



Diffusion and Dissemination of Evidence-based Cancer Control Interventions

Summary

Overview

The burden of illness imposed on society as a result of cancer represents a major issue in health care through out the world. Within the United States, cancer is the second leading cause of death. As a result, significant resources are directed towards research into cancer control. This includes a broad spectrum of basic and applied research in the behavioral, social, and population sciences. Such research covers the continuum of cancer control from prevention to early detection to diagnosis to treatment to end-of-life care. However, the impact of these advances in cancer control research is limited by the failure to transfer new, evidence-based findings into the widespread delivery of both individual and population health care. Recognition of this problem has prompted research initiatives investigating methods to assist the dissemination of new knowledge to a larger target audience, one that includes providers, policy makers, and the general public.

A variety of models of behavior change and theoretical frameworks have been developed to try to explain the process by which new knowledge is generated and disseminated to a broader audience. However, this process is hampered by diverse terminology and inconsistent definitions of terms such as diffusion, dissemination, knowledge transfer, uptake or utilization, adoption, and implementation.

Much of the research to date has focused on interventions to promote behavior change among health care providers (a group that includes physicians, public health professionals and allied health care practitioners). A recent review by the Cochrane Collaboration's Effective Practice and Organization of Care (EPOC) Group found that

interventions that are considered more active, such as health care provider reminders, educational outreach, and the use of opinion leaders, were effective in changing health care provider behavior. Multi-component interventions were more likely to result in behavior change than single interventions. No single intervention was effective under all circumstances. Less active interventions, such as conferences, medical journals, or mailed clinical practice guidelines, were not effective in changing provider behavior. The EPOC review was not specific for cancer control research.

Reporting the Evidence

The goals of this evidence report were: (1) to provide an overview of the effectiveness of cancer control interventions that promote uptake of behavior change; and (2) to determine what strategies have been evaluated to disseminate these cancer control interventions in five key areas along the cancer control continuum (smoking cessation, healthy diet, mammography, cervical cancer screening, and control of cancer pain).

Preliminary research questions included:

- What types of diffusion and dissemination strategies are most effective?
- Is there variation in these strategies across the cancer control continuum?
- What are the outcomes of these diffusion and dissemination strategies?

A multidisciplinary research team was assembled with participation of members of the National Cancer Institute (NCI)—the topic-nominating organization—the Agency for Healthcare Research and Quality (AHRQ) Task Order Officer (TOO), invited technical experts, plus local experts and research staff from



McMaster University. Discussion within this group led to a refinement of these preliminary questions.

The refined objectives were defined as:

Objective 1: *What is the effectiveness of cancer control interventions to promote the uptake of cancer control behaviors?*

Objective 2: *What strategies have been evaluated to disseminate cancer control interventions?*

During the initial consultation process, it became apparent that the topic area was too large to consider the entire cancer control continuum. Five topic areas were identified for this evidence report based on NCI priorities. These were: smoking cessation, healthy diet, mammography, cervical cancer screening and control of cancer pain. This generated a total of ten key questions:

Objective 1:

1. What is the effectiveness of cancer control interventions that promote adult smoking cessation?
2. What is the effectiveness of cancer control interventions that promote the uptake of adult healthy diet?
3. What is the effectiveness of cancer control interventions that promote screening mammography?
4. What is the effectiveness of cancer control interventions that promote cervical cancer screening?
5. What is the effectiveness of cancer control interventions that promote the control of cancer pain?

Objective 2:

6. What strategies have been evaluated to disseminate cancer control interventions that promote adult smoking cessation?
7. What strategies have been evaluated to disseminate cancer control interventions that promote the uptake of adult healthy diet?
8. What strategies have been evaluated to disseminate cancer control interventions that promote screening mammography?
9. What strategies have been evaluated to disseminate cancer control interventions that promote cervical cancer screening?
10. What strategies have been evaluated to disseminate cancer control interventions that promote the control of cancer pain?

Methodology

The first objective of this evidence report was addressed by a review of systematic reviews examining the effectiveness of cancer control interventions in each of the five topic areas. The second objective was addressed by a systematic review of primary studies evaluating strategies to disseminate cancer control interventions in each of the five topic areas. The following criteria were used to select published articles for review and included:

Objective 1. *What is the effectiveness of cancer control interventions to promote the uptake of cancer control behaviors?*

Systematic reviews conducted on individuals (patients, clients, consumers, or the general public) or health care providers were considered for inclusion if they were in English, published no earlier than 1990, and addressed one of the five topic areas. A review was considered to be systematic if it had stated inclusion criteria for primary studies and had explicitly identified methods used in the review. Reports exclusively focused on children or adolescents were excluded.

Objective 2. *What strategies have been evaluated to disseminate cancer control interventions?*

Primary studies were considered for inclusion if they were in English, published no earlier than 1980 and evaluated dissemination of a cancer control intervention in one of the five topic areas. All primary studies, regardless of study design, were eligible for inclusion. Reports exclusively focused on children or adolescents were excluded.

Search strategies were developed as an iterative process in consultation with the McMaster Evidence-based Practice Centre (EPC) librarian. Similar databases were searched for both objectives, including: MEDLINE® (with HealthSTAR), PREMEDLINE®, CANCERLIT®, EMBASE, PsychINFO, CINAHL®, Sociological Abstracts, and the Cochrane Database of Systematic Reviews (CDSR). Additional reviews and articles were identified from reference lists of pertinent articles and reviews or were suggested by technical experts.

All data extraction forms were developed, pilot-tested, and revised by members of the local research team. Two reviewers completed data extraction independently for all reports. Any disagreements were resolved by consensus. Differences that could not be resolved by these reviewers were discussed by the local research team. Quality assessment was undertaken using standardized quality assessment tools developed by the Effective Public Health Practice Project.

Evidence and summary tables were constructed to describe the most salient characteristics of the eligible studies. Evidence tables were generated to summarize, by topic, all information extracted from the study reports. These tables are found at the end of each chapter along with the relevant supplementary tables. Meta-analysis was not undertaken because there were substantial differences across the studies, in terms of study design, intervention assessed, outcome measurements, methodological quality, and completeness of data reporting. Therefore, the report represents a systematic narrative review of the existing evidence, emphasizing the implications for practice and the opportunities to fill existing knowledge gaps.

Findings

More than 5,000 titles and abstracts were identified in the literature search for the review of systematic reviews. Full text screening was performed on 232 retrieved papers, data extraction was undertaken on 79 reports, and 41 unique studies

are presented in the evidence tables. The weighted kappa for agreement on study inclusion was 0.6367 (95% Confidence Interval [95%CI] = 0.53–0.75).

More than 6,000 titles and abstracts were identified for the review of primary studies of dissemination strategies. Full text screening was performed on 456 retrieved papers, data extraction was undertaken on 40 reports and 31 unique studies are presented in the evidence tables. The weighted kappa for agreement on study inclusion was 0.5329 (95%CI = 0.31–0.76).

General Findings

The primary objective of the report was to determine what strategies have been evaluated to disseminate effective cancer control interventions more widely in the five topic areas examined along the cancer control continuum. The assessment of published systematic reviews provides an overview of the state of evidence regarding interventions to promote the uptake of behavior change. There are some findings from these reviews that are generalizable across the topic areas:

- Few studies examined policy-level cancer control interventions in any of the five topic areas. Therefore, there is insufficient evidence to comment on the effectiveness of policy-level interventions to promote the uptake of cancer control interventions.
- Very few systematic reviews specifically evaluated the effectiveness of behavioral interventions that promote uptake of cancer control behaviors in minority or socio-economically disadvantaged populations. There is no evidence that specific targeted interventions are any more effective than generic interventions.
- Considerable differences were observed in the types studies included in the review of primary studies. Therefore, interpretation of the evidence was limited to narrative syntheses.
- Considerable variation was observed in the outcomes assessed in these studies. Outcomes ranged from process measures to behavioral outcomes. Variation in terminology related to diffusion, dissemination, and implementation was also evident.
- Very few of the primary studies evaluating dissemination strategies used a randomized, controlled design to evaluate the dissemination strategy. The majority of studies used other designs including descriptive, pre-test/post-test, and time series.
- Passive approaches (diffusional techniques), such as mailing of materials to targeted populations, were generally ineffective. Active approaches (disseminational methods), such as the train-the-trainer model, media campaigns, and educating opinion leaders, were more likely to be effective in promoting change in knowledge, attitudes, and behaviors when used alone or in combination.

- The majority of evidence for strategies to disseminate cancer control interventions was identified in provider-directed interventions. The current evidence base in the area of dissemination is limited, but the evidence in this report provides insight into the likely effectiveness of different interventions and strategies, such as informed and shared decision-making.

Topic-Specific Findings

Effectiveness of Cancer Control Interventions

Smoking cessation interventions found to be effective in this review include: brief advice by a health care professional, office prompts (reminder systems, telephone counseling either as a single intervention or in combination with other interventions, and individual smoking cessation counseling), and media campaigns. Effective multi-component interventions include office reminders combined with physician training, with or without patient education.

There is some evidence that physician education in dietary counseling is an effective dietary intervention. However, there is no consistent evidence of effectiveness of other health care provider-directed interventions. Interventions directed at individuals that were shown to have some effect in producing dietary change include: tailored interventions; multiple interventions; and provision of multiple contacts and environmental interventions. Media campaigns may result in increased knowledge and awareness of behaviors to reduce risks.

Interventions that have been consistently shown to be effective for increasing mammography are: invitations or mailed reminders, office system interventions (i.e., prompts), and financial barriers interventions—especially when a multi-component strategy is undertaken that combines behavioral and cognitive interventions.

Effective interventions to promote uptake of cervical cancer screening include office systems (computer or manual chart reminders), and invitations and reminders to individuals. There is limited evidence of effectiveness for educational materials, telephone counseling, removal of financial barriers, media campaigns, and advice from health care providers.

There is inadequate data regarding effective interventions for the control of cancer pain. Promising interventions include the transmission of patients' self-reported pain scales to oncologists, pain education for nursing staff, and the use of daily pain diaries.

Strategies to disseminate cancer control interventions

Fifteen primary studies were identified in the systematic review of dissemination strategies for smoking cessation activities. The majority of these used nonrandomised designs to evaluate the dissemination strategy. There was no strong

evidence of effective dissemination strategies for smoking cessation interventions.

Train-the-trainer approaches improve knowledge and awareness of the smoking cessation issues among health care providers, but there is no evidence they impact on advice to quit smoking or on smoking cessation rates. Several studies evaluated the use of educational facilitators to disseminate smoking specific information, or information about multiple preventive behaviors. Overall, preventive services appear to be increased but the specific impact on smoking cessation activities is more uncertain. Several studies examined the importance of different media sources for recruitment of patients or their families to use the Cancer Information Service (CIS). Media awareness campaigns, in particular those using television, are important strategies to disseminate information about CIS help lines.

There are few studies evaluating dissemination strategies to promote the uptake of a healthy diet. Seven studies were included in the review of strategies to promote an adult healthy diet. Many of the studies identified are primarily descriptive rather than evaluative. The use of educational facilitators to promote the use of office systems by health care providers shows some promise at improving the provision of preventive services in community practices. One additional study, using peer educators in the worksite, did demonstrate some short-term increase in dietary fruit and vegetable intake.

Only six studies were identified that examined dissemination strategies for mammography. These were predominantly targeting health care providers. Several studies examined the use of educational facilitators to promote the use of office systems. They provide mixed results for disseminating office system interventions. Overall, there is insufficient evidence to conclude that any dissemination strategy is effective at increasing mammography.

There were four studies identified in the review of dissemination of cervical cancer screening interventions. These studies examined the use of educational facilitators to disseminate office systems (for health care providers), or media awareness campaigns to disseminate information about the CIS. These studies all examined cervical cancer screening as one of a number of topic areas. Educational facilitators appeared to increase overall indicators of preventive care. However, there was no statistically significant increase in cervical cancer screening rates. There is no evidence for effective strategies to disseminate interventions to promote cervical cancer screening.

Three studies were included in a review of strategies to disseminate interventions for control of cancer pain. There is a lack of research examining dissemination of interventions to promote effective pain control. Dissemination of a treatment algorithm for pain management produced only short-term change in provider adherence. Cancer pain role-modeling programs were shown to improve process measures such as knowledge and education of other health care providers.

However, no information is given on integrating pain assessment into clinical practice.

Future Research

This evidence report identified a number of effective cancer control interventions designed to change provider or individual behavior. However, it also identified a need for research into strategies to disseminate these interventions into routine care. There are methodological issues that should be considered in future research:

- It is important that future dissemination research focuses on attempts to disseminate effective cancer control interventions.
- Many of the studies identified in this review were primarily descriptive rather than evaluative. This raises questions about the most appropriate study designs for dissemination research. Issues for consideration include: What is the role of randomized controlled trial (RCT) designs in dissemination research? How can non-RCT type of studies make a stronger contribution to the field?
- What outcomes are important to consider in dissemination research?
- Are cancer control interventions equally effective when they are more widely disseminated in the community?
- There is inconsistent use of terminology in the literature. Standardized criteria for reporting research findings have been developed in other areas including the CONSORT statement for reporting of randomized trials and the MOOSE proposal for observational studies in epidemiology. Would establishing criteria for reporting dissemination research help to clarify this field of research?

There are other topics within the cancer control continuum that were not addressed in this evidence report. As dissemination approaches may vary across topic areas, there is a need for further systematic reviews to synthesize available data in these areas too.

Future systematic reviews should consider the following:

- What strategies have been used to disseminate cancer control interventions to promote other preventive behaviors such as increased physical activity, or avoidance of exposure to ultraviolet radiation; screening activities including screening for colorectal cancer; and the therapeutic areas of cancer treatment and supportive care?
- What approaches have been undertaken to improve compliance/maintenance? Do the approaches to promote long-term behavioral change differ from those required to promote the uptake of behavioral change?

There were some suggestions for future research that were common across several of the five topic areas examined in this evidence report. Those issues, along with a number of more general considerations that should be considered in undertaking

future research examining diffusion and dissemination of cancer control interventions, include:

- How can theoretical models of behavior change inform future dissemination research?
- What approaches can be undertaken to make dissemination and dissemination research a routine component of intervention research?
- Do dissemination strategies along the cancer continuum differ from dissemination approaches in other areas of health care?
- What approaches can be undertaken to incorporate dissemination strategies into health care policy?
- What policy level interventions are effective at promoting dissemination of evidence-based cancer control interventions?
- What is the cost-effectiveness of different cancer control interventions and strategies to disseminate them? This may be an important local issue in determining approaches to dissemination.
- What is the role of new technologies in dissemination research? What is the potential of the Internet as a dissemination tool?
- Can audit and feedback, local opinion leaders, and educational outreach be used to disseminate cancer control interventions? These approaches are effective interventions to change provider behavior in other situations, but have not been well evaluated in the topic areas examined in this evidence report.
- What characteristics of health care providers and individuals contribute to increased or decreased success of dissemination approaches?
- What is the most appropriate approach to combine provider- and patient-directed cancer control interventions?
- What is the importance of local barriers to effective dissemination of cancer control interventions?

Additional topic specific suggestions for future research are summarized in the report.

Final Comments

Much of the focus of dissemination research in the cancer continuum to date has been evaluating interventions to promote behavior change. This evidence report highlights the lack of data on how to disseminate these findings into the community. There is a need to prioritize some of the suggestions above. Additionally there is a need for National agencies to provide leadership and funding for future dissemination research.

Availability of the Final Report

The full evidence report from which this summary was derived was prepared for AHRQ by the McMaster University Evidence-based Practice Center under contract number 290-97-0017. It is expected to be available in late spring 2003. Printed copies may be obtained free of charge from the AHRQ Publications Clearinghouse by calling 800-358-9295. Requesters should ask for Evidence Report/Technology Assessment No. 79, Diffusion and Dissemination of Evidence-based Cancer Control Interventions. When available, Internet users will be able to access the report online through AHRQ's Web site at: www.ahrq.gov.



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