Facilitating Dissemination Research and Implementation of Evidence-Based Cancer Prevention, Early Detection, and Treatment Practices

Introduction

There has been a longstanding awareness that the burden of cancer can be significantly reduced by taking the knowledge generated through research and disseminating it to achieve widespread application in our public health and clinical communities.[1] Without timely adoption of innovations in cancer prevention, early detection, and treatment, cancer health disparities are exacerbated,[2] and NCI's ability to achieve the goal of reducing suffering and death due to cancer will be compromised. Regrettably, the history of the past several decades has shown that moving research discoveries into public health and clinical practice is more easily said than done. Many barriers exist that impede the movement of knowledge into widespread practice in both the community and clinical settings. These barriers can be found in both the research on and adaptation and implementation of evidence-based cancer control practices in community, clinical, and public health settings.

As part of its ongoing commitment to closing the gap between research discovery and program delivery, the NCI sponsored a series of four *Dialogue on Dissemination* meetings convening experts in the fields of public health, clinical practice, and dissemination to discuss the development of research and implementation agendas for dissemination. This report provides a summary of dissemination research and implementation recommendations derived from two meetings, held in November and December 2004.

Dissemination/Implementation Research

Two broad areas were identified that require significant change to create a system that supports and charts a course for continued research on dissemination. The first involves building onto existing research infrastructures (e.g., NCI Cancer Centers, CDC Prevention Research Centers, AHRQ Practice-Based Research Networks) the resources needed to support dissemination and implementation research. The second involves building an agreed-upon body of conceptual models, dissemination and implementation research methods, and theory-based dissemination and implementation approaches. Under these areas, specific strategies were identified for enhancing research efforts in the area of dissemination and implementation. Some strategies are relevant across both clinical and public health settings; others are unique to one or the other. This summary document provides a synthesis of the discussions and the related strategies.

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[1] Cancer Control Objectives for the Nation: 1985-2000 (Greenwald P, Sondik E, editors). JNCI Monograph 2; 1986.

[2] Making Cancer Health Disparities *History*—Report of the Trans-HHS Cancer Health Disparities Progress Review Group Report, 2004 (http://www.hhs.gov/chdprg/pdf/chdprg.pdf)

AREA 1: EXPAND INFRASTRUCTURE MECHANISMS TO SUPPORT DISSEMINATION AND IMPLEMENTATION RESEARCH

Systems for the conduct of basic and clinical research are well established in performing basic inquiries that lead to discoveries covering a wide range of cancer treatment-related issues. In the past 20 years, U.S. Government agencies (e.g., NCI, CDC, and AHRQ) have expanded their research support for prevention and control intervention research that has focused on developing new methods of preventing chronic diseases such as cancer or detecting the disease early in its development in order to improve treatment prognosis. Similar efforts have been seen in other developed countries (e.g., Canada, U.K.). Most recently, with growing numbers of cancer patients surviving their disease 5 years or longer, innovative intervention approaches to improve the quality of life of cancer survivors are being developed and tested through research.

Thus, the potential for prevention, early detection, treatment, and supportive care practices to rapidly improve based on knowledge gained from research has never been greater. However, the infrastructures built to support basic, clinical, and public health research are not well suited to support research on more effective methods to disseminate and implement the lessons learned from basic and applied research. An expanded dissemination research infrastructure is warranted if knowledge translation is to flourish. A host of policies and processes could be developed or modified to support the building of a solid infrastructure for dissemination and implementation research. While the majority of the strategies provided in the *Dialogue* could be made at the Federal Government level, others can be made at the state and/or local level, by academic institutions and individual researchers, and in the domains of foundations and private industry. Finally, international collaborations to sort out these challenges may provide fruitful opportunities for research/practice collaborations. Recommended changes to the infrastructure include:

Strategy #1: Reconstruct and Expand National Funding Mechanisms/Requirements in Order to Accommodate the Specific Needs of Dissemination and Implementation Research

- Expand dissemination and implementation research funding.

- Include explicit review criteria for the dissemination potential of interventions tested in research grant applications and for the dissemination of research findings. There is a need to consider the dissemination potential during the intervention development and evaluation phases.

- Examine—and modify, if necessary—Federal statutes that govern how research and service funds are spent to support research/practice partnerships.

- Provide significant incentives to generate proposals in which researchers and community-based organizations (CBOs)/professional associations work as teams to solve practice-based problems. Funded projects should receive financial support not only for the research itself, but also for the organizational development work necessary to ensure that the new practices are properly integrated into the adopting organizations.

- Capture the uptake of evidence-based practices using a data collection system that can be integrated with health services research surveillance systems. Begin to develop a surveillance system for implementation of evidence-based approaches in order to monitor uptake and events/interventions that boost adoption.

Strategy #2: Improve the Quality of Peer Review for Dissemination and Implementation Research

- Orient peer reviewers prior to their seeing individual grant applications in order to increase the understanding of and support for dissemination and implementation research.

- Provide peer-review committee members with dissemination and implementation research summaries to keep them up to speed with changes in the field.

- Obtain feedback from both reviewers and applicants about the quality of the peer-review process as it pertains to dissemination and implementation research.

Strategy #3: Examine and Shift Educational Systems and Approaches and Academic Structures to Provide Incentives and Rewards Suited to Training and Career Development in Dissemination Research

- Broaden funding for education and training programs (e.g., R25s) to include dissemination research and research dissemination priorities.

- Enhance journal submissions by adding sections on the dissemination potential of a tested intervention in published intervention efficacy/effectiveness papers.

- Identify and promote feasible modifications to the academic reward system to encourage action research/collaborative projects.

- Evaluate the role and impact of continuing medical education, journals, and professional societies on the adoption of evidence-based innovations in clinical care settings.

Strategy #4: Create a Common Lexicon of Dissemination and Implementation Research Methods and Terminology to Facilitate Communication and Cohesion Among the Group

- Increase the understanding of the existing variations in the terminology used by researchers in related disciplines to discuss dissemination and implementation.

- Identify and agree upon a core set of outcome variables for dissemination and implementation research studies (IOM six dimensions of quality, SF-36, stages of adoption, etc.) and a complementary set of common process measures to evaluate effectiveness of dissemination.

AREA 2: BUILD AN AGREED-UPON BODY OF CONCEPTUAL MODELS, DISSEMINATION AND IMPLEMENTATION RESEARCH METHODS, AND THEORY BASED APPROACHES

In order for dissemination research to be meaningful and applicable in real-world settings, it needs to be based on conceptual models that both reflect practitioner agreement on public health or clinical relevance of the model and are grounded in sound theory. As more dissemination and implementation research is conducted testing theories, models, and frameworks, the science of dissemination can advance more quickly, building on an ever-expanding base of dissemination research methods and implementation knowledge that can be put into practice. Strategies supporting this area include:

Strategy #5: Broaden/Shift the Accepted Research Designs and Methodologies

Dissemination and implementation research needs to consider systems approaches as a critical step, as dissemination and implementation necessarily involves many audiences and intermediaries operating at many different levels of public health and clinical practice delivery. These systems approaches require new methods for conducting research that may not always

correspond to traditional intervention research designs and may, in fact, run counter to traditional researcher views about threats to both internal and external validity. For dissemination and implementation research, a paradigm shift may be essential. This shift includes:

- Moving investigator-driven research to collaborative research with public health or clinical practitioners. Research/practice partnerships are needed across contexts in the conduct of dissemination and implementation research. Such partnerships serve to determine whether the evidence generated by the research is perceived by public health practitioners and/or clinicians as helpful in their efforts to better address the service delivery issues they face in their respective practice settings. (This is reinforced in implementation strategy #2.)

- Shifting the view from randomized, controlled trials as the "gold standard" for all intervention research to an appreciation for quasi-experimental designs that capture the key process measures of adaptation, adoption, implementation, and maintenance of evidence-based interventions, as well as the population outcome measures of intervention effectiveness.

- Expanding beyond controlled intervention settings to naturally occurring service delivery situations (federally supported demonstration programs, delivery systems, and collaboratives).

- Focusing beyond changes occurring in individuals to focusing on changes affecting systems and populations.

- Transforming discipline-specific investigations into transdisciplinary team science.

- Consolidating the research synthesis process and streamlining the passive diffusion process that stretches from concept to proposal, funding to results, results to publications, publications to evidence reviews, evidence reviews to guidelines, and guidelines to practice.

- Accelerating the diffusion-of-innovation curve by focusing on targeted dissemination research efforts tailored to factors that influence middle-to-late adopters of innovations.

Strategy #6: Increase the Study of Specific Areas of Dissemination and Implementation

The following are recommended areas for study:

- Studies that look at systems approaches to dissemination in varying contexts from public health practice to cancer care clinical practice and the extent to which system change dissemination approaches increase propensity for adoption of innovations in practice.

- Studies on motivation and what affects motivation in ways that lead middle-to-late adopters to change health behaviors and practice preferences.

- Studies on agents for change: who or what they are, what they have in common, and what the characteristics are that render them effective change agents.

- Studies on dissemination channels in community and clinical settings: what they are, where they are, when to use which channel, and how to access them.

- Studies looking at contextual reinforcers (team care models, protection of provider autonomy in the standardization of care) of dissemination and implementation.

Strategy 7: Begin to Capture Evidence of Progress That Currently Exists for Dissemination/Implementation and Present It in Ways That Render It Useful in the Consideration of New Research Strategies

- Produce literature syntheses on evidence-based intervention adoption and use of evidence in clinical decision making. The literature is currently poorly organized for clinical decision making, and it is difficult to discern what is known and ascertain opportunities for research.

- Compile a body of dissemination models that depicts "best practices" in dissemination and implementation research.

Dissemination and Implementation of Evidence-Based Interventions

Five broad strategies were identified for accelerating the implementation of evidence-based practices in public health and clinical care settings for cancer control.

Strategy #1: Facilitate Effective Communication and Interaction Between All Parties That Benefit—or Can Benefit—From the Successful Translation of Cancer Control Research Findings Into Practice

Currently, many different "languages" are being used between and within various communities to describe the implementation of research findings in practice settings. The lack of fluency across these communities appears to be undermining the effectiveness of translation efforts. It is not reasonable, however, to expect people from different communities or practice settings to agree on and use a common set of terms and concepts. Rather, practitioners should be encouraged to communicate in terms understood and accepted by members of the audience(s) with whom they communicate and work closely in providing cancer services. Moreover, while clear communication is important, it is only valuable when it results in interactions, processes, and systems that facilitate adoption of evidence-based practices. One use of effective communication is in influencing organizational cultures in order to overcome barriers to the implementation of evidence-based approaches.

Understanding the Service Delivery Marketplace

- "Market research" should be conducted with the various audiences that could improve practice with the knowledge gained through research. This market research would serve to identify the terms, concepts, and processes most suited for adoption within particular settings.

- A glossary of the terms and concepts identified and placing these terms/concepts in a matrix by audience could facilitate discussions between researchers who see their work/findings as being of value to particular users and among practitioners working collaboratively to implement evidence-based practices.

- Stakeholders within systems should examine opportunities and assess their particular role in influencing the evaluation of process, interaction, and system changes in order to facilitate the adoption of evidence-based practices and interventions.

- Recognition of and emphasis on the importance of team-based performance could facilitate the adoption of evidence-based practices and encourage processes supportive of the team.

- Development and implementation of a communication plan and process for working with senior managers in public health and clinical care systems would enhance the perceived value and benefits of evidence-based approaches.

- Funding agencies and clinical practice settings should examine current initiatives for their potential value as case studies in informing a national strategy to support the timely dissemination of evidence-based cancer care practices.

- It is important to increase understanding of and appreciation for the tacit (i.e., experience-based) knowledge of professionals. This is often more important in guiding their behavior than explicit (i.e., evidence-based) knowledge. Few efforts have been made to document and understand the tacit knowledge of the various types of professionals currently involved in—or who could become involved in—cancer control activities. Using tacit knowledge to guide dissemination research and implementation is strongly encouraged. Studies should be conducted to elucidate the tacit knowledge of professionals involved in the implementation of cancer control activities.

Promote Partnerships Between Researchers and Community Organizations That Implement Cancer Control Programs.

Although the proof is more anecdotal than empirical, it appears that dissemination is commonly understood by many members of the research community to be a linear process—i.e., "from us to them" (researcher to practitioner)—and their dissemination efforts tend to be planned and implemented in a manner that reflects this approach. Unfortunately, linear dissemination efforts tend to be less successful—in part, because the recipients of the knowledge do not perceive it to be responsive to the service delivery challenges they are attempting to address.

An alternative view of dissemination—a view grounded in systems theory—suggests that dissemination/knowledge mobilization efforts will be more successful when the relationship between the "researchers" and the "adopters" is reciprocal rather than linear. In a reciprocal relationship, researchers ask practitioners to identify the challenges they are attempting to address and then focus their research on developing solutions to those challenges. For their part, practitioners turn to researchers to help them understand—and apply—the valuable lessons that emerge from the research literature so that they can become more effective in their work. If this is a valid and practical conceptualization of dissemination—and the experiences of the Social Sciences and Humanities Research Council of Canada and other organizations suggest that it may well be—then cancer control research institutions must be brought to understand this framework and become more proficient at working in ways that support the development of reciprocal relationships between researchers and research users.

To that end, the following steps were recommended:

- Extant partnerships between researchers and CBOs should be examined to determine the attributes of effective and ineffective partnerships.

- Funding agencies should provide significant incentives for proposals in which researchers and CBOs/professional associations work as a team to solve practice-based problems. Funded projects should receive financial support not only for the research, but also for the organizational development work necessary to ensure that the new practices become properly integrated into the adopting organization.

- Feasible modifications of the academic reward system to encourage action research/collaborative projects should be identified and promoted.

- The practices of institutional review boards should be assessed, with modifications suggested as necessary, to ensure that researchers can appropriately use, and publish based on, data collected through CBOs' management information systems.

Strategy #2: Promote Research/Practice Partnerships Between Agencies That Fund Cancer Control Research and Agencies That Fund Cancer Control Programs

Federal agencies that fund research (e.g., NCI, CDC, and ACS) and the agencies that fund its implementation (e.g., CDC, CMS, HRSA) have the ability to serve as strong models of effective partnerships. Such partnerships can be used to develop financial incentives to promote and enable collaborative research. They might also be used to create mechanisms to capture "lessons learned" from funded programs for use in other implementation efforts.

Specific opportunities that might benefit the implementation of evidenced-based approaches in public health and clinical settings through these Federal partnerships include:

- Management information systems (MISs) should be developed to enable CBOs and clinical practices to track their performance as well as to evaluate the impact of interventions or innovations on their performance. Use of MIS data to improve performance—i.e., "data farming"—is integral to the success of high-performing private-sector organizations (e.g., Wal-Mart) and represents an enormous opportunity for improving the management of cancer control activities.

- Studies are needed to identify where dissemination processes are succeeding and where they failing. For example, an evaluation of Cancer Control PLANET (http://cancercontrolplanet.cancer.gov)—to determine how and where it is helping to promote evidence-based practice—could be of great value. Case studies that identify successful knowledge mobilization efforts are also valuable in both implementation and training practitioners for dissemination. Potential cases include Weight Watchers, Drug Abuse Resistance Education (DARE), and the Community Campus Partnerships for Health (http://depts.washington.edu/ccph).

- The combination of performance measurement and accountability is a powerful catalyst for organizational change. Agencies that fund cancer control programs can hold grantees accountable for standards-based performance relating to dissemination of their findings and outcomes.

- Federal statutes that govern how research and service funds are spent should be examined— and modified, if necessary—to better support research/practice partnerships and address the challenges that these relationships present.

Strategy #3: Increase the Demand for—and Encourage a Culture of—Evidence-Based Practice Within Organizations That Implement Cancer Control Activities

Evidence-based practices tend to be adopted by organizations in which there is a strong management and practitioner demand for such approaches. They tend not to be adopted in organizations where there is less demand or greater resistance to change. Increasing the amount of demand or "pull" for evidence-based practices by cancer control practitioners and clinicians and, perhaps more importantly, by the organizations in which they are employed, is a potentially powerful strategy for accelerating the diffusion and adoption of such practices.

Organizations that are strongly supportive of evidence-based practice tend to have cultures with specific characteristics that the following recommendations serve to encourage:

- Support the identification of senior-level executives and managers who could serve as champions of evidence-based practice.

- Encourage organizations to support either one or a small group of employees whose specific function is to identify opportunities for the organization to improve its performance through adoption or adaptation of evidence-based approaches or other forms of knowledge mobilization (i.e., "knowledge brokers").

- Support system assessments wherein employees in various job categories throughout the organization are encouraged to be receptive to modifying how they perform their jobs in order to accommodate evidence-based approaches.

- Facilitate a team-based approach to performance management.

Specific opportunities to increase the demand and create supportive environments for evidence-based practice within cancer control delivery organizations include:

- Developing an integrated marketing initiative to build awareness and increase demand for evidence-based practices. Recognition should be given to organizational practices whose systems are "adoption and implementation friendly" in cancer control practice settings.

  o The initiative should employ both targeted media—e.g., newsletter and journal articles, permission- and referral-based "push" e-mails, tailored Web content, live and virtual conference presentations, etc.—and interpersonal communication mechanisms that are grounded in diffusion theory (e.g., informal networks, peer opinion leaders, etc.).

  o Beyond building demand, the initiative should market the full range of support services (e.g., training, technical assistance, team building, and other approaches to change management training), practice management tools (e.g., MIS applications), and other products and services that would help create organizational change.

  o The initiative should be premised on a keen understanding of the benefits most sought by and the barriers of greatest concern to members of the target audience and should deliver the benefits and reduce the costs to the fullest extent possible.

- Given the pivotal role of employees who routinely review research for the purpose of putting the evidence generated into practice (e.g., knowledge brokers), concerted efforts should be made to promote and possibly formalize these roles within health organizations and to identify, train, and support personnel in this vital role. Efforts should be made that address individuals within systems in order to support dissemination at each level within a complex structure.

- Stakeholders should develop mechanisms to reward people and organizations that excel in the adoption/adaptation of evidence-based practices. Such rewards (incentives) might include: financial incentives and reimbursements; peer recognition of excellence; mechanisms to communicate excellence to consumers (report cards, seals of approval, etc.); tenure and promotion for academics involved in dissemination research and implementation; and supportive policies at the Federal, state, local, and organizational levels.

Strategy #4: Cultivate Dissemination Partnerships With Traditional and Nontraditional Organizations Based on Mutual Self-Interest; Allow These Partnerships to Serve as Conceptual Models for Dissemination When Appropriate

Research-generated knowledge that is beneficial to the public's health can be mobilized only if organizations and individuals believe that it is in their best interest to adopt it. Therefore, for evidence deemed paramount in contributing to lessening the impact of cancer to be adopted, dissemination proponents must understand the principles of the organizations—and

individuals—for whom such knowledge is most beneficial. The ability to earn the cooperation and partnership of organizations and individuals within those organizations in mobilizing knowledge is contingent upon their belief that doing so is one of the most efficient and effective ways in which they can advance their own interests. Failure to understand and help advance the interests of potential partners undermines, and possibly eliminates, the potential to initiate collaborative efforts to disseminate evidence. This principle is true in even greater measure when forming distribution/knowledge mobilization partnerships with nontraditional partners because of the absence of a preexisting relationship.

To cultivate distribution/knowledge mobilization partners, we must demonstrate to them their ability to advance their perceived "self-interest" via participation. Examples include:

- A large national retail chain that sells large amounts of walking shoes and exercise clothing could benefit from becoming a partner in a national walking promotion initiative.

- School districts can raise revenue by renting space for community health activities.

- Media channels can deliver valued content to their audiences by providing engaging health programming and/or cross-promoting health programming offered to audience members in other venues.

- Industry/professional associations can be of value in helping organizations understand the perceived self-interests of their constituents. This might also allow for "ownership" in the conception and development of evidence-based programs ("by our industry for our industry") and provide a natural dissemination/delivery channel.

Strategy #5: Make Evidence-Based Practices and "Knowledge Mobilization" Methods Easier to Adopt

Current efforts to "push" evidence-based practices into public health and community settings are largely predicated on an erroneous assumption that these organizations operate in a manner akin to a corporate franchise model (i.e., independent or corporately owned operators who rely on the corporation to innovate on their behalf). The reality is that most public health and community-based organizations operate more like a loose network of "cottage" businesses, and national organizations are unable to innovate on the behalf of cottage businesses because each is operated in a unique manner. Borrowing a phrase from the political realm: "All [innovation] is local."

For this and other reasons, evidence-based practices must be easy to find, easy to use, and easy to modify if widespread adoption and/or adaptation is to occur. While this is easier said than done, there is, without question, much more that can be done over the near- to mid-term to make it easier to use and adopt intervention innovations. Such opportunities are outlined below:

- There is currently an increasing number of guidelines, as well as an increasing number of proven programs and products. Many, however, are not explicitly accessed in practical and easy-to-use formats. Organizations that develop evidence-based guidelines should identify ways to engage stakeholders in the processes used to synthesize evidence so that the resulting "evidence-based recommendations" are grounded not only in the science (i.e., the explicit knowledge), but also in the realities of real-world practice (i.e., tacit knowledge). Practical considerations (workflow and reimbursement) should accompany practice guidelines and recommendations.

- There is a limited number of tools currently available to make evidence-based practices easy to find, easy to use, and easy to modify (e.g., Cancer Control PLANET, RTIPs, the Guide to

Community Preventive Services, and the Guide to Clinical Preventive Services), but these tools could be improved and additional tools developed with the specific objective of increasing ease of use. This might include a central online resource for evidence-based practices and guidelines (e.g., "www.stuffthatworks.org").

- The current generation of available tools does not take into consideration an understanding of how organizations (i.e., systems) actually work. As these tools are improved and new tools are developed, they should be based on current best practices of organizational change management. This must include clear guidance on incentives and policies within organizations that are known to improve the uptake of useful innovations.

- Most of the potential adopter organizations have, or believe they have, insufficient resources—time and money—to try new ways of doing business. Mechanisms must be developed that will help organizations create adoption-related resources.

Summary

This document has distilled the many and varied suggestions made in the two *Dialogue on Dissemination* meetings, focused, respectively, on community/public health practice and clinical practice. Two overarching approaches, 7 strategies, and 28 specific action items for moving a dissemination/implementation research agenda forward were identified. Five strategies with 28 specific action items to accelerate the dissemination, adoption, and implementation of evidence-based cancer prevention and control interventions in the public health and clinical service sectors were also identified. Not all items are relevant to both public health and clinical practice settings, nor will all actions be ones in which you or the organization (and types of organizations) you represent will likely take a leadership role. *However, some should be*.

Thus, the purpose of this fourth *Dialogue on Dissemination* meeting is to identify which approaches, strategies, and action items are most appropriate for whom; which organizations should be working together to implement what; and who is willing to step up and state their organizations' interest in taking a leadership role on one or more specific action items. Some action items may provide short-term or quick opportunities for changing the dissemination/implementation research environment or receptivity to and interest in evidence-based cancer prevention and control practices, while others may require a longer-term investment. Not all are equally important, nor are all equally feasible.

However, if we wish to see change, as Gandhi so eloquently and simply stated, we will need to *be* that change. Thus, where we go from here and how quickly we move forward is largely up to all of us who are committed to working together to make change happen.

Thank you for your participation in this *Dialogue on Dissemination*. We look forward to seeing you in New York City, January 25–26, 2005. Happy New Year!