Knowledge Translation and Systematic Reviews

After attending the National Center for the Dissemination of Disability Research (NCDDR) workshop on December 5th, 2007 on "Conducting Systematic Reviews of Randomized and Non-Randomized Studies to Inform Evidence-Based Practice and Policy" we felt that the topics of knowledge translation (KT), systematic reviews, and evidence-based practice would be of particular interest to our readers.

The concept of the systematic review was developed outside of the United States and eventually expanded into the U.S. with the creation of the Cochrane Collaboration in 1993 and the Campbell Collaboration circa 1999. Over the past few years, the Campbell and Cochrane Collaborations and their systematic reviews have garnered respect in the social sciences and health care fields respectively. With the addition of Wiley InterScience producing Cochrane documents, the Collaborations will continue to increase their audience, interest in systematic reviews, and related research areas such as KT and use of KT in evidence-based practice.

But what is a systematic review? Simply put, a systematic review is an intensive review of literature on a subject area with a specific focus (generally a specific question), which attempts to identify, evaluate, select, and synthesize the quality of research evidence relevant to the specific question. Standard subject areas include the social sciences, education, and health care. The increased attention to and imporant of systematic reviews has created a need to understand and implement them as part of research practice (i.e. KT).

There are many definitions of KT. The National Institute on Disability Rehabilitation Research (NIDRR) definition is quoted in *Knowledge Translation: Introduction to Models, Strategies, and Measures* by Pimjai Sudsawad, ScD.

> *"NIDRR refers to KT as 'the multi-dimensional, active process of ensuring that new knowledge gained through the course of research ultimately improves the lives of people with disabilities, and furthers their participation in society' (NIDRR, 2005)." In short, knowledge translation builds a bridge between the researcher, stakeholders, policy makers, and the end user in such a way that results in the positive utilization of the "research-generated and other types of knowledge."* (Sudsawad, 2)

Information on systematic reviews and knowledge translation is extensive. For further reading on systematic reviews, the Campbell and Cochrane Collaboration Review processes, and the evaluation of reviews, we recommend the following resources:

National Center for the Dissemination of Disability Research (NCDDR) *Technical Briefs* (specifically numbers 9, 10, 14, 15, 17) and other information on systematic reviews and knowledge translation are available at www.ncddr.org.

Systematic review processes of Campbell and Cochrane Collaborations:

Campbell Collaboration Systematic Reviews – protocols
www.campbellcollaboration.org/guidelines.asp

Cochrane reviews and The Cochrane Library – introduction
www.cochrane.org/reviews/clibintro.htm

For further information on KT—Dr. Sudsawad provides an excellent overview in *Knowledge Translation: Introduction to Models, Strategies, and Measures*. Her paper presents various definitions of KT, different knowledge translation models, effective translation strategies, and measurement of the use of research knowledge. This report is available at www.ncddr.org/kt/products/ktintro/ktintro.pdf or www.ncddr.org/kt/products/ktintro.

Included in this edition of *reSearch* are research abstracts, along with links to organizations and research projects, with a focus on knowledge translation and systematic reviews. The two main search terms were: knowledge translation and systematic reviews. A listing of over 50 additional descriptor terms between the NARIC, Cochrane, ERIC, and PubMed databases can be found at the end of this document.

The search results provide a "snap shot" of the past five years of knowledge translation and systematic review research. Our REHABDATA search resulted in nine documents between 2007-2003. A search of the Cochrane database resulted in two clinical trials and three method studies between 2007-2003. The ERIC database search resulted in six documents between 2006-2004. And finally, the PubMed search resulted in 21 documents between 2007-2003. The complete citations are included at the end of this research brief.

NIDRR Funded Projects related to Knowledge Translation & Systematic Reviews

In addition to document searches, we searched our NIDRR Program Database to locate grantees/projects related to the topic of KT and systematic reviews. The search resulted in 11 current NIDRR funded projects. Project information and their publications are offered as additional resources for our patrons.

———————

ABLEDATA.
Project Number: ED-02-CO-0038
www.abledata.com

Center for International Rehabilitation Research Information and Exchange (CIRRIE).
Project Number: H133A050008
http://cirrie.buffalo.edu

Disability and Business Technical Assistance Centers: Coordination, Outreach, and Research Center (DBTAC).
Project Number: H133A060087
www.adata.org

EVIDAAC: A Database of Appraised Evidence in Augmentative and Alternative Communication.
Project Number: H133G070150
Email: R.Schlosser@neu.edu

Innovative Knowledge Dissemination and Utilization for Disability and Professional Organizations and Stakeholders.
Project Number: H133A050006
Email: psyrehab@bu.edu

Model Systems Knowledge Translation Center (MSKTC).
Project Number: H133A060070
http://msktc.washington.edu

National Center for the Dissemination of Disability Research (NCDDR).
Project Number: H133A060028
www.ncddr.org

National Rehabilitation Information Center (NARIC).
Project Number: ED-05-CO-0007
www.naric.com

National Spinal Cord Injury Statistical Center (NSCISC).
Project Number: H133A060039
www.spinalcord.uab.edu/NSCISC

Rehabilitation Engineering Research Center on Technology Transfer (T2RERC).
Project Number: H133E030025
http://t2rerc.buffalo.edu

Research Utilization Support and Help (RUSH) Project.
Project Number: H133A031402
www.researchutilization.org

———————

Table of Contents

Full-text copies of these documents may be available through NARIC's document delivery service.

To order any of the documents listed, please note the NARIC Accession Number (starts with a J, O, or R) and call an information specialist at 800/346-2742.

Or you can order online at www.naric.com/services/requestform.cfm. There is a charge of five cents for copying with a $5 minimum on all orders. International shipping fees may apply.

2007

(2007). *NIDRR long-range plan for fiscal years 2005 - 09: Executive summary.*
NARIC Accession Number: O16868
ABSTRACT: Executive summary discusses the three sections of the National Institute on Disability and Rehabilitation Research (NIDRR) Long-Range Plan for Fiscal Years 2005-09 (the Plan). The mission of NIDRR is to enhance the ability of people with disabilities to achieve their maximum desired participation in the community, with full access to all societal and life activities. The first section of the Plan includes the introduction and background, as well as information about NIDRR's target population. The second section addresses managing for success and contains the Logic Model for outcome achievement and a strategy for managing the results. The third section discusses three arenas of outcomes achievement: research and development, KT, and capacity building.

Bayley, Mark T., Hurdowar, Amanda , Teasell, Robert, Wood-Dauphinee, Sharon, Korner-Bitensky, Nicol, Richards, Carol L., Harrison, Margaret, & Jutai, Jeffrey W. (2007). **Priorities for stroke rehabilitation and research: Results of a 2003 Canadian stroke network consensus conference.** *Archives of Physical Medicine and Rehabilitation, 88*(4), 526-528.
NARIC Accession Number: J52309
ABSTRACT: The Canadian Stroke Network Consensus Conference panel convened in 2003 in Toronto, Canada to address areas of stroke rehabilitation that require additional research. Three sources of information were presented to the panel for review: (1) an extensive literature review, (2) a study of factors related to post-stroke quality of life, and (3) a survey of clinicians' priorities for stroke research. From this review, the panel compiled a consensus list of five priorities for stroke rehabilitation: (1) multimodal programs for reintegration into the community, (2) rehabilitation of patients with severe strokes, (3) the ideal timing and intensity of aphasia therapy, (4) cognitive rehabilitation, and (5) the timing and intensity of rehabilitation after mild-to-moderate stroke. In addition, the panel identified three priority areas for KT where research was convincing: (1) lower-extremity interventions, (2) upper-extremity interventions, and (3) detection of clients who are at risk of complications.

2006

(2006). *Focus: Technical brief number 13: Meet the new NCDDR.*
NARIC Accession Number: O16597
ABSTRACT: Brief describes how the National Center for the Dissemination of Disability Research (NCDDR) plans to expand production, access, dissemination, and utilization of disability and rehabilitation research in support of the National Institute on Disability and Rehabilitation Research's (NIDRR's) long-range plan for KT. Several of the services the NCDDR will offer to NIDRR grantees, and in some case, to consumers to achieve these goals are spread over five categories: (1) research quality, (2) development, (3) dissemination, (4) technical assistance, and (5) utilization effectiveness.
This document is available to download at www.naric.com.

(2006). *Focus: Technical brief number 14: Overview of international literature on knowledge translation.*
NARIC Accession Number: O16647
ABSTRACT: This brief examines the KT process as described by several international authors. Viewing KT from an international perspective provides several models or strategies for understanding and planning the movement of evidence-based research into practice setting. The majority of these approaches consist of multiple stages or steps, including: (1) identification of quality information/research findings; (2) assessment of research findings for target system; (3) program development, program/content adaptation; (4) program implementation; (5) evaluation of knowledge utilization; and (6) sustainability, capacity building.
This document is available to download at www.naric.com.

Krahn, Gloria L., Putnam, Michelle, Drum, Charles E., Powers, Laurie. (2006). **Disabilities and health: Toward a national agenda for research.** *Journal of Disability Policy Studies, 17*(1), 18-27.
NARIC Accession Number: J50766
ABSTRACT: Article proposes a framework for a national research agenda on disabilities and health that includes five core principles and six issue areas. The five principles address good health as a normative expectation, a theory-driven knowledge base, heterogeneity of the disability experience, translation of research to practice, and coordinated research. Recommenda-

tions are provided in relation to six pressing issues: (1) an integrated conceptualization of disability; (2) diagnosis-specific and cross-disability research; (3) diversity within the disability population; (4) opportunity, accessibility, and accountability; (5) translation of research findings to implemented practice; and (6) the need for increased coordination among agencies and organizations. The authors conclude by identifying key responsibilities for funding entities, researchers, disability advocacy organizations, and people with disabilities.

2005

(2005). *Focus: Technical brief number 10: What is knowledge translation?*
NARIC Accession Number: O16058
ABSTRACT: KT is a relatively new term used to describe the underutilization of evidence-based research in systems of care. It involves the assessment, review, and utilization of scientific research findings in practice settings. Several planning models are presented that discuss the KT process and KT strategies.
This document is available to download at www.naric.com.

Gordon, Wayne A., Brown, Margaret. (2005). **Building research capacity: The role of partnerships.** *American Journal of Physical Medicine and Rehabilitation, 84*(12), 999-1004.
NARIC Accession Number: J50162
ABSTRACT: Article suggests that the goal of capacity building through partnerships is to maximize research utility. Specifically, an investigator or research organization must create partnerships that will enable the selection and framing of research questions to address concerns of relevant stakeholders, the development of a high-quality research design, and the translation of new knowledge into useful message that will be clearly understood by target audiences. Paper was presented at the "Rehabilitation Medicine Summit: Building Research Capacity" held in April 2005, in Washington, DC. Funding for the Summit was provided in part by NIDRR.

Sudsawad, Pimjai. (2005). **A conceptual framework to increase usability of outcome research for evidence-based practice.** *American Journal of Occupational Therapy (AJOT), 59*(3), 351-355.
NARIC Accession Number: J49149
ABSTRACT: Article presents a conceptual model that researchers can use to create research evidence that is easier for occupational therapy practitioners to understand and use. Author uses the Diffusion of Innovations Theory as a framework to identify desirable characteristics of research information that may increase its adoption and utilization by practitioners. The concepts of social validity, ecological validity, and clinical significance are discussed as possible approaches to creating those desirable characteristics.

2003

Sudsawad, Pimjai. (2003). *Developing a social validation model for effective utilization of disability and rehabilitation research.*
NARIC Accession Number: O15120
ABSTRACT: Research project report examines the utility of including the concepts of social validity, ecological validity, and clinical significance in the research on outcomes of occupational therapy (OT), physical therapy (PT), and speech-language pathology (SLP) interventions for children with disabilities. The goals of the project were met by (1) a systematic literature review of outcome studies of OT, PT, and SLP interventions over the past 10 years; (2) a focus group study of OT, PT, and SLP practitioners; and (3) a national mail survey. Preliminary findings indicated that the use of social validity, ecological validity, and clinical significance in designing and conducting outcome studies would be helpful and would likely increase the use of research information by rehabilitation practitioners. The terms were used to develop the social validation model for creating outcome research.

Documents from the Cochrane Database of Systematic Reviews search at www.thecochranelibrary.org are listed below:

Clinical Trials

2007

Butzlaff, M.E., Lefering, R., Rieger, M.A., & Vollmar, H.C. (2007). **Knowledge translation on dementia: A cluster randomized trial to compare a blended learning approach with a "classical" advanced training in GP quality circles.** *BMC Health Services Research, 7*, 92.
ID: CN-00589966
ABSTRACT: BACKGROUND: Thus far important findings regarding the dementia syndrome have been implemented into patients' medical care only inadequately. A professional training accounting for both,

general practitioners' (GP) needs and learning preferences as well as care-relevant aspects could be a major step towards improving medical care. In the WIDA-study, entitled "Knowledge translation on dementia in general practice" two different training concepts are developed, implemented, and evaluated. Both concepts are building on an evidence-based, GP-related dementia guideline and communicate the guideline's essential insights. METHODS/DESIGN: Both development and implementation emphasize a procedure that is well-accepted in practice and, thus, can achieve a high degree of external validity. This is particularly guaranteed through the preparation of training material and the fact that general practitioners' quality circles are addressed. The evaluation of the two training concepts is carried out by comparing two groups of GPs to which several quality circles have been randomly assigned. The primary outcome is the GPs' knowledge gain. Secondary outcomes are designed to indicate the training's potential effects on the GPs' practical actions. In the first training concept (study arm A) GPs participate in a structured case discussion prepared for by internet-based learning material ("blended-learning" approach). The second training concept (study arm B) relies on frontal medical training in the form of a slide presentation and follow-up discussion ("classical" approach). DISCUSSION: This paper presents the outline of a cluster-randomized trial which has been peer reviewed and support by a national funding organization—Federal Ministry of Education and Research (BMBF)—and is approved by an ethics commission. The data collection has started in August 2006 and the results will be published independently of the study's outcome. TRIAL REGISTRATION: Current Controlled Trials [ISRCTN36550981].

2006

Klar, N., Last, L.D., Law, C.H., Ryan, D.P., Smith, A.J., & Wright, F.C. (2006). **A blended knowledge translation initiative to improve colorectal cancer staging [ISRCTN56824239].** *BMC Health Services Research, 6*, 4.
ID: CN-00554249
ABSTRACT: BACKGROUND: A significant gap has been documented between best practice and the actual practice of surgery. Our group identified that colorectal cancer staging in Ontario was suboptimal and subsequently developed a KT strategy using the principles of social marketing and the influence of expert and local opinion leaders for colorectal cancer. METHODS/DESIGN: Opinion leaders were identified using the Hiss methodology. Hospitals in Ontario were cluster-randomized to one of two intervention arms. Both groups were exposed to a formal continuing medical education session given by the expert opinion leader for colorectal cancer. In the treatment group the local Opinion Leader for colorectal cancer was detailed by the expert opinion leader for colorectal cancer and received a toolkit. Forty-two centers agreed to have the expert opinion leader for colorectal cancer come and give a formal continuing medical education session that lasted between 50 minutes and 4 hours. No centers refused the intervention. These sessions were generally well attended by most surgeons, pathologists and other health care professionals at each centre. In addition all but one of the local opinion leaders for colorectal cancer met with the expert opinion leader for colorectal cancer for the academic detailing session that lasted between 15 and 30 minutes. DISCUSSION: We have enacted a unique study that has attempted to induce practice change among surgeons and pathologists using an adapted social marketing model that utilized the influence of both expert and local opinion leaders for colorectal cancer in a large geographic area with diverse practice settings.

Method Studies

2006

Grimshaw, J., Robinson, V., Santesso, N., & Tugwell, P. (2006). **Systematic reviews and knowledge translation.** *Bulletin of the World Health Organization, 84*(8), 643-561.
ID: CMR-10143
ABSTRACT: Proven effective interventions exist that would enable all countries to meet the Millennium Development Goals. However, uptake and use of these interventions in the poorest populations is at least 50 percent less than in the richest populations within each country. Also, we have recently shown that community effectiveness of interventions is lower for the poorest populations due to a "staircase" effect of lower coverage/access, worse diagnostic accuracy, less provider compliance, and less consumer adherence. We propose an evidence-based framework for equity-oriented KT to enhance community effectiveness and health equity. This framework is represented as a cascade of steps to

assess and prioritize barriers and thus choose effective KT interventions that are tailored for relevant audiences (public, patient, practitioner, policy-maker, press, and private sector), as well as the evaluation, monitoring and sharing of these strategies. We have used two examples of effective interventions (insecticide-treated bed nets to prevent malaria and childhood immunization) to illustrate how this framework can provide a systematic method for decision-makers to ensure the application of evidence-based knowledge in disadvantaged populations. Future work to empirically validate and evaluate the usefulness of this framework is needed. We invite researchers and implementers to use the cascade for equity-oriented KT as a guide when planning implementation strategies for proven effective interventions. We also encourage policy-makers and health-care managers to use this framework when deciding how effective interventions can be implemented in their own settings.

2005

Driedger, M., Farmer, A., Graham, I., Grimshaw, J., Mayhew, A., McGowan, J., & Shojania, K. (2005). **Systematic reviews of knowledge translation interventions: Contributions of process evaluations and contact with authors [abstract].** *XIII Cochrane Colloquium; 2005 Oct 22-26; Melbourne, Australia, 159.*
ID: CMR-7905
ABSTRACT: Background: Interventions aimed at improving evidence-based implementation of clinical evidence are intrinsically complex. Complexity of these interventions can be explained by process evaluation details that may be modifying the performance of interventions. Methods for systematically reviewing and analyzing process evaluations alongside reviews are poorly developed. Complementing evidence from robust designs provided in process evaluations and communication with authors can make systematic reviews more informative. Objectives: This study explored the development and application of methods for reviewing process evaluations and contact with study authors to a Cochrane Effective Practice and Organization of Care systematic review (printed educational materials), specifically to: (1) compare methods of seeking additional information (process evaluations and contact with authors), (2) determine the relative value of including other sources of information in a systematic review, and to

(3) develop guidance for those undertaking reviews of complex interventions. Methods: We collected information on quality appraisal items and key process evaluation components for twenty-two studies from three different sources: (1) effectiveness reports (RCT, CBA, ITS), (2) process evaluations, and (3) direct contact with study authors. We developed optimal search strategies for identifying process evaluations, a framework for appraising quality of process evaluations and a conceptual framework for conducting process evaluations alongside systematic reviews. The relative value of information retrieved from these three sources was compared and supplemented evidence in the systematic review. Results: 18/22 study authors participated in process evaluation interviews. Only 6/22 studies published process evaluations and secondary research. Direct contact with study authors improved information on quality assessment of trials, description of studies and interpretation of study results. Citation searches produced 1605 citations resulting in 30 relevant citations, the same yield as hand searching and contacting study authors. Conclusions: Direct communication with authors is worthwhile for providing process evaluation details, clarifying quality assessments criteria and citing related publications that may be missing from primary publications. Additional efforts required for citation index searches were not beneficial. Process evaluations alongside systematic reviews may not be worthwhile until more progress is made in conducting and publishing process evaluations. This project was funded by the Canadian Coordinating Office for Health Technology Assessment.

2003

Davis, D., Evans, M., Jadad, A., Perrier, L., Rath, D., Ryan, D., Sibbald, G., Straus, S., Rappolt, S., Wowk, M., & Zwarenstein, M. (2003). **The case for knowledge translation: Shortening the journey from evidence to effect.** *British Medical Journal, 327*(7405), 33-35.
ID: CMR-4875
No abstract available.

2006

Cumpston, Miranda, Grimshaw, Jeremy M., Mayhew, Alain, McGowan, Jessie, & Santesso, Nancy. (2006). **Knowledge for knowledge translation: The role of the Cochrane Collaboration.** *Journal of Continuing Education in the Health Professions, 26*(1), 55-62.
ERIC #: EJ759237

Abstract: KT activities, including continuing education, should be informed by the totality of available research evidence. Systematic reviews are a generic methodology used to synthesize evidence from a broad range of research methods addressing different questions. Over the past decade, there has been a dramatic increase in the availability of systematic reviews that could support KT activities. However, the conduct of systematic reviews is technically challenging, and it is not surprising that the quality of available reviews is variable. In addition, unless attempts are made to update systematic reviews, they rapidly become out of date. The Cochrane Collaboration is a unique, worldwide, not-for-profit organization that aims to help people make well-informed decisions about all forms of health care by preparing, maintaining, and promoting the accessibility of systematic reviews of the effects of health care interventions. Globally, over 13,000 consumers, clinicians, policymakers, and researchers are involved with The Cochrane Collaboration and have to date produced over 2,500 systematic reviews that can be used to inform KT activities. The Cochrane Collaboration publishes its reviews quarterly in The Cochrane Library. Cochrane reviews have been used to develop a number of KT-derivative products for professionals, consumers, and policymakers. Whereas most Cochrane Review groups focus on specific clinical areas, the Cochrane Effective Practice and Organization of Care Group undertakes reviews of interventions to improve health care delivery and health care systems, including reviews of different KT activities. We summarize the activities of The Cochrane Collaboration and how these can contribute to KT activities.

Estabrooks, Carole A., Hofmeyer, Anne, Jacque, E., Lovely, J., & Thompson, David S. (2006). **A guide to knowledge translation theory.** *Journal of Continuing Education in the Health Professions, 26*(1), 25-36.
ERIC #: EJ759234

ABSTRACT: Despite calls over several decades for theory development, there remains no overarching KT theory. However, a range of models and theoretical perspectives focused on narrower and related areas have been available for some time. We provide an overview of selected perspectives that we believe are particularly useful for developing testable and useful knowledge-translation interventions. In addition, we discuss adjuvant theories necessary to complement these perspectives. We draw from organizational innovation, health, and social sciences literature to illustrate the similarities and differences of various theoretical perspectives related to the knowledge-translation field. A variety of theoretical perspectives useful to KT exist. They are often spread across disciplinary boundaries, making them difficult to locate and use. Poor definitional clarity, discipline-specific terminology, and implicit assumptions often hinder the use of complementary perspectives. Health care environments are complex, and assessing the setting prior to selecting a theory should be the first step in knowledge-translation initiatives. Finding a fit between setting (context) and theory is important for knowledge-translation initiatives to succeed. Because one theory will not fit all contexts, it is helpful to understand and use several different theories. Although there are often barriers associated with combining theories from different disciplines, such obstacles can be overcome, and to do so will increase the likelihood that knowledge-translation initiatives will succeed.

Pablos-Mendez, Ariel, & Shademani, Ramesh. (2006). **Knowledge translation in global health.** *Journal of Continuing Education in the Health Professions, 26*(1), 81-86.
ERIC #: EJ759240

ABSTRACT: We discuss the "know-do gap," present a definition of KT, and discuss its relative importance in bridging the know-do gap. Some of the underlying causes of the know-do gap are listed, along with ongoing efforts to address them. KT is considered a cross-cutting, nonlinear process that involves not only recent research findings but also knowledge that is created from the dynamic interaction of people who come together to

solve public health problems, to learn, and ultimately to drive productive change. We also mention some of the activities undertaken by the World Health Organization in regards to KT. The search strategy has been nonsystematic, and reference is made to selected sources only.

Reeves, Scott, & Zwarenstein, Merrick. (2006). **Knowledge translation and inter-professional collaboration: Where the rubber of evidence-based care hits the road of teamwork.** *Journal of Continuing Education in the Health Professions, 26*(1), 46-54.
ERIC #: EJ759236
ABSTRACT: KT interventions and inter-professional education and collaboration interventions all aim at improving health care processes and outcomes. KT interventions attempt to increase evidence-based practice by a single professional group and thus may fail to take into account barriers from difficulties in inter-professional relations. Inter-professional education and collaboration interventions aim to improve inter-professional relations, which may in turn facilitate the work of KT and thus evidence-based practice. We summarize systematic review work on the effects of interventions for inter-professional education and collaboration. The current evidence base contains mainly descriptive studies of these interventions. Knowledge is limited regarding the impact on care and outcomes and the extent to which the interventions increase the practice of evidence-based care. Rigorous multi-method research studies are needed to develop and strengthen the current evidence base in this field. We describe a Health Canada-funded randomized trial in which quantitative and qualitative data will be gathered in 20 general internal medicine units located at five Toronto, Ontario, teaching hospitals. The project examines the impact of inter-professional education and collaboration interventions on inter-professional relationships, health care processes (including evidence-based practice), and patient outcomes. Routes are suggested by which inter-professional education and collaboration interventions might affect KT and evidence-based practice.

Santesso, Nancy, & Tugwell, Peter. (2006). **Knowledge translation in developing countries.** *Journal of Continuing Education in the Health Professions, 26*(1), 87-96.
ERIC #: EJ759241
ABSTRACT: There is increasing evidence that the application of knowledge in developing countries is failing. One reason is the woeful shortage of health workers, but as this is redressed, it is also crucial that we have an evidence base of what works to minimize the "know-do gap." The World Health Organization and other international organizations are actively building momentum to promote research to determine effective strategies for KT. At this time, the evidence base for the effectiveness of those strategies is not definitive in developed countries and is relatively sparse in developing countries. It appears, however, that the effectiveness of these strategies is highly variable and dependent on the setting, and success hinges on whether the strategies have been tailored. A useful framework to provide direction for tailoring interventions is the Ottawa Model of Research Use (OMRU). Underlying OMRU is the principle that success rests with tailoring KT strategies to the salient barriers and supports found within the setting. The model recommends that barriers and supports found in the practice environment or as characteristics of potential adopters and the evidence-based innovation or research evidence be assessed and then the KT strategy tailored and executed. The model also recommends that whether the research has been applied and has resulted in improved health outcomes should be measured. Studies in developing countries, although few, illustrate that the OMRU approach may be a valid method of tackling the challenges of KT strategies to improve health care in developing countries.

2004

Bloch, Ralph, Gondocz, Tunde, Ho, Kendall, Laprise, Rejean, Perrier, Laure, Ryan, David Thivierge, Robert, & Wenghofer, Elizabeth. (2004). **Technology-enabled knowledge translation: Frameworks to promote research and practice.** *Journal of Continuing Education in the Health Professions, 24*(2), 90-99.
ERIC #: EJ759127
ABSTRACT: KT articulates how new scientific insights can be implemented efficiently into clinical practice to reap maximal health benefits. Modern information and communication technologies can be effective tools to help in the collection, processing, and targeted distribution of information from which clinicians, researchers, administrators, policy makers in health, and the public can benefit. Effective implementation of KT through the use of information and communication tech-

nologies, or technology-enabled KT (TEKT), would benefit both the individual health professional and the health system. Successful TEKT in health requires cultivation and acceptance in the following key domains: (1) Perceiving types of knowledge and ways in which clinicians acquire and apply knowledge in practice; (2) Understanding the conceptual and contextual frameworks of information and communication technologies applied to health systems, particularly the push, pull, and exchange communication models; (3) Comprehending essential issues in implementation of information and communication technologies and strategies to take advantage of emerging opportunities and overcome existing barriers; and (4) Establishing a common and widely acceptable evaluation framework in order that researchers can compare various methodologies in their rightful contexts in TEKT research and adoption. Achieving harmony and common understanding in these areas will go a long way in fostering a fertile and innovative environment to encourage research and advance understanding in this exciting domain of TEKT.

PubMed *Documents from the National Library of Medicine PubMed search at* *www.pubmed.com* *are listed below:*

2007

Alberta Ambassador Program Team, Barton, P., Harstall, C., Moga, C., Rashiq, S., Schopflocher, D., Scott, N.A., & Taenzer, P. (2007). **Creating clinically relevant knowledge from systematic reviews: The challenges of knowledge translation.** *Journal of Evaluation in Clinical Practice, 13*(4), 681-8.
PMID: 17683314
ABSTRACT: RATIONALE AND OBJECTIVE: A research translation strategy for chronic pain was developed that has significant potential to advance the usefulness of systematic reviews (SRs) in clinical practice. METHOD: The strategy used interactive case-based workshops that summarize current evidence on treatments for chronic non-cancer pain. Health technology assessment researchers and clinicians collaborated to translate SR evidence into education aids, but this proved far from straightforward. RESULTS: Sourcing and selecting the SR evidence required maintaining a credible balance between the diametrical concepts of comprehensiveness and efficiency, and relevance and validity. On examination of the collated evidence base,

further challenges were encountered in dealing with the lack of consistency among the SRs in the quality of execution, the scales used to rate the quality of the evidence, and the conclusions on common topic areas. Strategies for overcoming these difficulties are discussed. CONCLUSIONS: The key elements for creating clinically relevant knowledge from SRs are: a flexible, consistent and transparent methodology; credible research; involvement of renowned content experts to translate the evidence into clinically meaningful guidance; and an open, trusting relationship among all contributors.

Armstrong, R., Crockett, B., Keleher, H., & Waters, E. (2007). **The nature of evidence resources and knowledge translation for health promotion practitioners.** *Health Promotion International, 22*(3), 254-60.
PMID: 17596543
ABSTRACT: Governments and other public health agencies have become increasingly interested in evidence-informed policy and practice. Translating research evidence into programmatic change has proved challenging and the evidence around how to effectively promote and facilitate this process is still relatively limited. This paper presents the findings from an evaluation of a series of evidence-based health promotion resources commissioned by the Victorian Department of Human Services. The evaluation used qualitative methods to explore how practitioners, for whom the resources were intended, viewed and used them. Document and literature review and analysis, and a series of key informant interviews and focus groups were conducted. The findings clearly demonstrate that the resources are unlikely to act as agents for change unless they are linked to a knowledge management process that includes practitioner engagement. This paper also considers the potential role of knowledge brokers in helping to identify and translate evidence into practice.

Bullard, M.J., Emond, S.D., Graham, T.A., Ho, K., Holroyd, B.R. (2007). **Informatics and knowledge translation.** *Academic Emergency Medicine, 14*(11), 996-1002.
PMID: 17967961
ABSTRACT: To ensure that the benefits of KT synthesis are accessible to care providers at the point of decision-making, fast, efficient, usable clinical informa-

tion systems are required. Medical informatics appears to hold the greatest promise to be able to create systems with the necessary capacity and functionality. Emergency medicine needs to be actively engaged at all levels of the process. This includes driving the development and filtering of emergency-specific synopses and summaries. It requires advocating for hardware and software that suit the needs of the emergency department environment. It is increasingly important to educate and participate on committees with funders and policy-makers to ensure they support this growing evolution. To determine the outcome of these initiatives, careful evaluation is required to inform the discussion. End-users need to be actively involved in the development and usability testing of clinical information retrieval technology and clinical decision-support systems and make certain relevant best evidence is readily accessible and formatted to meet the needs of the working emergency physician. The integration of KT into clinical practice, and the impact of delivering electronic clinical decision-support, requires methodologically sound studies to confirm or refute its benefits and guide future development of medical informatics.

Bullard, M.J., Graham, T.A., Holroyd, B.R., & Rowe, B.H. (2007). **Decision support technology in knowledge translation.** *Academic Emergency Medicine, 14*(11), 942-8.
PMID: 17766733
ABSTRACT: Information technologies, and specifically clinical decision support systems (CDSSs), are tools that can support the process of KT in the delivery of emergency department (ED) care. It is essential that during the implementation process, careful consideration be given to the workflow and culture of the ED environment where the system is to be utilized. Despite significant literature addressing factors contributing to successful deployment of these systems, the process is frequently problematic. Careful research and analysis are essential to evaluate the impact of the CDSS on the delivery of ED care, its influence on the health care providers, and the impact of the CDSS on clinical decision-making processes and information behaviors. The logistical and educational implications of CDSSs in the ED must also be considered. The specialty of emergency medicine must actively collaborate with other stakeholders in the design, implementation, and evaluation of CDSSs that will be utilized during the delivery of care to our patients.

Casebeer, A., Ginsburg, L.R., Lewis, S., & Zackheim, L. (2007). **Revisiting interaction in knowledge translation.** *Implementation Science, 2*(1), 34.
PMID: 17971208
ABSTRACT: BACKGROUND: Although the study of research utilization is not new, there has been increased emphasis on the topic over the recent past. Science push models that are researcher driven and controlled and demand pull models emphasizing users/decision-maker interests have largely been abandoned in favor of more interactive models that emphasize linkages between researchers and decision makers. However, despite these and other theoretical and empirical advances in the area of research utilization, there remains a fundamental gap between the generation of research findings and the application of those findings in practice. METHODS: Using a case approach, the current study looks at the impact of one particular interaction approach to research translation used by a Canadian funding agency. RESULTS: Results suggest there may be certain conditions under which different levels of decision maker involvement in research will be more or less effective. Four attributes are illuminated by the current case study: stakeholder diversity, address-ability/action-ability of results, finality of study design and methodology, and politicization of results. Future research could test whether these or other variables can be used to specify some of the conditions under which different approaches to interaction in KT are likely to facilitate research utilization. CONCLUSIONS: This work suggests that the efficacy of interaction approaches to research translation may be more limited than current theory proposes and underscores the need for more completely specified models of research utilization that can help address the slow pace of change in this area.

Compton, S., Dunne, R., Green, J., Grimshaw, J., Hess, E., Khare, R.K., Lang, E., Meurer, W., Richardson, T.M., Scott-Findlay, S., & Stanley, R. (2007). **Knowledge translation consensus conference: Research methods.** *Academic Emergency Medicine, 14*(11), 991-5.
PMID: 17967960
ABSTRACT: The authors facilitated a workshop session during the 2007 Academic Emergency Medicine Consensus Conference to address the specific research methodologies most suitable for studies investigating the effectiveness of KT interventions. Breakout session discussions, recommendations, and examples in emergency medicine findings are presented.

Degutis, L., Graffeo, C.S., Hamann, C.J., Kantor, W., Larkin, G.L., Monico, E.P., & Schuur, J. (2007). **Knowledge translation at the macro level: Legal and ethical considerations.** *Academic Emergency Medicine, 14*(11), 1042-6.
PMID: 17967966
ABSTRACT: Macro-level legal and ethical issues play a significant role in the successful translation of knowledge into practice. The medic-legal milieu, in particular, can promote clinical inertia and stifle innovation. Embracing new clinical practice guidelines and best practice models has not protected physicians from superfluous torts; in some cases, emerging evidence has been used as the dagger of trial lawyers rather than the scalpel of physicians. Beyond the legal challenges are overarching justice issues that frame the broad goals of KT and technology diffusion. Optimal implementation of the latest evidence requires attention to be paid to the context of the candidate community and the key opinion leaders therein, characterized by the "8Ps" (public, patients, press, physicians, policy makers, private sector, payers, and public health). Ethical and equitable KT also accounts for the global burdens and benefits of implementing innovation such that disparities and gaps in health experienced by the least advantaged are prioritized. Researchers and thought leaders must attend to questions of fairness, economics, and legal risk when investigating ways to promote equity-oriented KT.

Estabrooks, C.A. (2007). **Prologue: A program of research in knowledge translation.** *The Journal of Nursing Research, 56*(4 Suppl.), S4-6.
PMID: 17625472
No abstract available.

For the Effective Consumer Investigative Group, O'Connor, A.M., Santesso, N.A., Tugwell, P.S., & Wilson, A.J. (2007). **Knowledge translation for effective consumers.** *Physical Therapy, Sep 25* [Epub ahead of print].
PMID: 17906288
ABSTRACT: With the emergence of patient-centered care, consumers are becoming more effective managers of their care - in other words, "effective consumers." To support patients to become effective consumers, a number of strategies to translate knowledge to action (KTA) have been used with varying success. The use of a KTA framework can be helpful to researchers and implementers when framing, planning, and evaluating KT activities and can potentially lead to more successful activities. This article briefly describes the KTA framework and its use by a team based out of the University of Ottawa to translate evidence-based knowledge to consumers. Using the framework, tailored consumer summaries, decision aids, and a scale to measure consumer effectiveness were created in collaboration with consumers. Strategies to translate the products into action then were selected and implemented. Evaluation of the knowledge tools and products indicates that the products are useful to consumers. Current research is in place to monitor the use of these products, and future research is planned to evaluate the effect of using the knowledge on health outcomes. The KTA framework provides a useful and valuable approach to KT.

Graham, I.D., KT Theories Research Group, & Tetroe, J. (2007). **Some theoretical underpinnings of knowledge translation.** *Academic Emergency Medicine, 14*(11), 936-41.
PMID: 17967955
ABSTRACT: A careful analysis of the definition of KT highlights the importance of the judicious translation of research into practice and policy. There is, however, a considerable gap between research and practice. Closing the research-to-practice gap involves changing clinical practice, a complex and challenging endeavor. There is increasing recognition that efforts to change practice should be guided by conceptual models or frameworks to better understand the process of change. The authors conducted a focused literature search, developed inclusion criteria to identify planned action theories, and then extracted data from each theory to determine the origins, examine the meaning, judge the logical consistency, and define the degree of generalizability, parsimony, and testability. An analysis was conducted of the concepts found in each theory, and a set of action categories was developed that form the phases of planned action. Thirty-one planned action theories were identified that formed the basis of the analyses. An Access database was created, as well as a KT Theories User's Guide that synthesizes all the planned change models and theories, identifies common elements of each, and provides information on their use. There are many planned change models and frameworks with many common elements and action categories. Whenever any planned change model is used, change agents should consider documenting their expe-

riences with the model so as to advance understanding of how useful the model is and to provide information to others who are attempting a similar project.

Handrigan, M., & Slutsky, J. (2007). **Funding opportunities in knowledge translation: Review of the AHRQ's "Translating Research into Practice" initiatives, competing funding agencies, and strategies for success.** *Academic Emergency Medicine, 14*(11), 965-7.
PMID: 17967957
ABSTRACT: The Agency for Healthcare Research and Quality actively funds and conducts research to improve health care for all Americans. This article is intended to provide a brief overview of Agency for Healthcare Research and Quality activities in KT and to accompany the presentation given on May 15, 2007, to the Academic Emergency Medicine Consensus Conference, "Knowledge Translation in Emergency Medicine: Establishing a Research Agenda and Guide Map for Evidence Uptake."

For more information, the Translating Research into Practice (TRIP)-II Fact Sheet is available at www.ahrq.gov/research/trip2fac.htm.

Hedges, J.R. (2007). **The knowledge translation paradigm: Historical, philosophical, and practice perspectives.** *Academic Emergency Medicine, 14*(11), 924-7.
PMID: 17704350
No abstract available.

Lang, E,S., Haynes, R.B., & Wyer, P.C. (2007). **Knowledge translation: Closing the evidence-to-practice gap.** *Annals of Emergency Medicine, 49*(3), 355-63.
PMID: 17084943
ABSTRACT: KT describes any activity or process that facilitates the transfer of high-quality evidence from research into effective changes in health policy, clinical practice, or products. This increasingly important discipline attempts to conceptually combine elements of research, education, quality improvement, and electronic systems development to create a seamless linkage between interventions that improve patient care and their routine implementation in daily clinical practice. We outline the gap between research and practice and present a case study of an emergency medicine example of validated evidence that has failed to achieve widespread implementation. The authors describe a model of organization of evidence and its relationship with the process that links research from the scientific endeavor to changes in practice that affect patient outcomes. Obstacles to evidence uptake are explored, as well as the limitations of current educational strategies. Innovative strategies in realms such as computerized decision support systems designed to enhance evidence uptake are also described. The potential interface between KT and continuous quality improvement, as well as the role for bedside tools, is also presented. Research in KT includes studies that attempt to quantify and understand the discrepancies between what is known and what is done, as well as those that examine the impact and acceptability of interventions designed to narrow or close these gaps. Sentinel examples in this line of research conducted in the emergency department setting are described.

Wyer, P.C. (2007). **Responsiveness to change: A quality indicator for assessment of knowledge translation systems.** *Academic Emergency Medicine, 14*(11), 928-31.
PMID: 17698558
No abstract available.

2006

Graham, I.D., Mazmanian, P.E., Straus, S.E. (2006). **Knowledge translation: Resolving the confusion.** *The Journal of Continuing Education in the Health Professions, 26*(1), 3-4.
PMID: 16557515
No abstract available.

2005

Barer, M. (2005). **Evidence, interests, and knowledge translation: Reflections of an unrepentant zombie chaser.** *Healthcare Quarterly, 8*(1), 46-53, 2.
PMID: 15715333
ABSTRACT: Justice Emmett Hall's landmark 1964 Royal Commission report is remarkable as, among other things, a very early Canadian example of successful knowledge brokering. It predates by about three decades even the earliest discourse in Canadian health research circles about KT, knowledge transfer, knowledge exchange, knowledge brokers, and the like.

Choi, B.C. (2005). **Understanding the basic principles of knowledge translation.** *Journal of Epidemiology and Community Health, 59*(2), 93.
PMID: 15650137
No abstract available.

2004

Amsallem, E., Boissel, J.P., Cucherat. M., Haugh, M.C., & Nony, P. (2004). **Bridging the gap between therapeutic research results and physician prescribing decisions: Knowledge transfer, a prerequisite to knowledge translation.** *European Journal of Clinical Pharmacology, 60*(9), 609-16.
PMID: 15378222
ABSTRACT: BACKGROUND: A wide gap continues to exist between available therapeutic research results and physician's prescribing. Numerous explanations account for this gap, but one central reason is the difficulty in transferring comprehensive research information to practicing clinicians. This problem arises from information overload and the growing complexity of research findings. We propose a multi-step process that can be used to develop systems to bridge this information/prescription gap. The steps include: comprehensively collecting and summarizing clinical trial reports, scoring and ranking these according to their level of evidence, exploring and synthesizing the data using meta-analyses, summarizing these results, representing them in an easily understandable form, and transmitting the overview findings to prescribers at the time they need them. DISCUSSION: This ambitious endeavor is needed to ensure that prescribers have access to pertinent research results for use in their prescription decisions. We demonstrate in this article that there are no theoretical or technical obstacles to make the proposed system workable.

Gondocz, S.T., Lockyer, J., & Thivierge, R.L. (2004). **Knowledge translation: The role and place of practice reflection.** *The Journal of Continuing Education in the Health Professions, 24*(1):50-6.
PMID: 15069912
ABSTRACT: Reflection is the mechanism by which we contemplate and try to understand relatively complex and sometimes troubling ideas for which there is no obvious solution. Reflection allows us to transform current ideas and experiences into new knowledge and action. Personal experiences and organizational feedback can trigger reflection, whereas a lack of time, available colleagues, and social networks detract from the ability professionals have to reflect. Educational programs can encourage reflection through the judicious use of case-based discussion, formal and informal needs assessments, and commitment to change exercises. Learning journals and personal learning projects are self-directed methods that facilitate reflection. In the workplace, critical incident techniques and debriefing of cases provide opportunities for thoughtful inquiry. Additional study is needed to understand how and why reflection works to transform surface learning into deep learning and change in practice; how reflection enhances the integration of reading, collegial interchange, and classroom discussion into practice; and how technology can enhance reflection.

2003

Butterill, D., Goering, P., & Jacobson, N. (2003). **Development of a framework for knowledge translation: Understanding user context.** *Journal of Health Services Research & Policy, 8*(2), 94-9.
PMID: 12820671
ABSTRACT: OBJECTIVE: To develop a framework that researchers and other knowledge disseminators who are embarking on KT can use to increase their familiarity with the intended user groups. METHODS: The framework was derived from a review and analysis of the KT literature and from the authors' own experience with a variety of user groups. RESULTS: The framework consists of five domains: the user group, the issue, the research, the KT relationship, and dissemination strategies. Within each domain, the framework includes a series of questions. The questions provide the researcher with a way of organizing what he or she already knows about the user group and the KT project, of identifying what still is unknown, and of flagging what is important to learn. CONCLUSIONS: Most researchers wishing to engage in KT are moving out of their own familiar contexts. By using this framework, researchers will learn about the new contexts in which they find themselves. The insights they gain will increase their familiarity with the user group, thus aiding in the implicit goal of the interactive model of KT: making the researcher a part of the user group context.

Quick Looks

Agency for Healthcare Research and Quality (AHRQ)
www.ahrq.gov

Alberta Heritage Foundation for Medical Research (AHFMR)
www.ahfmr.ca

Canadian Health Services Research Foundation (CHSRF)
www.chsrf.ca/home_e.php

Canadian Institutes for Health Research (CIHR)
www.cihr-irsc.gc.ca

Center for Evaluation Research and Methodology (CERM)
www.vanderbilt.edu/VIPPS/ER&M

Center for Reviews and Dissemination (CRD)
www.york.ac.uk/inst/crd/index.htm

Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Center)
eppi.ioe.ac.uk

Health Research Transfer Network of Alberta (RTNA)
www.ahfmr.ab.ca/rtna

Institute for Work and Health (IWH)
www.iwh.on.ca

Joanna Briggs Institute (JBI)
www.joannabriggs.edu.au

Knowledge Translation Program (KTP)
www.ktp.utoronto.ca

National Institute for Health and Clinical Excellence (NICE)
www.nice.org.uk

National Registry of Evidence-based Programs and Practices (NREPP)
www.nrepp.samhsa.gov

National Center for the Dissemination of Disability Research (NCDDR)
www.ncddr.org
NCDDR Webcast #9:
www.ncddr.org/webcasts/webcast9.html

Nordic Campbell Center (NCC)
www.sfi.dk

Physiotherapy Evidence Database (PEDro)
www.pedro.fhs.usyd.edu.au/index.html

RAND Center for e-Health
www.rand.org/health/centers/archive/ehealth/internet.html

Swedish Council on Technology Assessment in Health Care (SBU-Sweden)
www.sbu.se/en/Home

The Campbell Collaboration
www.campbellcollaboration.org

The Cochrane Collaboration
www.cochrane.org

What Works Clearinghouse (WWC)
www.whatworks.ed.gov

Search Terms for Knowledge translation & systematic reviews

- Applicability & recommendations
- Assessments of the impact of research
- Attitude of Health Personnel
- Benchmarking
- Case Studies
- Chronic Disease
- Clinical Competence/Education
- Cochrane Collaboration
- Communication
- Comparative Analysis
- Cultural Awareness
- Data Collection
- Data Interpretation, Statistical
- Decision Making
- Decision Support Techniques
- Dissemination
- Education/Medical
- Evaluation Methods
- Evidence-Based Practice
- Expository Writing
- Guidelines
- Health Care
- Health Knowledge, Attitudes/Methods Practice/Promotion
- Health Services Administration/Needs/Research
- Information Dissemination/Methods
- Information Services/Utilization

- Information Technology/Transfer
- Inter-professional Relationships
- Intervention
- Literature Review
- Methods Research
- Models
- National Health Programs/Administration Organization
- Needs Assessment
- Organizational Case Studies
- Physician's Practice Patterns/Role
- Policy Making
- Practice Guidelines
- Presentation of reviews
- Private Sector/Administration/Organization
- Program Descriptions/Effectiveness/Evaluation
- Public Health
- Quality Assurance/Management
- Research Design/Methodology/Problems Standards/Utilization
- Review methodology
- Schematic Studies
- Social Sciences
- Teaching Methods
- Theory Practice Relationship
- Time Factors
- Translation

About **reSearch**:

reSearch is a new information product from the National Rehabilitation Information Center (NARIC). Each issue is based on real-world queries received by our information specialists from researchers, educators, and rehabilitation professionals around the world.

We search several sources both in-house and online, to fill these requests including:

- REHABDATA and the NIDRR Program database
- Education Resources Information Center
- National Clearinghouse of Rehabilitation Training Materials
- Campbell and Cochrane Collaborations
- PubMed and other National Library of Medicine databases
- Agency for Health Care Policy and Research databases
- Center for International Rehabilitation Research Information and Exchange
- and other reputable, scholarly information resources.

We hope you find these *reSearch* briefs informative in your own research.

- NARIC Information and Media Team