators at these sites have particularly strong experience with eHealth and chronic care, and have links with established VA rural health initiatives (Ann Arbor, Iowa City). Sites were also included because they have been involved in the secure messaging pilot (Portland, Boston) or have been tentatively selected (Ann Arbor, Salt Lake) for the next roll-out of secure messaging.

In conclusion, in the months between the concept paper submission and this strategic plan, members of the eHealth QUERI have began to establish the data systems that will serve as the basis for many analyses, have had a series of meeting with V/CHIO staff, have started a lecture series on eHealth with invited speakers and cyberseminars (Weaver and McInnes), have had a workshop accepted at National HSR&D, have obtained survey data from the Pew Internet and American Life project on Veteran use of the Internet for Health, and are working on SDP and RRP submissions as this proposal is being submitted. We look forward to continuing this work.

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