



# HUMAN SERVICES RESEARCH DISSEMINATION: WHAT WORKS?

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## FINAL REPORT

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## CONTENTS

I.	Introduction.....	4
	Project Background and Mission .....	4
II.	Methodology of the Literature Review .....	5
	Included Areas.....	5
	Search Strategies .....	7
	Databases and Fields of Study.....	7
	General Results.....	8
III.	Findings: State of the Field in 2010 .....	8
	The Dissemination–Diffusion Distinction .....	8
	International Influence.....	10
	Literature Depth and Quality.....	10
	Outcomes of Dissemination .....	10
IV.	Findings: Well-Known Barriers to Dissemination .....	11
V.	Dissemination of Human Service-Related Research: What Works? .....	15
	Dissemination as a Communication Process .....	15
	Dissemination as a Planned Process .....	15
	Dissemination Channels and Specific Tactics .....	17
	Synthesis: Solutions or Principles Relevant to All OPRE Audience Types.....	18
VI.	Summary and Conclusions .....	28
	Relevance of All Solutions to OPRE’s Audiences.....	29
	Enacting Solutions Through Dissemination Tactics.....	29
	Literature Relationship to the OPRE Dissemination Framework .....	30
	Attachments:	
	Appendix I. Literature Reviews Included as Current Knowledge Base.....	31
	Appendix II. Methods Section Tables .....	32
	Appendix III. Glossary .....	35
	Appendix IV. References .....	38

# HUMAN SERVICES RESEARCH DISSEMINATION: WHAT WORKS?

## Chapter I. Introduction

Public Strategies (PSI) conducted a literature review for the Office of Planning, Research and Evaluation (OPRE), a division of the Administration for Children and Families, U.S. Department of Health and Human Services. The review investigated current knowledge about disseminating human science research results, including new findings, programs, and practices. The literature review supports a dissemination framework, an integrated strategic marketing plan, and other related work for OPRE. The review extends other major literature reviews (see Appendix I), and covers the full range of OPRE human services interests and potential audiences from these reviews forward.

This first section introduces the project and the goals of the literature review. After this background section, Chapter II summarizes the diversity of perspectives that co-exist in the dissemination literature and describes the search procedures used to address OPRE's specific dissemination interests across interdisciplinary fields of study. Three sections then present findings: Chapter III includes general findings about the state of the field; Chapter IV discusses the persistent challenges that necessitate solutions, or the well-known barriers to dissemination; Chapter V contains a synthesis of findings on solutions, or what works, in the present state of knowledge; and Chapter VI provides a summary and conclusions, highlighting the solutions discovered in the literature review.

This literature review seeks to summarize the current state of evidence on dissemination, to inform a research dissemination strategy for OPRE.

### **Project Background and Mission**

This literature review examines current research on dissemination as it applies to social services research and specifically to OPRE's areas of interest, which include a broad array of human services addressed through the U.S. Department of Health and Human Services, Administration for Children and Families (such as child welfare, child care, economic security, youth services, Head Start, etc.). OPRE's intended audiences are policymakers, researchers, administrators, leaders, and intermediaries in the broad field of human services.

OPRE is interested in dissemination and utilization of research-based new information. Often, new information should have supplanted older information, but has not, as examples in many fields show (17, 40, 63, 64, 122). Common distribution practices such as posting or publishing findings are not sufficient for policy, practice, and research fields to find and utilize them (14, 36, 60, 64, 101, 117). This is a worldwide phenomenon in many professional disciplines, from health care to education to social work to academe.

The key challenge is how to communicate research findings and products with the appropriate audiences and to understand why various approaches differ in their likelihood of success. Throughout the review process, we emphasized what is known about factors or variables affecting dissemination outcomes.

For the purpose of this report, dissemination is defined as, “A planned process that involves consideration of target audiences and the settings in which research findings are to be received, and where appropriate, communicating ...in ways that will facilitate research uptake in decision making processes and practice” (171, pg. 2). This definition fits closely the conclusions drawn from the literature; alternative contrasting definitions used are included in Chapter II.

## Chapter II. Methodology of the Literature Review

The literature review, conducted between October 2010 and February 2011, was intended to summarize what is known about dissemination, to identify effective practices, and to inform a dissemination framework to support human service research dissemination. The search was intentionally not exhaustive but was broadly interdisciplinary. The intent was to learn from prior major reviews and to extend these reviews in the more current literature.

### Included Areas

Thirteen prior reviews of dissemination and related theory provided the platform for this review. Prior reviews focused largely on the international literature, primarily in Britain and Canada, and on dissemination in health care (see Appendix I for a list of the reviews). For this reason, the present review targeted the U.S. literature on dissemination, OPRE-related research areas (e.g., child care, welfare, youth development, etc.), and targeted the empirical literature. We were especially interested in identifying factors or variables that might help explain dissemination outcomes.

Empirical work in OPRE-related areas is lightly covered in prior reviews. The review emphasized empirical studies to extend prior reviews, expand knowledge, and increase understanding of specific variables and factors affecting dissemination outcomes. While the search specifically sought empirical studies and variable-analytic work, numerous theory-building articles were also included. Many non-empirical articles described the state of dissemination in various fields; these usually were based on reflective observations rather than reviews or data collection.

The review also sought information on diffusion or dissemination through complex organizations. In the human services, dissemination involves layers of organizations, including federal policymakers and agencies, national organizations, state organizations and policymakers, and finally, local practice organizations. We were particularly interested in this because U.S. human services decisions are not strictly made at the highest level and deployed below. Dissemination, in this situation, must involve working through multiple complex organizations, which is not the same as pushing new information down through a centralized decision structure. Since OPRE rarely disseminates directly to consumers, the review did not focus on consumer-related articles, which mostly come from health care.

Because the review examined human services broadly, searches included multiple practice domains. The review team also intentionally searched for relevant literature in the business sector as well as the public sector. The practice domains investigated were physical health, mental health, business and management, public policy and administration, human services and education. See Appendix II, Table A, for details of what was included in each of these categories.

A number of theories have developed that address dissemination issues. These theories often emerged in different fields or arose from perspectives in specific disciplines, such as health care or community psychology. The different theories all address similar problems, and therefore, key terms from four theories were part of the literature search. The four theories are:

- Diffusion of innovation. “Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system” (137, p. 5). In diffusion of innovation theory, innovation means any new research findings, technologies, products or programs based on research. Diffusion of innovation theory has informed dissemination work across many fields of practice and study.
- Knowledge Utilization (KU). “The study of how individuals and teams acquire, construct, synthesize, and apply knowledge” (64, p. 588). Knowledge utilization theory developed in Canada and is less used by scholars in the United States.
- Knowledge Translation or Knowledge Transfer (KT). “The exchange, synthesis and ethically-sound application of knowledge—within a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research for... more effective services and products, and a strengthened health care system” (158, p. 1). As an empirical body of knowledge, this theory area (and others aside from diffusion of innovation) is not well developed (14).
- Knowledge Transfer and Exchange (KTE). “Knowledge Transfer and Exchange is an interactive process involving the interchange of knowledge between research users and research producers” and is a field of research said to be still in its infancy (112, p. 1).

Additionally, because dissemination is relevant to so many fields, distinct bodies of practice-related knowledge have developed. These practice-related approaches are not atheoretical, but scholars using them are more interested in practice than in building theory. The four main practice areas are dissemination, technology transfer, evidence-based medicine, and evidence-based public health. While dissemination articles were actively sought, we also included in the review many articles from the latter two areas, and some from information technology studies (45).

- *Dissemination*. This term has been variously defined as “The spread of knowledge from its source to health care practitioners...includes any special efforts to ensure that practitioners acquire a working acquaintance with that knowledge” (102, p. 77). “The transfer of knowledge with and across settings, with the expectations that the knowledge will be ‘used’ conceptually... or instrumentally” (80, p. 2). “Actively spreading a message to defined target groups” (63, p. 42). “A planned process that involves consideration of target audiences and the settings in which research findings are to be received, and where appropriate, communicating... in ways that will facilitate research uptake in decision making processes and practice” (171, pg. 2). According to Johnson, et al. (1996), dissemination research is “the study of the processes and variables that determine and/or influence the adoption of knowledge, interventions, or practice by various stakeholders” (as cited in 40, p. 2).
- *Technology Transfer*. *Technology transfer* is typically used as an engineering term referring to technology innovations migrating out of universities or other research laboratories into products or wider use. However, Baum (cited in Backer et al., 11) defined technology in human services to mean... “what a practitioner does.” As in other areas related to dissemination and diffusion, definitions and meanings are often relative to the field in which they are used (59).

- *Evidence-based Medicine*. Evidence-based medicine is a dissemination field of practice in health care in many countries. Evidence-based medicine focuses dissemination efforts on complex organizations, rather than dissemination to health care consumers.
- *Evidence-based Public Health*. Evidence-based public health, also a field of practice, emerged from dissemination practice and diffusion of innovation theory. Evidence-based public health generally targets dissemination to individuals, and often emphasizes preventative medicine, or knowledge designed to help individuals manage their own health issues effectively.

## Search Strategies

Dissemination is a term in widespread use, creating challenges in producing relevant search results. One large literature review on dissemination relevant to health care in the United Kingdom found, for example, over 6,000 articles that included that keyword, but only 450 of these were relevant to review (63). The best results were obtained using keywords that should capture nearly all empirical work, the focus of this review, and including keywords for several fields of knowledge related to dissemination, and to OPRE-related practice areas as they were discussed in the literature. Several synonymous terms were used such as TANF and welfare or child abuse and child maltreatment, to ensure the broad fields within human services were covered. Alternative phrasing appeared frequently, so those that appeared were re-used, and keywords that were unproductive were dropped. See Appendix II, Table B, for the sets of keywords used.

## Databases and Fields of Study

The literature review began with thirteen prior major reviews. The search terms in Appendix II, Table B assured that OPRE's interest areas would be covered. Critical databases in specific fields were searched in turn. These databases are listed in Appendix II, Table C. Searching databases in this way helped to avoid the thousands of irrelevant articles that appeared frequently in aggregator databases. "Child welfare," for example, as a search term, returned numerous abstracts that on inspection, had little relevance to dissemination (e.g., child welfare statistical reports). The term dissemination itself, no matter what other keywords with which it was paired, originally returned over 10,000 abstracts, most of which were irrelevant to the goals of the project (e.g., dissemination of insecticide information in Sudan).

The databases used were in nine disciplines: psychology, sociology, communication studies, social work, education, public administration and political science, information science, management (including business and organizational psychology), and health. The health care database Medline was included to ensure that empirical articles on health care research or intervention dissemination were located. Adding the large, multi-disciplinary Social Science Citation Index (SSCI) ensured complete coverage.

## General Results

This review sought topically relevant empirical articles across disciplines. After reviewing 1,208 abstracts obtained via this search, PSI staff retrieved 182 articles in full text. One hundred thirty-four (134) articles, book chapters, and books were reviewed in depth. Forty-two (42) reviewed articles were health care-related; the remainder (92 or 69%) were human services related. Seventy-four (74) individual articles were empirical studies, or collected original data to answer research questions. Eleven (11 or 8%) of reviewed articles were theory-building works. Twenty-five (25 or 18%) of articles reviewed were descriptive or proscriptive state-of-the-field works. Empirical studies collected data using either surveys/focus groups/interviews (47), experiments or quasi-experiments (18), or analysis of secondary data (16). (Note: Some studies included multiple methodologies.) The distribution of article (etc.) types and definitions, in all areas of interest, is shown in Appendix II, Table D.

Prior reviews had not discovered significant numbers of empirical studies, prompting emphasis on them for this review. Experimental designs and random assignment methods were rare; non-random samples were more often used since most studies investigated actual dissemination but did not conduct comparative or controlled experiments. For example, one review investigated research utilization in nine instances of human services dissemination in four California counties (36). Organizations and participants were chosen for specific reasons, not randomly. Similarly, another review looked at how three states disseminated information on the 1996 Personal Responsibility and Work Opportunity Reconciliation Act and interviewed 93 administrators (61). Other studies sought information such as program effects related to participants' differences in socio-economic levels matched with severity of presenting child behavior problems (e.g., 21). Since the search terms included "results or findings or method" it seems likely that all experimental studies were found, but such studies are apparently currently rare in dissemination research.

The interdisciplinary search strategy described here resulted in empirical and theory-building articles, books, and book chapters that describe the current state of evidence on dissemination. These findings are summarized in Chapter III.

## Chapter III. Findings: State of the Field in 2010

This section provides background on the field of dissemination studies that emerged in the literature review. Initially, the review focused on dissemination; however, initial searches showed this was an inappropriate limitation, as we will explain below. To aid in this explanation, four findings are summarized here: 1) the dissemination–diffusion distinction and its influence; 2) the influence of international perspectives; 3) the general state of evidence quality; and 4) what is currently understood about outcomes of dissemination.

### The Dissemination–Diffusion Distinction

The dissemination and diffusion literatures are two bodies of knowledge. Diffusion had been of interest from the late 1800s forward, and emerged in the United States as a formal theory in the late 1950s and early 1960s (137). The concept of dissemination grew out of the subsequent literature on diffusion of innovation. Dissemination became a concept separate from diffusion in the late 1980s, a distinction that has been traced to a taxonomy provided to the health care field by

Lomas and Haynes (102) (see <http://www.ncbi.nlm.nih.gov/books/NBK36996/>). Passive information presentation should be called diffusion, Lomas and Haynes suggested, where passive means simply making information public and hoping someone will find and use it (e.g., through a journal article). Lomas and Haynes suggested dissemination should be active, involving a change agent deliberately engaged in actions to increase spread of new information and speed of utilization.

By explicating dissemination as a concept distinct from diffusion, Lomas and Haynes essentially split the study and practice of dissemination into two branches. The idea that dissemination is active and should be distinguished from diffusion took hold in health care and spread to other disciplines and areas of practice. Meanwhile, diffusion in its original definition was an active effort, and fields such as business and management studies, organizational psychology, social psychology, information technology, and communication studies continued to study diffusion from that perspective.

The two fields of study are not cross-linked; articles addressed one or the other, with no apparent awareness that the other field exists. This probably occurred because of two features of academic discourse. First, those in any academic discipline are responsible only for the knowledge base in their field. Lomas and Haynes originated the distinction in health care, and it does not appear that others in health care contested the new definition. Second, when concepts move across disciplinary boundaries, they are often re-formulated to fit the problems and theories dominating that field. Researchers typically work within disciplinary boundaries, following the traditions of their field, and may even reproduce terms without knowledge of or reference to their more distant origins.

While Lomas had explicated dissemination as distinct from diffusion, in Rogers' and many others' work, diffusion was always an actively led and encouraged process. By 2003, Rogers' decades of applied studies and theory-building stated that diffusion could be either *centralized or decentralized* (137), which are different names for active and passive. Centralized diffusion, as Rogers defined it, proceeds from top-down research and development tactics, led by change agents. Decentralized diffusion occurs relatively spontaneously among near peers (or by other means). Thus, Lomas' dissemination is Rogers' centralized diffusion, and Lomas' diffusion is Rogers' decentralized diffusion. Semantic confusion is rampant in dissemination, so much so that one author proffered an article called "Lost in Knowledge Translation? Time for a Map" (59). This confusion is probably due to disciplinary practices, since dissemination is more practice-based than theory-based. In theory-based work, definitions are not casually recast with different meanings.

In the applied field of marketing, two additional terms—push marketing and pull marketing—are used to describe dissemination. *Push* marketing activity are efforts directed from top-down or lateral agents. Its counterpart is *pull*, or consumer or user-led spontaneous demand and utilization. For example, diaper purchases are generally driven by pull (inherent need). Smoking, on the other hand, may be partly driven by push marketing efforts and partly driven by social pull or diffusion (53). In human services dissemination, push tactics may be most useful when they encourage or result in pull from the field, as may also be the case in health care (39, 87).

For this review, the PSI team sought articles that investigated or theorized about active, agent-led distribution of research results, regardless of the terms used. We investigated both the diffusion and the dissemination literatures. To avoid confusion, however, in this report, dissemination refers to active means of encouraging the spread of new information; diffusion is the spread of information through non-agent-driven means such as word of mouth and peer leadership. Diffusion of *innovation* retains its traditional meaning: any new idea, research result, program, technology, etc., based in research.

## International Influence

The literature on dissemination (as opposed to diffusion) springs largely from health care systems, and its development has proceeded faster in centralized health care countries such as Great Britain, Canada, and Australia. The health-related literature frequently emphasizes dissemination to individual consumers. OPRE's interest, by contrast, is in informing effective dissemination of new information to policymakers, researchers, administrators, leaders, and intermediaries in the broad field of human services. In the United States, this necessarily involves many layers of organizations across the country. Tactics useful in centralized systems may not work as well in these more distributed systems. Because health care research dissemination is not directly relevant to OPRE's dissemination interests, we sought and found useful information in disciplines that do not directly address dissemination, but similarly address knowledge transfer, diffusion of innovation, and knowledge utilization. These knowledge areas can inform hypotheses about dissemination in more diffuse systems such as human services in the United States.

## Literature Depth and Quality

In seeking a research-informed view of dissemination, the review emphasized empirical studies, but included theory and field-status perspectives for background. This approach responded to the finding discussed previously—that earlier literature reviews in dissemination found few empirical studies, primarily investigated the bodies of knowledge in health care, and focused on literature outside the United States.

The project team found that in the dissemination literature, research methods were generally less rigorous than in the diffusion of innovation literature. As discussed in Chapter II (Methodology of the Literature Review), this review sought out all types of studies, across multiple fields, that were not adequately covered in prior reviews. Study types varied in rigor from case studies, which were prevalent in this review, to experimental studies, of which there were few. The most rigorous and empirical articles came from organizational psychology, business and management, psychology, sociology, and communication studies, the fields where diffusion of innovation is studied.

Whether from the dissemination or the diffusion tradition, a relatively small number of articles studied a specific dissemination strategy. This finding corresponds with a large review of the knowledge transfer and exchange literature (KTE). Mitten et al. similarly found that of 169 KTE articles, 18 actually studied a KTE strategy (112). Many dissemination articles described the research but not the results, or had such small samples that statistics could not differentiate which of several dissemination tactics accounted for the study outcomes.

## Outcomes of Dissemination

What are the goals of dissemination? The discussion below presents three perspectives on the kinds of outcomes possible. Dissemination outcomes would probably differ depending on the audience targeted. These are not prescriptive recommendations, but are intended to focus discussion on the outcomes that are most relevant to seek in a particular situation.

*Outcomes: The Diffusion Perspective.* The classical diffusion model, developed by Rogers (1962), included stages of outcomes that occur leading up to adoption of an innovation. Essentially, these are stages leading from simple awareness through deeper states of cognition. These end

outcomes are themselves related to sub-outcomes, such as gaining how-to knowledge versus principled knowledge. Attitude change creates persuasion; using new information signals adoption; reinforcement creates sustainable practice and confirmation.

*Outcomes: Knowledge Utilization Perspective.* Belkhdja et al. (15) explain outcomes differently, as related to knowledge utilization. Knowledge utilization outcomes are different from those of other perspectives. Knowledge utilization currently is measured as passing through levels of utilization, from initial reception through perception into use. The most commonly recognized levels of knowledge utilization are reception, cognition, reference, efforts, influence, adaptation, and application. From this perspective, knowledge utilization occurs when we have cognitively processed it, can reference it, show efforts to use it, use it to influence others, fit it to our needs, and apply it in practice. There are currently many ways of explicating utilization, possibly because it is of interest in so many different fields of study.

*Outcomes: The Translational Research Perspective.* Translational research generally examines the spread of evidence-based policies, practices, and programs. Most common in the public health field, the factors involved in successful translation of research into practice, in this view, are related to six dissemination outcomes: reach, compatibility, effectiveness, adoption, implementation, and maintenance (37, 55). Reach and awareness are the most basic outcomes, followed by the degree of compatibility with needs, the innovation's effectiveness compared to needs, adoption, implementation, and maintenance in continuing practice.

## Chapter IV. Findings: Well-Known Barriers to Dissemination

Understanding the core challenges of dissemination provides the logical foundation for developing solutions. The literature amply supports that the eight issues discussed below are the central barriers to effective dissemination of research evidence or research-based practices.

Usually described as barriers to dissemination, the core challenges are a longstanding thread of work dating to the 1970s. However, research on barriers to dissemination is a beginning point only, since the solution to a barrier is not necessarily its inverse. If the field of practice lacks time for training, for example, it is not always the case that more time is the only possible solution. Different kinds of training might be a better answer.

1. *Qualities and concerns of organizations and individuals.* Many individual and organizational characteristics form barriers to dissemination. Change readiness refers to the variability that individuals, organizations, and communities have in terms of their interest, willingness, and ability to acquire and adopt new knowledge (14). Interest, willingness, and ability are related to capacity, or issues such as time, staffing, and competing demands. Many organizations lack the staff, funding, time, and other resources necessary to turn new information into effective practice (158). The different education levels of employees who would utilize new information or practices can also be an obstacle (96).

Practitioners also use and promote research when they see its *added value* to their practice. They are especially motivated to adopt new research information that results in successful outcomes for the client, practitioner enjoyment in facilitating the intervention, and positive client reception of the new intervention (17).

In health care dissemination, Fitzgerald found that professionals weigh a range of factors, including the robustness of the evidence, breadth of application, severity of consequences if not adopted, neutral cost or cost savings, complexity in implementation with patients, and patient satisfaction (49). Ease of implementation depends on the degree to which program or practice characteristics align (or are perceived to align) with the organization's characteristics and mission (32, 173).

*Institutional logics* also affect utilization of new information. These reasoning patterns reflect the values, mission, and identity that develop in organizations. For example, a non-profit service provider might want to be seen as a field leader, while another might prefer to take a conservative approach and adopt new practices only after they are proven in the field elsewhere. Shipilov et al. (149) found that organizations in their study adopted new practices when they accepted a particular logic. The institutional logic in this case was the reasoning that management should be led by boards of directors who are responsive to shareholders. This logic was not accepted by all; many organizations resisted and did not adopt board reform practices, even though these practices were mandated by legislation. The competing logic in use held that management needed to be shielded from shareholder demands, not led by them, in order to implement long-term strategies.

*Timeliness* is a factor in the field of practice and in organizations' adoption of policy or practice (37, 118). Studies have shown that research may take as long as 8–15 years to diffuse into the field of practice (attributed to 47 and 77 as cited in 40). At the same time, some in the field complain that research is 10–15 years behind them. These dual realities suggest the field of practice may move on while research is conducted, so that timeliness may be a significant cause of disinterest in "new" findings. We investigated, but did not find, more recent literature or literature on timeliness in light of the Internet.

The qualities and concerns of organizations and individuals, either as disseminators or recipients, interfere with diffusion, or the natural spread of good ideas. They demand more from disseminators than simply distribution (14).

2. *Capacity to evaluate research.* Utilization of evidence-based information is further hindered by policymakers' and others' ability to evaluate competing evidence. Information is abundant, but information is not equal. For example, an innovation can be persuasively presented, only to be rejected when a different argument is presented.

As one elected official put it, "You've got to find the inconsistencies...and rip it up right before their eyes," in order to utilize the best information and deflect persuasively presented, but flawed, arguments (85). *Training to increase skills in utilizing research-based information* (frequently called evidence-based skills training) is intended to bridge the gap between the theoretical and the applied, and to educate leaders and policymakers who can then introduce new decision-making approaches to their agency or organization. This type of skills-oriented training is advocated for policymakers as well as practitioners.

Developing skills for interpreting statistics may be needed, along with additional strategies. Cochrane and Campbell Reviews are systematic reviews that are quite useful, but require

understanding of research methodologies and statistics. To counter this obstacle, one dissemination study used short summaries that explained the findings to nurses without display of complex statistical tables, and found these summaries were far more intelligible (124). Thus, capacity to evaluate is also a matter of presentation.

3. *Situational fit.* In Rogers' (137) classic diffusion of innovation theory, the initial characteristics of an innovation were understood as a significant factor in uptake, based on many studies. Green et al. state that, "Dissemination is not an end in itself; its intended benefits depend on integration and implementation by the end users, who will also determine the relevance and usability of whatever is disseminated. Therefore, they need to be considered early in the process of generating the research they might use" (60, p. 168). In dissemination, situational fit accounts for relevance and usability of the innovation. In practice, utilization of an innovation can be a problem of fit with the specific needs of a particular community or organization (4, 15, 17, 37, 38, 94). Some have said that sustainability and persistence in practice often rely on situational flexibility. Fit is not always easily addressed, which is why it is a significant obstacle to reaching dissemination goals.
4. *Access.* Even in the Internet age, research is not always widely available. Studies have repeatedly found that government and non-profit organizations that might be highly interested in new information frequently do not have access to central information hubs such as conferences and university libraries. For example, a recent study examining Canadian government professional employees' access to information concluded that only 12% of professionals and managers—in health, human services, and social security—usually or always received university research relevant to their work (96). Other access issues include the logistical challenge of getting to conferences, reading journal articles, and using university libraries. Relatively few from the field of practice can afford conference travel and attendance or journal subscriptions. University libraries restrict remote access due to license agreements with database providers, and limit non-university members' time for on-campus access. Munson (117) noted that the fugitive literature, reports or evaluative studies by government entities, rarely are published, indexed, or made readily available, even if sought.
5. *Contested evidence.* What is considered good evidence is still a contested issue, as is the nature of evidence-based practice. In health care, an experimental study that deliberately excludes many types of patients raises the issue of external validity (validity outside the circumstances in which the results were obtained); this matters a great deal in the field of practice (37, 60, 90). A recent study summarized two decades of methods for rating strength of evidence, finding only 19 of 121 different approaches met the standards applied (156). The authors conclude there may be good reasons for practitioners and policymakers to resist blanket acceptance of evidence-based practices. Furthermore, of supposedly evidence-based findings related to cirrhosis and hepatitis from 1945 to a review in 2000, 21% were false, and 19% were obsolete (59). Another author's analysis of the way a program developer represented evaluation evidence reveals that positive self-reviews were not entirely accurate to the statistics (58). In human services fields, contested evidence is often discussed as a clash between what field experience suggests works and the alternative evidence from research (16, 49, 50, 117).
6. *Complexity.* Diffusion of innovation theory expects that features of the innovation itself often predict 47% to 87% of utilization (137), and that complexity reduces utilization. This challenge may stem from presentation that makes understanding difficult, or inherently complex features of a program or policy that impede implementation. Policies that are overly

technical or require advanced knowledge are more difficult to utilize; each policymaker will be looking to adopt the policy under unique and timely situations (118). Any information that takes too much time or resources to successfully implement, or is difficult to explain to others, will be a problem.

7. *Messaging and format issues.* A common research dissemination tactic is distribution in journals and at conferences. Abundant language and format issues are identified with these tactics related to the standards and requirements of the audiences. Researchers most often publish for other researchers, to inform their own field, and to add to knowledge rather than enhance practice; using non-technical language could be seen as unscientific. Thus, new findings may come with intense layers of technical jargon, words with multiple meanings across fields, complex sentence structure, dense tables and statistics, and little discussion of the relevance to practice. All of these issues interfere with utilization of research by anyone outside the research community (36, 117), including policymakers.
8. *Professional commitments.* *Professional commitments* come from training and reward systems in which people work, and may be an obstacle across many audiences. A recommended practice that clashes with the treatment approach learned in initial training presents an obstacle to utilization of the practice. For example, in a study of mental health practitioners, many held philosophical commitments to a certain type of therapy, precluding an interest in other approaches regardless of research evidence (32).

Professional commitments can also be a barrier in dissemination of research findings to other researchers. One type of professional commitment by academics is adherence to the reward structure in which they work. New research that resonates with the reward structure and disciplinary trends is more likely to influence other researchers (95, 101). Academic researchers typically pursue the types of work that are rewarded in their discipline, which are not necessarily related to practice or policy.

Non-academic researchers also are not immune to professional commitments. As Kuhn (95) notes, academic training directs researchers into narrow bands of knowledge. In a study of federal government staff researchers, investigators found they reported a high value on knowledge for its own sake, and valued 'shielding' research. In this study, shielding meant sheltering it from prevailing political pressures. While both commitments are understandable, Gano et al. also concluded that these researchers were not typically concerned with operational issues in organizations, but rather with big-picture social policy issues (52). There are very few studies of federal researchers and more information on the subject would be helpful.

Barriers to dissemination inhibit the ability of an organization or individual to utilize new information, and disseminators' ability to communicate new information. These issues affect all audiences interested in human services research. The next section will consider solutions to these challenges.

## Chapter V. Dissemination of Human Service-Related Research: What Works?

The prior section explained well-known barriers, but understanding these barriers does not necessarily point to workable solutions. For example, if local staffing, time, access, evaluation capacity, professional commitments and competing demands are barriers, eliminating these barriers would theoretically solve the problem. Realistically, however, this is unlikely to occur, so solutions are needed to circumvent these barriers.

Before introducing the solutions, background in two perspectives on communication provides a framework for considering dissemination strategies. First, dissemination is best understood as a communication process, and second, as a planned, intentional process.

### Dissemination as a Communication Process

The first feature of a “what works” approach is to see dissemination as a process rather than an event. Simply generating information is a one-time event. Change management expert John Kotter says that single communication events do not work (91) because they fall into the larger communication stream. For example, one memo, one training session, or even a combination of these in an ongoing communication stream become quickly overwhelmed by the large stream of information continuously targeting professionals. A process of communication is needed, in enough quantity and with enough intensity to make a difference.

### Dissemination as a Planned Process

Second, the literature suggests that dissemination should be thought of as an *intentional, planned process*. Of all the frameworks available, Wilson’s definition of dissemination (171) most represents this perspective, defining dissemination as, “A planned process that involves consideration of target audiences and the settings in which research findings are to be received and, where appropriate, communicating and interacting with wide policy and health service audiences in ways that will facilitate research uptake in decision-making processes and practice.”

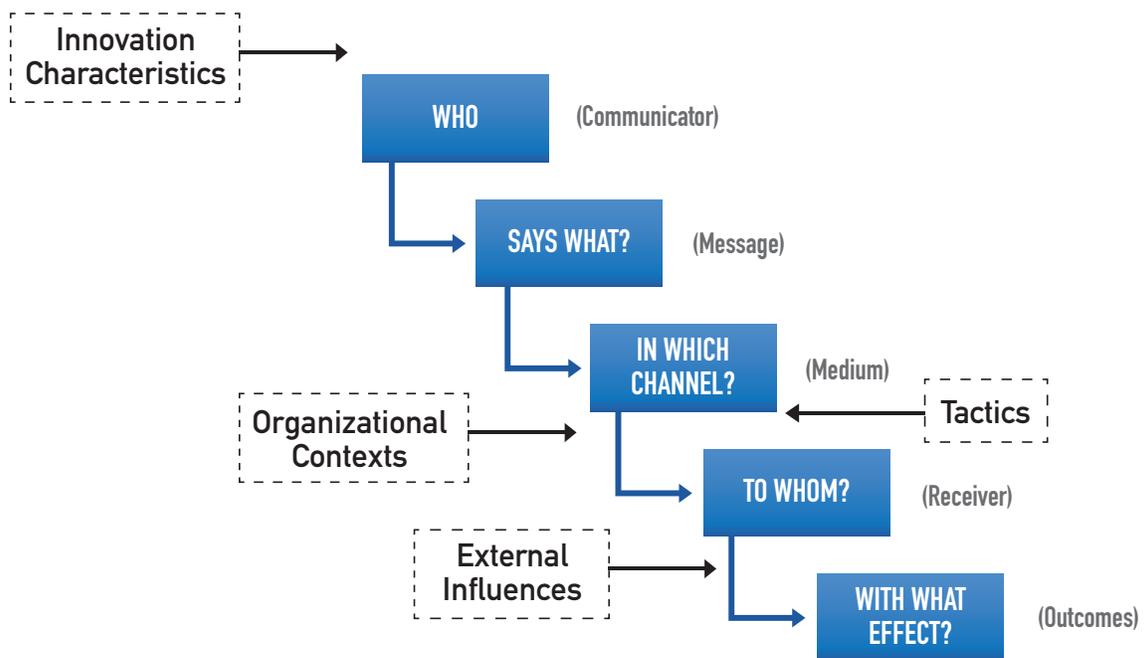
Following from Wilson’s definition, it helps to look at the classic models of communication and elements that could be recognized as parts of dissemination. Thus, we assume dissemination planning includes attention to all of the areas described in Lasswell’s classic model of communication (150) and the most basic texts on communication. These are:

- *Message intent*: Strategic work should be led by objectives. Assuming one intentionally communicates and is aware of how messages influence receivers, what objectives does the disseminator have? Clear objectives for dissemination are needed.
- *Message content and qualities*, or what messages should talk about, and in what way, is the second important component of dissemination as a communication process. Messages should be aimed at achieving specific objectives.

- Messages travel via the *channels* of distribution, or the general *medium* of communication, such as print materials, the Internet, radio, etc. Specific *tactics* are the ways in which channels are used. If the chosen channel is the Internet, for example, we must choose yet more specific mechanisms, such as a community of practice (CoP), e-learning, a clearinghouse, or a listserv. (For more details on channels and tactics, see the next section.)
- The communication model also includes receivers and addresses *specific audiences*: What are the needs of different audiences, and what works for dissemination to policymakers, intermediaries, the field of practice, or researcher audiences? Communication is typically more successful if audiences' attitudes and backgrounds (among other things) are taken into account.

Figure 1, below, depicts the classic communication model in the solid boxes. Additional dissemination elements are on the periphery, in boxes with a dotted line.

**Figure 1. The Classic Communication Model, Plus Dissemination Elements**



To illustrate what this means in dissemination, consider the following example. The authors reported on a trial that was underway at the time of publication (146). It will examine telehealth (teleconferencing) technology to train Parent-Child Interaction Therapy (PCIT). PCIT requires complex training methods (didactic instruction and cotherapy), so moving PCIT from research and development into practice settings was reportedly difficult. The teleconferencing technology is a new channel and tactic through which the training (innovation) can be delivered to the practitioners (receivers). In this example, the study will examine how the tactics and dissemination elements may influence the effectiveness of the training (outcome).

## Dissemination Channels and Specific Tactics

With the knowledge that dissemination is an intentional, planned communication process, the following section explains dissemination channels and tactics in more detail. Table 1, below, summarizes the channels and tactics that were either discussed or actually studied in the literature reviewed.

*Communication Channels.* A channel, in models or theories of communication, refers to the general medium or transmission method of communication (150). Radio is a distinctively different transmission medium from television; radio is purely auditory, and television is highly visual and auditory. Printed materials convey some types of information very well, but as a transmission method, a DVD containing video scenarios paints a picture in quite a different way. Face-to-face communication is significantly different from written text; nuances that are more easily conveyed face-to-face may require more work to represent in written form. In other words, transmission methods or the channels make a difference.

Distinguishing between different channels helps in considering their limitations and benefits. Research has documented that non-verbals (tone, pitch, facial expression—everything besides the words), supply up to 95% of the relational meaning of communication, or tell us how the speaker feels (e.g., excited, angry, bored). Non-verbal signals are conveyed easily in face-to-face meetings, but are missing in text. For this reason, written materials require attention to tone to convey the intended feeling. For example, even in brief emails the right tone can take time to achieve.

*Tactics.* A *tactic* (19) is how a communication channel or medium is used in a given situation. For example, conferences or journal articles are communication tactics that might be used to reach researchers, primarily. The results of knowledge distillation activities might be tactics such as summaries, print or web systematic reviews and/or executive summaries (42). Leave-behind postcard-size summaries, phone consultation services (30), online interactive training, and e-newsletters are all examples of tactics in different channels.

Table 1 lists the channels and tactics represented in the literature reviewed for this project. Since the review was intentionally limited to 2005 forward, the table includes only empirical articles included in this review, using prior large literature reviews to stand in for the pre-2005 work. Table 1 not only lists the tactics within their channels, but also contains the count of empirical articles on a given activity. An asterisk (\*) designates items that audience research finds are audience preferences; these are primarily policymaker and administrator studies. The low count of empirical articles investigating specific dissemination strategies shows that evidence about this is limited. One study found that of 169 papers deemed relevant for their review of knowledge utilization studies, just 18 were studies of actual dissemination strategies (112). Table 1 lists all the channels and tactics discussed in the literature; however, there are many more tactics, such as press releases, that would be included in a comprehensive list.

**Table 1. Channels and tactics discussed in the literature reviewed**

Channels	Communication Tactics
<b>Web, Internet</b>	Computer-mediated group discussion and/or decision making ♦ E-learning, courses, or online training (2) ♦ E-newsletter* ♦ Listserv ♦ Webinars ♦ Informal email messaging (e.g., short summaries of Cochrane Reviews) ♦ Web clearinghouse (3) ♦ Blog ♦ Community of Practice
<b>Print Material</b>	Formal guidelines ♦ Manuals ♦ Practice guides ♦ Policy Brief* ♦ Tool kits ♦ Tip sheets ♦ Executive summaries* (2) ♦ Case studies
<b>Mass Media</b>	Attention-getting activities to generate press ♦ Media campaign (1)
<b>Audio/Visual Media</b>	Interactive CD or DVD training (1) ♦ Phone information service (1) ♦ Phone conferencing ♦ Coaching or phone consultation after TA
<b>Face-to-face</b>	Interactive CD or DVD training (1) ♦ Phone information service (1) ♦ Phone conferencing ♦ Coaching or phone consultation after TA Interlocking networks (2) ♦ Conference presentation, workshops (1), seminars for policymakers (1) ♦ Training or Train the Trainer (2) ♦ Two-way dialogue or debate (1) ♦ Group or team process to resolve concerns and issues (1) ♦ Testimony to authorities ♦ Respond to questions (1) ♦ Coalition of credible sponsors ♦ Technical assistance ♦ Knowledge broker, linking agent, interlocks (4) ♦ Legislative staff interaction ♦ Embedded researcher (1)

Notes: Numbers in the table are the number of empirical studies that evaluated these tactics in the Human Services Research Dissemination: What Works? literature review (total = 21). An asterisk (\*) indicates a tactic that audience members expressed as a preference. All other tactics were discussed but not evaluated.

## Synthesis: Solutions or Principles Relevant to All OPRE Audience Types

The factors involved in effective dissemination formed a pattern across the synthesis, suggesting crosscutting solutions. Across audiences such as policymakers, intermediaries, human services administrators, or the field of practice, the same solutions generally apply. The solutions below are also guiding principles for disseminators.

### Solution 1. Understand audiences

A key problem identified in a number of scholarly articles is disseminators' failure to decipher what the potential adopter will need, and to target messages so that they will be understood. Failing to highlight the right information so that it resonates with receivers is the core of this problem (158). To target interests and highlight what an audience most wants or needs to know, disseminators must understand the audiences they wish to reach.

Furthermore, across audiences, all receivers want clear, succinct messages, and in the field of practice, want recommendations related to practice. When asked their preferences for receiving information, all audiences favor summaries over lengthy pieces, syntheses rather than single-study releases, and e-newsletters (124); policymakers prefer executive summaries and policy briefs (42).

The similarity in audiences' preferences may relate to competing demands for limited time and attention, one of the obstacles long associated with dissemination.

## Solution 2. Linkage or reach mechanisms

The most effective dissemination takes advantage of existing mechanisms for reaching the target audience. Using multiple mediums, as well as the influence of connected and/or committed individuals and organizations, will increase the effectiveness and utilization of the disseminated information.

- a. Multiple dissemination methods. A finding replicated repeatedly in the literature is that multiple methods of dissemination, employed together, work better than any one tactic alone (166). These findings are applicable to many audiences, but are primarily about dissemination to the field of practice. As Walter puts it, there is “overwhelming support” in the long chain of studies on dissemination for pursuing more than one avenue of communication when disseminating new knowledge. Making research information available to practitioners in various forms is especially crucial (51). Mueller (115) used print materials, Web delivery, and workshops to disseminate program information, finding that satisfaction with the effort was highest when all three strategies were used.

Studies investigating passive information media, such as manuals, find these are more effective when combined with active techniques, such as training and follow-up to answer questions that support implementation. Sorenson found that manuals by themselves are successful in changing practices 4% of the time, but when combined with a workshop are effective 29% of the time (158). By contrast, other researchers found neither a two-day training nor reading the provided manual transferred into practice, although reading did increase knowledge (74). Utilization of practice guidelines is affected by presentation style, content related to adopters, and provision of implementation strategies (22).

Oxman (126) reviewed 102 dissemination strategies, finding that conferences and training did not significantly improve knowledge utilization among health care practitioners without more comprehensive strategies. The study also found that outreach visits were effective; single dissemination strategies often showed modest or no results; and cumulative strategies were significantly more effective.

- b. Linking agents. Individuals who serve as linking agents improve knowledge transfer by bringing together two communities, such as research and practice. A linking agent serves as a connection between resource and user systems. Throughout the literature, linking agents are referred to as *policy entrepreneurs*, *knowledge brokers*, *agents of change*, *infomediaries*, *information specialists*, *boundary-spanners*, and more (67, 127).

*Linking agents* tend to employ tactics such as face-to-face interactions, workshops, webinars, and interactive meetings or conferences to reach their objectives. Most often, a linking agent operates within organizations that play a formal role in policy and practice networks, including intermediaries such as professional organizations, inter-governmental non-profits, and contractors providing technical assistance and training.

In some fields, these linking agents might also be called boundary spanners or knowledge brokers (14, 76, 112, 174). The extent of their connectedness is also important. In one quasi-experiment, researchers were embedded in health care organizations. This tactic was intended to improve dissemination of research findings by producing them in local settings where researchers would interact with practitioners. The evaluation study found this tactic was successful in changing practices within the host organization, but did not increase dissemination or diffusion externally (56).

*Knowledge brokers* are a formal organizational role in some cases, and are in widespread use in Canadian health care. Some feel knowledge brokers are needed to identify, assimilate, and integrate useful knowledge for their organizations (174). Anecdotal evidence suggests that knowledge brokers improve the quality and usefulness of evidence that is employed in decision-making while promoting a culture that values evidence (41). Knowledge brokers build relationships within organizations and research networks in order to strengthen the knowledge base among practitioners (156).

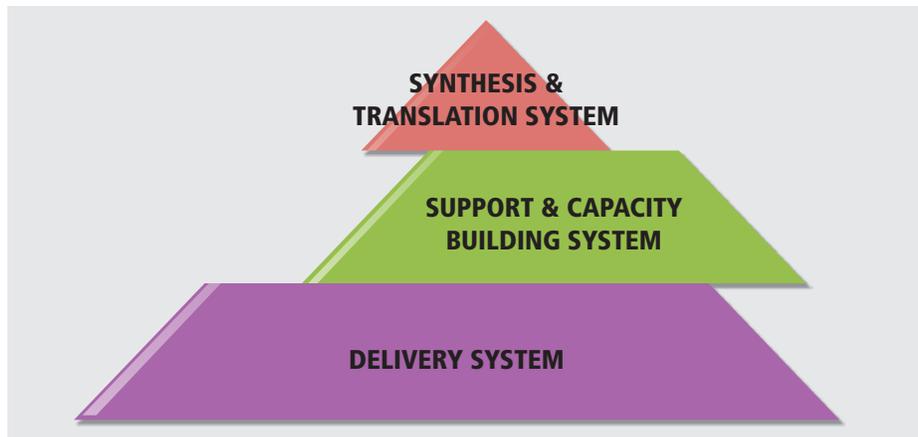
*Information specialists* have the responsibility to gather knowledge needed for decision-making, and to collect information relevant to the organization's long-term core interests (8). Information specialists might be in law firms, as in Attfield et al.'s work (8), in knowledge-based corporations, or in non-profits that serve a field of practice, such as the National Center for State Courts' phone and web Knowledge Information Service.

*Policy entrepreneurs* operate in the policy arena, and tend to be third-party actors, ranging from interest activists to policy analysts advising federal or state legislators. Policy entrepreneurs may or may not have a significant research background on an issue or policy, but actively advocate for it. Policy entrepreneurs can serve as a conduit for researched information and facilitate the learning process by working with others, rather than working directly in one organization (49, 109, 118). Organizations can also be policy entrepreneurs, promoting either objective or philosophically biased policy perspectives; see Rich's 2004 history of think tanks, for example (134).

- c. Linking networks. Multiple studies in diverse fields have found that using networks of people and organizations is a key way to increase utilization of new information. Linking agents might be a hub across networks, but this is not necessarily the case. The simple existence of a network is not the answer, but what networks accomplish may be important to understand. Yuan (172) suggests using coalitions of credible sponsors may be an important way to improve dissemination, although this is an untested proposal. Belkhdja et al. (15) found that formal linkage mechanisms were more influential in knowledge use than even person-to-person contact *and* the new knowledge's perceived usefulness.

The Interactive Systems Framework (ISF) highlights three systems proposed to bridge the research to practice and dissemination gap in health care (see Figure 2). In ISF, these three systems are 1) the synthesis and translation system, 2) the support system (which provides training or technical assistance, etc.), and 3) the delivery system that implements change in practice (168). The support system builds innovation-specific capacity; the delivery system depends on local capacity. Systematic efforts to link these three systems in interactions "may be...the greatest contribution to enhancing dissemination...." (168, p179). For example, the Centers for Disease Control developed a multi-site program in teen pregnancy prevention using the Interactive Systems Framework. This program used a tiered train-the-trainer approach, so that national grantees provided training and technical assistance to state grantees, which provided support for local organizations (98). All parties were linked together into a comprehensive interactive program. Numerous examples of linking networks are in Nutley's review of the literature on improving health care through dissemination within British public services (122).

**Figure 2. Interactive Systems Framework**  
Activities or Functions of Three Related Systems



Redrawn from Wandersman et al., 2008

In another study, inter-organizational relationships between child welfare agencies and mental health providers were correlated with improved access to mental health services for children in the child welfare system (12). The inter-organizational relationships had a statistically significant positive effect not only on improved access to mental health services but also on improved mental health outcomes for children in the system. These relationships rely on allocations of time and people, and their funding is frequently susceptible to changes in top leadership.

In corporate settings, *interlocks*, or individuals serving on multiple corporate boards, were found to form a network of connections that fostered acceptance of new policies governing the boards. Outside consultants who performed board evaluations, which were a part of the new policies, were a second key portion of the interlock network. Consultants are another example of interlocks who create networks bridging different organizations (149). Furthermore, these networks influence thinking by diffusing *logics*, or a reasoning pattern that leads logically to acceptance (or rejection) of a new practice (149). In these studies, the key individuals interlocking boards had more influence on acceptance of the new board governance policies than did the legislative mandate.

*Policy networks* play a key role in pull-through, or decentralized diffusion of policy innovations. A policy network is a group of actors who share an interest in a particular policy area and are linked by their direct and indirect contacts with one another (110).

Policy networks can be regional formal networks or informal interpersonal networks. Potential adopters may rely mostly on their judgments of an innovation based on information from those who have knowledge of the issue and who can explain its advantages and disadvantages; policy networks and collaborative groups are most able to provide that insight. Networks can also help in the dissemination process by acting as additional screeners for merit within proposed policies (109).

Ingle et al. found that inter-state policy networks improved the adoption rate of merit-based college scholarship programs. Inter-state policy networks allowed information from early

adopters about consequences and policy challenges to diffuse through to other interested states (81). However, adoption was also hindered by each state's economic conditions and by active resistance groups.

- d. Local champions. Champions are different from knowledge brokers or linking agents in that they generally do not have a formal role, but emerge because of their knowledge on a particular policy or practice, and their role as intermediaries to other communities (14). Like information specialists, they may be internal to organizations.

*Internal champions* play an important role in change readiness and program adoption. Change readiness is the variability of individuals, organizations, and communities that accounts for their interest, willingness, and ability to acquire and adopt new knowledge (14). Internal champions collaborate with end users to identify issues and problems for which solutions are required, and facilitate the identification, access, assessment, interpretation and translation of research evidence into local policy and practice (41).

### **Solution 3. Demonstrate salience**

The salience of an innovation is very important. Information is salient when it is applicable and relevant to a user's needs (51). The strength of evidence also affects its perceived salience (85, 169). Barwick (14) advises that research knowledge is more likely to be utilized when responding to user needs, and when users can see its applied value (salience) to their practice. New information is salient to policymakers when it is linked to concrete impact (85) or when an issue is drawing heated attention in the public eye (118). Attributes of the innovation can thus help demonstrate salience, by 1) ensuring that the new information or program actually is an improvement over current practice, and 2) ensuring that evidence and validity of evidence is strong. Demonstrated relevance and attitudes about the innovation are related (51).

### **Solution 4. Design for dissemination: messages, formats, and tactics**

The way a message is crafted influences how it is received. Readers will connect better with a message that is succinct, written in their "language," perceived as credible, and in a format with which they are comfortable.

- a. Message construction and formats. Messaging is important to the potential influence of research evidence on all audiences. Since researchers typically publish for other researchers, *translation* is often needed to meet different audiences' needs. Translation, here, does not mean shifting from one language into another (in the usual sense of the term). Instead, translation means addressing the needs of broader audiences.

The first purpose of *translation* is to make information more accessible—to simplify the complexities of technical reports by using ordinary language for an educated layman (one outside the main profession of the finding or program generator). New information that is easily processed or digestible is far more likely to gain attention and be adopted. Training manuals, research summaries, webinars and intermediaries should target and tailor messages to practitioner audiences, emphasizing straightforwardness and appeal in order to successfully translate evidence-based information (51).

A second purpose of translation is to save readers' time, since time is at a premium in all organizations. When targeting messages, disseminators articulate for whom and for what programs the review or article is most relevant, and the ways in which important and timely issues are addressed. Policymakers surveyed in one study in Canada said they wanted systemic reviews in executive summaries; clear, explicit implications for practice; tips on implementation; and outcomes to be expected (42). Targeted messaging can personalize the policy case, making it easier for audiences to relate to it (85).

Formoso found that five dimensions of translation, or transformation as it might better be called, are critical: contextualizing or enrichment; comprehensibility; making explicit any potential harms and benefits; applicability and relevance; and straightforwardness and appeal (51).

- b. Framing. Words and language choices are important, and so are the larger frames in which people interpret specific claims. Both reading and verbal conversation comprehension mean, literally, understanding the larger issue, without which the stand-alone sentences would not make sense (131, 160, 161). Wording is thus as much a matter of linking to the larger frame as it is understanding the localized sentence. All readers or listeners more easily absorb new information when it is in context, both due to the limited time of recipients, and because people understand information in its relationship to larger topics.

Disseminators should provide the frame in which they want material to be understood. A *frame*, in social theory, is a filter through which objects are perceived and meanings attached, created by the inevitable process of selective influence over the individual's perception. Receivers do not always accept others' framing (e.g., a March 3, 2011, *Washington Post* blog headline: "Public rejecting bogus 'public employee versus taxpayer' frame?"). Unless the larger issue or question is explicit, recipients will infer the larger topic, i.e., supply their own frame (13, 75, 105, 164).

Below is a summary list of recommendations for messaging and framing, drawn from the literature. Translation should include:

- Adaptations for readability and appeal (e.g., avoid highly technical language, jargon, and dense statistical tables);
  - Reducing costs to process intellectually (e.g., avoid complex or unfamiliar language);
  - Motivation to care (i.e., implied in message content or supplied by readers);
  - Source status and credibility matter (e.g., trusted influential individuals or organizations);
  - Knowledge representation crossing disciplinary boundaries (discussed in more detail shortly);
  - Diffusion of new logic (i.e., new motivations and reasoning, see p. 17); and
  - Operational recommendations (e.g., implementation tips, expected outcomes).
- c. Formats for message delivery. Research-based evidence relevant to client needs should be delivered in a user-friendly, non-technical format to facilitate ease in adoption and facilitation (51). Policymakers and practitioners alike prefer to receive *syntheses* of research

rather than reports from a single study, as the former place new information in context of other information, and because recipients are aware that one study's results may contrast sharply with another's. Due to time constraints, the field of practice needs research evidence provided in short, clear *summaries*. Research evidence should be clearly identified and succinctly confirm or dispute evidence based on prior knowledge and current practice in order for practitioners to easily digest the information (124).

*Case studies.* While there is little research on case studies as a mode of presentation, one study did explore the extent to which four conditions influenced practitioners in mental health: statistics presented alone, case studies alone, or a combination of the two. Participants who received a presentation of statistics alone showed increased interest over the control group. The case study, however, was more compelling than statistics and generated more interest in new, empirically-based treatments than either statistics alone or statistics with the case study (156).

*Web clearinghouses.* Web-based clearinghouses collect and store potentially widely accessible information. These clearinghouses have the opportunity to reach outside existing organizational boundaries and create a more accessible source of consolidated research evidence than any other medium. They may offer summations of research that may be read and understood much faster than the lengthy technical articles accessible in other areas. Ideally, clearinghouses offer policymakers a tactic for accessing evidence-informed information, as an alternative to information provided by interest groups or lobbyists who might prefer not to utilize evidence summaries (41, 85). The problem is that many websites are relatively unknown to people and their effectiveness still depends on their content.

There is presently limited evidence on clearinghouses' effectiveness. One study looked at a repository of systematic health intervention reviews published since 1985. Study participants received electronic communication about the availability of this site. Responses indicated that the clearinghouse helped in the collection of necessary information, which eventually helped inform policy. Participants also reported that the summaries provided on the website helped them better understand what was being said in an article without having to take the time to read the lengthy technical report (42). This study did not measure actual use of the site, rather participants' perceptions on encountering it.

This positivity contrasts with two other studies. The U.S. Government Accounting Office (GAO) (163) recently studied a large web-based education clearinghouse, the What Works Clearinghouse (WWC) and identified *timeliness* of the information disseminated, which was often years behind its production, and *dissemination*, as problems preventing greater use of the clearinghouse materials. WWC is the dissemination portal for the Department of Education (DOE)'s Institute of Education Sciences; the WWC disseminates via an e-mail listserv, webinars, and newsletters. The GAO study concluded that the Clearinghouse is being neither disseminated nor used in the field to the extent needed to improve student achievement. Recommendations included that dissemination tactics be developed to directly engage school districts and educators' professional development.

In another study, practicing psychologists overwhelmingly said a site developed to showcase empirically supported therapies presented practices that were similar to those already in use, and rated clinical experience and theory as more important than research (135). Thus, web publication alone does not solve the dissemination problem.

## Solution 5. Interdisciplinary knowledge and priorities translation

One of the barriers to interdisciplinary action is that people may lack shared language (127). *Knowledge translation* is an issue even within knowledge creation units. Majdzadeh and colleagues (104) studied a high-level government research organization in Iran, and noted that across disciplines in medical sciences, or even across disciplinary specialties, researchers do not share a common understanding of terms. Experts' knowledge may thus be relatively inaccessible to other experts.

Lacking a pre-existing shared language, these three ways of bridging the divide seem key to knowledge translation and effective dissemination.

- a. *Create boundary or knowledge objects.* Boundary objects as *knowledge representations* merge collective understanding of an issue or situation. This helps groups or organizations develop a shared language and common understanding of complex problems (23). Creating a joint diagram encompassing a team's knowledge across disciplines, for example, is one way to create a joint knowledge object (see the sample knowledge board presented in Figure 3). *Boundary objects* can be an essential part of dissemination. They expose the intersections of different groups' knowledge. In all types of organizations, mechanisms and processes that promote storage, acquisition, and retrieval of knowledge are consistently needed (23), and the amount of novelty introduced is a core challenge for knowledge integration. How a knowledge base is represented is critical to whether it is even identified as appropriate to tap, or include in the search/solution space.

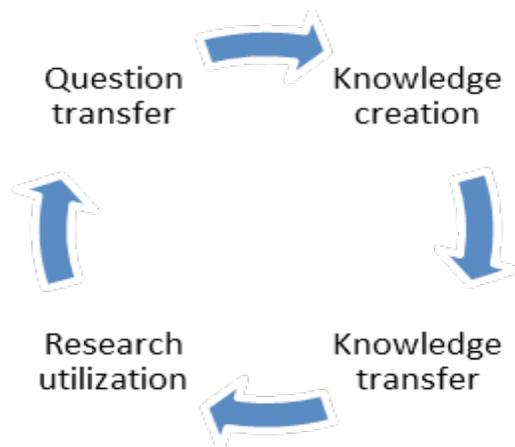
Knowledge or boundary objects also facilitate sharing information with other groups and help enable knowledge retrieval. Examining the non-spread of innovations, Ferlie et al. (47) concluded that Communities of Practice (CoP) can form "self-sealing" borders, or cognitive boundaries that have to be addressed explicitly if spread of information is to be successful. Cutting across the cognitive boundaries is the job of boundary or knowledge objects.

**Figure 3. Knowledge Board, a sample Boundary Object**



- b. *Researchable question transfer*. In multi-disciplinary groups, success or failure is not just determined by what is processed or transferred, but also by the capacity to represent missing knowledge, and the novelty or differences that are of consequence to the interdependent groups. A *researchable question* is the issue (101, 104), and a question that bridges different areas of knowledge on the same problem. To assist their own inter-organization network with this problem, Majdzadeh and colleagues developed a *knowledge translation cycle* describing a process of four tactics that can assist interdisciplinary understanding and action.

**Figure 4. Researchable knowledge translation cycle (104)**



The cycle was informed by interviews and focus groups with stakeholders in a health research organization. In the cycle, the organization moves from new knowledge creation through knowledge transfer, then to research utilization. The cycle also introduces a bridging activity called question transfer, which then feeds back into knowledge creation activities. This reinforces Lomas' (101) thinking that for research needs to be effectively transmitted back to researchers, someone must extract those priorities and translate them into terms understandable by the research community. The skills needed for this, Lomas points out, are not usually those of the researchers. The solution to this problem would improve the relevance of research to decision makers, and improve pull of research by decision makers, concerned legislators, administrators, and clinical and industrial audiences.

- c. *Group work*. A few studies have used strategically designed group work and have shown it can be effective in improving acceptance of innovations. One group studied diffusion of four health care interventions, finding that when units are geographically dispersed, there are few opportunities for collective corroboration of value and relevance (49). The units in this study were parts of a health care network in Britain. Local units are relatively autonomous in this kind of situation. That is, these networks do not operate as hierarchies in which top levels dictate to lower levels, so that group work could be an important means for recipients to air concerns and debate reasons.

To improve knowledge combination within groups, an experiment used a specific communication training strategy, along with development of *knowledge boards* (a type of

boundary object, as seen in Figure 3) to develop collaborative understandings bridging their unique knowledge (132). In this study, an interdisciplinary group collected each participant's input, relating the information in a visual map on a large whiteboard. The communication training that was provided asked participants to discuss the structure, organization, assumptions, meaning, and rationales in use, divulging cognitive schemas so that they became available for discussion. This type of discussion strategy focuses attention on what participants know or believe, developing shared schemas that bring unique knowledge and representations into group knowledge. By constructing the knowledge boards, the groups created boundary objects that can be shared with others, and created a permanent knowledge base, improving diffusion of information within groups and organizations.

Another type of group strategy was employed by Sabah and Cook-Craig (143): web-based Virtual Communities of Practice (VCoPs). The quasi-experiment in Israel used a specific strategy to encourage knowledge building via a VCoP. Learning teams were formed, and a process followed: formulate a learning question, search for actionable knowledge, form a tentative knowledge model, implement reflectively, redact new actionable knowledge, and formulate the next learning question. They concluded that VCoPs are a promising practice, although it seems likely that the group work process is the most promising practice (rather than that VCoPs always work). In this study, the intra-organizational teams made significant positive changes in knowledge and practice across their organizations.

## **Solution 6: Address needs for situational fit**

Dissemination is a planned process that considers the needs of the target audiences and the settings in which research findings will be received (171). As such, those responsible for dissemination should consider how the innovation being shared “fits” with the needs of those receiving the information. Fit can vary for a policy or practice audience. The “adaptation” of a university research product was found to be important to research uptake by government administrators (96). In this case, the adaptation refers to how well the research products fit with the needs of the government agencies.

For the field of practice, dynamic fit is the process of adapting to organizational factors (4), and is one of the most significant issues between old practices and adoption of a new innovation (26). There can also be cultural, technological, and political elements of local situations that affect fit or misfit of new practices within adopting organizations. Ease of implementation, another characteristic of fit for practitioners, directly relates to having the intervention aligned to the organizational mission and goals (173).

Considering how the innovation or research finding being disseminated fits within various political, cultural, organizational, or programmatic circumstances, can help disseminators set goals for uptake of the information. This strategy also can be applied to research design and the identification of relevant research questions.

## Solution 7. Follow through and linkage intensity

Another major factor in dissemination is follow-up between the disseminator and the adopting organization. Many disseminators assume that when the initial distribution is complete, no additional follow-up work is needed. However, adopting organizations are then left to their own devices regarding questions (which may not be answered) or issues (156, 159).

For the field of practice certainly, but probably also for policymakers, dissemination alone is not enough for change to occur (156). Processes are needed for answering questions posed by different audiences, and solving the problems presented. This is especially needed where the complexity or uniqueness of the new information or program is high (156).

Providing a process of support for practitioners to access information, develop relationships, and problem-solve their knowledge utilization challenges, is necessary to bridge the gap between research and practice (156). Knowledge brokers within organizations also are more successful with a higher frequency of interaction (174). Landry and colleagues (96) determined that in Canadian governmental agencies, intensity of linkage mechanisms was one of the key determinants of policymakers'/ administrators' research utilization.

In conclusion, these seven proposed solutions summarize the interdisciplinary strategies for overcoming the various barriers for research dissemination. Many solutions were identified in health sciences and theory of diffusion studies, where the majority of rigorous studies have occurred. The next section links barriers and solutions that are relevant for OPRE.

## Chapter VI. Summary and Conclusions

Dissemination is currently a field of practice with roots in health care. As an empirical body of knowledge, it is less well-developed than expected by the authors. The field of study in diffusion of innovation, however, has both a well-developed theory base and a decades-long body of rigorous empirical work. These are two separate fields of work, a fact that emerged during this literature review (see Chapter III).

The diffusion of innovation literature thus provides much clearer indicators of what should work in moving research findings out to the field of practice, policy audiences, and researchers. For the purpose of this literature review, the most helpful studies came from fields outside OPRE's interest areas, such as health care, management, and organizational psychology. The strengths of the literature lie in these areas. In Chapter V, the literature's lessons were summarized under seven proposed solutions. All of these address multiple barriers to dissemination (listed in Chapter IV). Here, the solutions relevant to all OPRE audiences are reintroduced in a more abbreviated form.

1. **Audience concerns** and needs must first be recognized. New dissemination approaches should be driven by audience needs and by identifying the best tactics for reaching and appealing to specific audiences.
2. **Linkage mechanisms** and reach are critical to achieve effective dissemination. Innovations or research findings need outlets to connect research, policy, and practice in the non-hierarchical field of human services. Linking agents (e.g., organizations and internal champions) should be

deliberately sought. Linking networks as infrastructure is the answer to the loosely coupled, distributed nature of social service organizations.

3. The importance of the original innovation and the frames that are relevant to the targeted audience are not always obvious to all; they must be **salient**. Audiences' attention has to be obtained before other objectives can be achieved. The statement, "This report is available," does not express the "why this is important" message that might attract the attention of target audiences.
4. Intentional **messages, formats, and tactics** need to be developed, taking into account audience members' technical knowledge, time available, and competing demands for their attention.
5. **Transforming interdisciplinary knowledge into related knowledge** is uniformly needed to create shared language. Common terms are used so differently in various fields that terminology is a problem among researchers and policymakers alike. Professional training also tends to create different perspectives, so that researchers and practitioners may see the same problem in different ways, and need a shared perspective in order to understand one another.
6. **Utilization by audience and fit** needs consideration. Establishing goals regarding how an innovation or research finding will be utilized encourages consideration of how that finding fits with current policy or practice. A good situational fit with the target audience will increase utilization of the new knowledge.
7. **Follow-through or linkage intensity** is also often necessary for knowledge utilization in practice. Advertising specialists know that many people will not absorb new information on the first or even fourth presentation. Disseminators should recognize this and plan dissemination with enough intensity to ensure frequency is achieved.

## Relevance of All Solutions to OPRE's Audiences

The PSI team initially began synthesizing the literature by the audience (policymakers, practitioners, etc.) investigated in different studies. Organized this way, the solutions were quite redundant, and they were then aggregated as the seven solutions presented above. Each solution is generally relevant across the dissemination of research findings to policymakers, researchers, intermediaries, and the field of practice.

## Enacting Solutions Through Dissemination Tactics

Communication or dissemination channels are quite understudied. We found only a few articles discussing Internet-based dissemination (other than clearinghouses), and few discussing any tactics except print materials.

What we know about specific dissemination tactics is that more research is needed. Of the 74 empirical articles reviewed, 21 investigated specific dissemination tactics. Tactics that were studied included distributing case studies with statistics; succinct summaries as opposed to statistic-heavy Cochrane-style reviews; using Virtual CoPs with specific group work; information services; and tiered networks of intermediaries for train-the-trainer work (national trainers develop state trainers, who

develop local trainers, etc.). Prior to the literature reviewed here, older literature had looked at the efficacy of tactics such as manuals, formal practice guidelines, technical assistance, and training, largely concluding that multiple dissemination strategies worked better, generally, than any one alone. It remains to be seen whether multiple strategies continue to be necessary as newer methods of dissemination are tested. Stand-alone tactics such as Internet training, for example, have not been tested. It may be that the earlier reliance on purely print materials could account for repeated findings that single tactics (print) do not work.

## **Literature Relationship to the OPRE Dissemination Framework**

This report covers the dissemination and diffusion literature, and brings in well-established concepts from communication, leading to a dissemination framework for OPRE. That framework will consider dissemination a communication issue rather than a distribution issue alone.

The dissemination framework developed for OPRE is presented separately. The graphical presentation of that framework incorporates the key challenges of dissemination, the solutions drawn from the literature, and the disseminator's role in enacting those solutions. That role is a value-added one, since the literature makes clear that mere publication of new findings is insufficient. Rather, the disseminator takes on translation, synthesis, and packaging (formatting) responsibilities so that new information is more likely to be absorbed and utilized. The disseminator should also identify desired dissemination outcomes. The theory-building articles outline dissemination outcomes, although virtually no studies on dissemination tactics indicated exactly what outcomes were sought. Strategic dissemination should spell out objectives so that tactics can be targeted to achieve them.

The barriers discussed here are very relevant to the dissemination framework. These barriers continue to exist because they are related to dissemination through organizations. To overcome these barriers a disseminator must recognize them and strategically use tactics and linkage mechanisms to reach and inform target audiences effectively. The barriers and solutions presented in this literature review suggest the disseminator must do more than distribute information.

In conclusion, there is not likely to be a "one size fits all" approach to effective dissemination in human services and social policy research. Solutions to overcoming barriers need to be informed by understanding the needs of specific audiences. Additional empirical research—well-designed research—is needed to test dissemination channels and tactics with which to reach the largest audiences in the most effective ways.

## APPENDIX I

# LITERATURE REVIEWS INCLUDED AS CURRENT KNOWLEDGE BASE

Barwick, M.A., Boydell, K.M., Stasiulis, E., Ferguson, H.B., Blase, K., & Fixsen, D. (2005). *Knowledge transfer and evidence-based practice in children's mental health*. Toronto, ON: Children's Mental Health Ontario, 1-138.

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Dopson, S., FitzGerald, L., Ferlie, E., Gabbay, J., & Locock, L. (2010). No magic targets! Changing clinical practice to become more evidence based. *Health Care Management Review*, 35(1), 2-12.

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Greenhalgh, T., Robert, G., Bate, P., Kyriakidou, O., Macfarlane, F., & Peacock, R. (2004). *How to spread good ideas: A systematic review of the literature on diffusion, dissemination and sustainability of innovations in health service delivery and organization*. South Hampton, England: National Coordinating Centre for NHS Service Delivery and Organization, 1-425.

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Nutley, S., Davies, H., & Walter, I. (2003). *Evidence based policy and practice: Cross sector lessons from the UK* (Working Paper 9). ESRC UK Centre for Evidence Based Policy and Practice, 1-25.

Walter, I., Nutley, S., Percy-Smith, J., McNeish, D., & Frost, S. (2004). *Improving the use of research in social care practice*. London, UK: Social Care Institute for Excellence, 1-218.

# APPENDIX II

## METHODS SECTION TABLES

**Table A. Practice Domains**

Practice Domain	Category includes articles on dissemination to or in:
<b>Physical Health</b>	Health research or practice generally, or gerontology, maternal/child health, pediatrics, public health, community-based health care providers, etc.
<b>Mental Health</b>	Practice areas of mental health including clinical psychology and substance abuse, research or practice findings being disseminated to therapists, clinicians, treatment specialists, etc.
<b>Business &amp; Management</b>	Private-sector practice domains, including studies by organizational management, management science, information management, diffusion of technology, and organizational psychology
<b>Public Policy &amp; Administration</b>	Public administration, policy studies, and political science, involving the practice domains of government officials/professionals, government staff, elected officials, administrators, etc.
<b>Human Services</b>	Any family- or child-related practice domains involving case managers, social workers, and other employees or administrators of non-profit or government human services organizations (includes behavioral health practice or programs but not mental health)
<b>Education</b>	Educator- or education-administration-targeted dissemination such as involving school-based programs, professional development techniques, or school-wide change programs

## Table B. Search Strings

In this search, a larger set of keywords was initially proposed, but in practice, some returned quite irrelevant results. The set of terms below was used because they retrieved the most relevant material and reflect terms in use in the literature. Quotation marks indicate phrases sought (rather than single word) searches.

<b>Search String</b>	dissemination or diffusion or "knowledge transfer" or "knowledge translation" or "research utilization" and (results or findings or method) and	
<b>Keywords</b>	("home visits" or "supplemental nutrition" or "nurse visits" or "after school" or "child abuse" or "child maltreatment" or "economic independence" or "child development" or "technical assistance" or "social services" or "maternal and child health" or "head start" or "TANF" or welfare or	"early childhood" or "strengthening families" or "healthy marriage" or adoption or fathering or fatherhood or poverty or "safety net" or "youth services" or "child care" or "foster care" or "youth development" or "practice communities")

## Table C. Databases Searched

Discipline	Database
Communication Studies	Communication Studies, Communication Abstracts
Sociology	SocAbstracts; SocIndex
Management and Business	JSTOR
Health	Medline
Information Science	Library Information Science & Technology Abstracts
Psychology	PsychINFO
Multi-disciplinary social sciences	SSCI (Social Science Citation Index)
Education	Educational Administration Abstracts; ERIC (Education Resources Information Center)
Public Administration & Political Science	Public Administration Abstracts; PAIS International (Public Affairs Information Service)

**Table D. Distribution of articles reviewed by type and practice domain.**

	Public Policy and Administration 11	Health Care 42	Education 8	Mental Health 23	Business & Management 13	Human Services 37
<b>Broad Literature Reviews</b>	-	7	1	2	1	8
<b>Theory Building</b>	1	9	-	-	1	-
<b>Experiment or Quasi-experiment</b>	2	5	1	2	3	5
<b>Survey Method/ Interview/Focus Group Studies</b>	5	9	3	10	5	15
<b>Multi-Method Studies</b>	1	3	1	2	1	2
<b>Secondary Materials or Data Analysis</b>	3	5	-	2	2	4
<b>Descriptive or Proscriptive Commentary</b>	-	9	3	5	2	6

\*Numbers in top row are total articles reviewed in that category. Due to multiple categorization where appropriate, totals in top row will not equal those below.

**Definitions**

Practice domain: the area of practice addressed by the article, chapter, etc.

Broad Literature Review: articles that are primarily broad-scope literature reviews

Theory Building: analysis and explication of concepts, variables, or factors, to build explanation

Experiment: manipulation of a variable to test differences between groups

Quasi-Experiment: same as experiment but in a field setting

Multi-Method Studies: a study in which more than one method of data collection was used

Secondary Analysis: an analysis using previously collected data or materials, not original data

Descriptive or Proscriptive Commentary: commentary describing the state of research or practice, or urging attention to specific areas

## APPENDIX III

# GLOSSARY

**Active dissemination** – The act of trying to inform others of innovations. Information that is “sent out, transmitted, and advertised” is active dissemination (Dearing, 2010).

**Adoption** – A decision to make full use of an innovation as the best course of action (Rogers, 2003).

**Champion** – An individual who throws his or her weight behind an innovation and can play an important role in boosting a new idea in an organization (Rogers, 2003).

**Change agent** – An individual who influences clients’ innovation decisions in a direction deemed desirable by a change agency. Change agents usually seek to obtain adoption of new ideas by using opinion leaders in a social system as their lieutenants in diffusion tactics (Rogers, 2003).

**Change readiness** – Variability that individuals, organizations, and communities have in terms of their interest, willingness, and ability to acquire and adopt new knowledge (Barwick, 2005).

**Clearinghouse** – “A central agency for the collection, classification, and distribution especially of information; broadly: an informal channel for distributing information or assistance” (Merriam Webster online at <http://www.merriam-webster.com/dictionary/clearinghouse>).

**Diffusion** – A passive process by which an innovation may spread organically among the members of a social system (Lomas & Haynes, 1988; Dearing, 2010). Usually thought of as a social process, and may or may not follow after dissemination tactics take place. In diffusion of innovation theory (Rogers 2003), diffusion was active and led by change agents.

**Diffusion of innovation** – The process, led by a change agent, in which an innovation is communicated and adopted through certain channels over time among the members of a social system (Rogers, 2003).

**Dissemination** – The transfer of knowledge with and across settings, with the expectations that the knowledge will be ‘used’ conceptually... or instrumentally (Hutchinson and Huberman, 1994). Actively spreading a message to defined target groups (Greenhalgh, 2004). A planned process that involves consideration of target audiences and the settings in which research findings are to be received, and where appropriate, communicating in ways that will facilitate research utilization in decision-making processes and practice (Wilson, 2010). See contrasting definition for diffusion.

**Evidence-based medicine** – One of several fields of study that is practice-based and generally follows principles from diffusion of innovation theory.

**Evidence-based practice** – The conscientious, explicit and judicious use of current best evidence in making decisions about the care of [clients] (Sackett, et al., 1997 as cited in Mullen, et al., 2008), where “evidence” means practices rather than other types of research findings.

**Evidence-based public health** – A field of practice, emerged from dissemination practice and diffusion of innovation theory.

**External validity** – The extent to which the findings of a study apply to variations in persons, settings, treatments, and outcomes outside the study (Vogt, 1993).

**Framing** – Organizing principles or meanings that are persistent over time, that work to meaningfully structure the social world. “Each word or image we use evokes a conceptual structure that includes more extensive images and knowledge, a structure of meaning that is literally triggered by the cues built into a communication” (Bales, 2008).

**Grey literature** – Information that is not marketed and distributed by commercial publishing organizations. Does not imply a value qualification, but a characterization of the distribution mode (Barwick et al., 2005). Also referred to as “fugitive literature,” and includes many government agency reports that are not indexed or readily available as resources (Munson, 2010).

**Implementation** – The tactics involved in putting research, innovations, or other knowledge into practice (Barwick et al., 2005).

**Implementation science** – The scientific study of methods to promote the utilization of research findings. Includes the study of factors that influence the behavior of health care professionals and organizations, and the organizational or practitioner interventions that enable them to use research findings more effectively (Barwick et al., 2005).

**Innovation** – Any new idea, research result, program, technology, etc. (Rogers, 2003).

**Institutional logic** – A reasoning pattern prevalent in an organization or group that leads logically to a particular conclusion. In diffusion of innovation, studies find that acceptance of the institutional logic then leads to acceptance (or rejection) of a new practice or policy (Shapiro, 2010).

**Intermediary** – An individual or organization positioned between or among other organizations, and playing a fundamental role in encouraging, promoting, and facilitating linkages of information.

**Key stakeholders** – Someone (or a group) who can affect or is affected by an organization (e.g., consumers, funders, researchers, practitioners and policymakers).

**Knowledge Broker (KB)** – One who is trained specifically in information exchange and has set aside time for the process (Mitton et al., 2007). Synonyms that may be used interchangeably in the literature across disciplines include change agent, boundary spanner, gate keeper, and infomediary (Ziam, Landry and Amara, 2009).

**Knowledge Transfer & Exchange (KTE)** – An interactive process involving the interchange of knowledge between research users and research producers (Mitton, Adair, McKenzie, Patten & Perry, 2007). Involves much more than a one-way, linear diffusion of knowledge and skills from a university to industry; it depends on access to people, information and infrastructure (UK Particle Physics and Astronomy Research Council).

**Knowledge Translation (KT)** – The exchange, synthesis and ethically-sound application of knowledge—within a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research [for Canadians] through improved health, more effective services and products, and a strengthened health care system (Sudsawad, 2007).

**Knowledge Utilization (KU)** – The study of how individuals and teams acquire, construct, synthesize, and apply knowledge (Greenhalgh, 2004).

**Linking agent** – A member of the resource or user system or an interested third party, who serves as a connection between resource and user systems (Peterson et al., 2007).

**Passive dissemination** – Providing access to information but relying on others to find it; i.e., creating a website with resource information on the Internet, publishing a journal article without publicizing it, etc. Synonymous with diffusion in much of the literature on dissemination, and synonymous with decentralized diffusion in Roger’s work (2003).

**Policy entrepreneur** – A person who seeks to initiate dynamic policy change by attempting to win support for policy innovation. Tends to be researched in his or her position and provide direct research support to policymakers and interested parties (Mintrom, 1997).

**Policymaker** – A person who sets the plan pursued by a government, business or organization whose actions and opinions strongly influence the course of events.

**Practitioner** – A person who provides service delivery actively involved in an art, discipline or profession.

**Push** – Systematic efforts by specific organizations or individuals to reach out to potential adopters; active marketing. In relation to the history of dissemination practice and research, the concept of “push” is characterized by trying to do more: more messages, more channels, more support and outreach staff, more control and process monitoring, more partnerships, meetings and coordinated action (Dearing, 2010).

**Pull** – The opposite of push; demand by potential adopters based on their wants, pre-existing dispositions, preferences, perceptions, capacities, and behaviors as they relate to the innovation in question. Effective dissemination triggers “pull” and the triggering of pull should be the basis for designing dissemination tactics (Dearing, 2010).

**Technology transfer** – Technology innovations migrating out of universities or other research laboratories into products or wider use. Generally an engineering term; it does not have a specialized theory, but is a field of practice supported by linking mechanisms, and by patent and licensing, marketing, and other professionals. In some uses, technology can also mean any innovation.

# APPENDIX IV

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