

# Knowledge brokering: An innovative model for supporting evidence-informed practice in respiratory care

Alison M Hoens BSc(PT) MSc<sup>1,2</sup>, W Darlene Reid BMR(PT) PhD<sup>1,3,4</sup>, Pat G Camp BSc(PT) PhD<sup>1,2,4,5</sup>

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The process of adopting research findings in the clinical setting is challenging, regardless of the area of practice. One strategy to facilitate this process is the use of knowledge brokering. Knowledge brokers (KBs) are individuals who work to bridge the gap between researchers and knowledge users. In the health care setting, KBs work closely with clinicians to facilitate enhanced uptake of research findings into clinical practice. They also work with researchers to ensure research findings are translatable and meaningful to clinical practice. The present article discusses a KB's role in a respiratory care setting. Working closely with both researchers and clinicians, the KB has led teams in the process of conceptualizing, developing, testing, disseminating and evaluating several projects related to respiratory care, including projects related to mobility in critical care settings and acute exacerbations of chronic obstructive pulmonary disease; inspiratory muscle training; and the use of incentive spirometry in postsurgical populations. The KB role has provided an important communication link between researcher and knowledge user that has facilitated evidence-informed practice to improve patient care.

**Key Words:** *Knowledge broker; Knowledge translation; Respiratory care*

The gap between evidence and practice is real. Indeed, it is estimated that it takes an average of 17 years for only 14% of research findings to be adopted into clinical practice (1). The process of changing practice to include adoption of the research findings – variably known as knowledge mobilization, knowledge exchange, knowledge transfer or, more commonly, ‘knowledge translation’ (KT) – is a challenge regardless of area of practice.

The field of study focused on the science of KT – implementation science – has identified a number of barriers that contribute to the challenges. These barriers exist at multiple levels: the individual clinician (eg, knowledge/experience, skills in accessing/appraising literature, attitude toward change); the organization (eg, provision of resources, training, protected time, authority to implement change, financial incentives); the regulators (eg, mandates from regulatory agencies); the health care research funders (eg, funding, provision of support services); and the patient (eg, preferences, behaviour) (2,3).

Many strategies to address the barriers have been trialed including the use of didactic sessions, academic detailing, educational resources, clinical pathways, audit and feedback, reminders, local opinion leaders, decision aids and computer decision support. A number of systematic reviews and meta-analyses investigating the relative effectiveness of the strategies have revealed that these interventions typically result in approximately a 10% change in practice. It is increasingly evident that there is no single ‘magic bullet’ to dramatically impact uptake of evidence into practice and that there is greater likelihood of success using multiple interventions targeted at context-specific barriers (3,4).

Another method to facilitate practice change that is gaining momentum in health care has been the creation of ‘knowledge broker’

## Le courtage du savoir : un modèle novateur pour soutenir la pratique fondée sur des données probantes en soins respiratoires

Le processus d'adoption des résultats de la recherche en milieu clinique est complexe, quel que soit le secteur de pratique. Le courtage du savoir fait partie des stratégies pour faciliter ce processus. Les courtiers en savoir (CS) sont des personnes qui travaillent à combler les lacunes entre les chercheurs et les utilisateurs du savoir. Dans le milieu de la santé, les CS travaillent en étroite collaboration avec les cliniciens pour qu'ils intègrent les résultats des recherches à la pratique clinique. Ils travaillent également avec les chercheurs pour s'assurer que les résultats de la recherche soient traduisibles et significatifs en pratique clinique. Le présent article porte sur le rôle d'un CS en pneumologie. En étroite collaboration avec les chercheurs et les cliniciens, ce CS a dirigé des équipes dans le processus de conceptualisation, d'élaboration, de mise à l'essai, de diffusion et d'évaluation de divers projets liés aux soins respiratoires, y compris des projets liés à la mobilité en soins intensifs et aux exacerbations aiguës des maladies pulmonaires, à l'entraînement des muscles inspiratoires et à l'utilisation de la spirométrie d'encouragement après une opération. Le CS s'est révélé un lien de communication important entre les chercheurs et les utilisateurs du savoir et a facilité la pratique fondée sur des données probantes pour améliorer les soins aux patients.

(KB) positions. The KB's role is to ‘bridge the gap’ between evidence and practice (5-6), functioning as a ‘change agent’, catalyst and project leader to link research producers and knowledge users. In a recent review of the literature on KBs, Conklin et al (5) identified seven types of activities that are typically undertaken by KBs and emphasized the ‘boundary spanning’ component of the role to link researchers, practitioners and decision makers by “fostering relationships and creating operational groups capable of producing tangible results”. The KB's ability to promote mutual understanding of the unique environments and cultures of each stakeholder group is crucial to fostering understanding across groups, commitment to the objective(s) of the project and, ultimately, adoption of the desired change. A key component of success is the ability to adapt the knowledge to the local context. Ward et al (6) identified the five key elements to the process undertaken by KBs: identify and communicate the problem; analyze the context; develop and select the knowledge to be transferred; select the appropriate KT interventions; and consider how the knowledge will be used in practice. The steps outlined by Ward et al (6) provide evidence-based direction for teams seeking guidance for their own knowledge translation activities.

### PHYSICAL THERAPY KB IN BRITISH COLUMBIA

In 2009, the University of British Columbia Department of Physical Therapy, the British Columbia (BC) Rehabilitation Science Research Network (BCRSRNet), and the Physiotherapy Association of BC jointly funded a KB position. The main purpose of the KB position was to seek, build and support knowledge linkage and exchange opportunities among physical therapy clinicians and researchers. Currently in its fourth year of funding (with the Providence Health Care Institute

<sup>1</sup>Department of Physical Therapy, University of British Columbia; <sup>2</sup>Providence Health Care; <sup>3</sup>Vancouver Coastal Health Research Institute;

<sup>4</sup>Institute for Heart and Lung Health; <sup>5</sup>James Hogg Research Centre, St Paul's Hospital, Vancouver, British Columbia

Correspondence: Dr Pat G Camp, University of British Columbia, 1081 Burrard Street, Vancouver, British Columbia V6Z 1Y6.

Telephone 604-806-9144, e-mail pat.camp@hli.ubc.ca

**TABLE 1**  
**Details of the process led by the British Columbia physical therapy knowledge broker for six respiratory care knowledge translation projects**

Project	Five essential elements of knowledge translation				
	Identify the problem	Analyze the context	Select the knowledge	Select the intervention	Support use in practice
SAFEMOB (Safe mobilization of acutely ill patients) ( <a href="http://physicaltherapy.med.ubc.ca/files/2012/05/SAFEMOB_Final18673.pdf">http://physicaltherapy.med.ubc.ca/files/2012/05/SAFEMOB_Final18673.pdf</a> )	Clinicians identified this issue. Decision makers supported the need. Researchers acknowledged the scattered, diverse and limited guidance from the existing literature	Uncertainty as to the 'yellow and red flags' for when one should consider not mobilizing an acutely ill patient <b>Stakeholders:</b> PT and, to a lesser extent, nursing <b>Focus:</b> <u>safe mobilization of acutely ill patient</u>	Synthesis of available evidence and expert opinion with multiple opportunities for feedback by >2000 stakeholders	Iterative, two page clinical decision-making tool	Support for adoption provided by a live webinar (recorded for later or repeated viewing providing rationale, process, and experts working through typical case histories utilizing the tool.  Presentations and practical sessions with case histories led by experts at both regional and national meetings
Safe and effective mobilization of AECOPD (see article in the current issue of the <i>Journal</i> by Camp et al, pages 281-284)	Researchers and clinician identified a gap in the SAFEMOB tool that it did not address the unique needs of the AECOPD patient – an important need given the high cost of care, and readmission rates of AECOPD patient	Clinicians treating patients with AECOPD are uncertain as to the parameters for exercise prescription for this population <b>Stakeholders:</b> Medicine, PT, Nursing, RT, patient, and family <b>Focus:</b> <u>safe and effective mobilization of AECOPD patient</u>	<u>Two components:</u> 1. Identify the current evidence from the literature; 2. Address the gaps in the existing literature.	<u>Three steps:</u> 1. Synthesis of systematic reviews of effective exercise in AECOPD and other co-morbidities; 2. Delphi process to develop best practice recommendations; 3. Using the information from steps 1 and 2, develop a clinical decision-making tool to guide	Developed an implementation and evaluation plan to address potential barriers to adoption of the tool
Mobilizing intensive care unit patients	Identified as an issue by the multidisciplinary ICU team at a local hospital. Inadequate mobilization of pts in the ICU setting can result in additional cardiovascular, respiratory, neurological and musculoskeletal complications	Team identified that they needed to create a process to enhance the earlier and more threshold targeted mobilization of their patients <b>Stakeholders:</b> Medicine, PT, Nursing, RT <b>Focus:</b> safe and effective mobilization of the critically ill patient with an emphasis on the delineation of the responsibilities of each discipline	Modification of SAFEMOB tool together with discipline-specific roles for progressive stages of patient ability	Development of a clinical decision making tool that included: a process for identifying the current level of mobility for a patient, a plan for selecting the targeted level of mobility for the patient, specific roles for each discipline and the required documentation	Education was provided, in the annual education forum, to all team members on the use of the tool and the steps in the process.  Ongoing follow-up to address questions and ensure compliance is provided by the nurse educator
Increase prescription of IMT	Researchers identified an underutilization of IMT in spite of well-established evidence of its effectiveness in the COPD population	Researchers identified that most COPD patients were not receiving effective treatment to manage dyspnea and inspiratory muscle weakness. <b>Stakeholders:</b> PT, RT, nursing in outpatient pulmonary rehabilitation <b>Focus:</b> increasing use of IMT for outpatient COPD patients	Review of evidence for effectiveness of IMT and of the behavioural theories to elicit practice change.	Undertook an RCT (MSc project) that compared traditional didactic approach with a theory informed behavioural approach to promote change in practice	Publication of findings (7) Presentation at the 2011 Canadian Physiotherapy Annual Congress. Development of implementation plan in process

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**TABLE 1 – CONTINUED**  
**Details of the process led by the British Columbia physical therapy (PT) knowledge broker for six respiratory care knowledge translation projects**

Project	Five essential elements of knowledge translation				
	Identify the problem	Analyze the context	Select the knowledge	Select the intervention	Support use in practice
Indication and contraindications to secretion removal techniques	Clinicians identified a need to support appropriate referrals to PT for secretion removal techniques.	PT in acute care hospitals frequently receive referrals requesting interventions using secretion removal techniques (eg, percussions, vibrations) for pts in which these techniques are either contraindicated or not indicated  <b>Stakeholders:</b> Medicine, PT, nursing <b>Focus:</b> Increasing awareness of physicians re: the evidence for the contraindications and indications of secretion removal techniques	Synthesis of available evidence for contraindications and indications	Two-page clinical decision making tool	Posted on hospital internet.  Distributed to all new medical staff by ward PT in conjunction with a discussion to address further questions / concerns
Contraindications and indications for incentive spirometry	Clinician identified the need to support appropriate referrals to PT for incentive spirometry	PT in acute care hospitals frequently receive referrals requesting incentive spirometry for pts in which it is either contraindicated or not indicated  <b>Stakeholders:</b> Medicine, PT, nursing <b>Focus:</b> Increasing awareness of physicians re the evidence for the contraindications and indications of incentive spirometry	Synthesis of available evidence for contraindications and indications	Two-page clinical decision making tool	Posted on hospital internet.  Distributed to all new medical staff by ward PT in conjunction with a discussion to address further questions / concerns

Number in parentheses refers to reference. AECOPD Acute exacerbation of chronic obstructive pulmonary disease; COPD Chronic obstructive pulmonary disease; IMT Inspiratory muscle training; RCT Randomized controlled trial; RT Respiratory therapy

and the Vancouver Coastal Health Research Institute replacing the BCRSRNet funding), this position has evolved to include multiple interdisciplinary KB projects related to acute and chronic disease, with several specifically focused on respiratory care.

The roles and activities of the physical therapy KB are diverse, but can be categorized as activities related to research; development of practice resources; and evidence-informed practice skill development. The KB facilitates research by identifying and facilitating partnerships among academic, education and clinical entities (decision makers and clinicians) in medicine, nursing and the allied health professions including physical therapy. The development of practice resources uses knowledge of the optimal methods to 'translate' the literature into practice-relevant tools and make it accessible and acceptable to stakeholders, including clinicians, researchers, students and decision makers. These practice resources are housed on an array of stakeholder relevant websites enabling broad access. Assessment of web traffic to these KB resources has shown a total of 10,000 hits over four years, and a 230% increase in traffic between year 1 and year 4 of the KB position. To improve health care professionals' critical appraisal skills, the KB developed a journal club series hosted through a webinar platform (and recorded for repeated viewing), enabling health care professionals working throughout the province an ongoing opportunity to develop and refine their skills in reading, critiquing and then applying

knowledge to their clinical practice setting. Attendance has increased by 302% between the first and most recent sessions (10 sessions in total) and pre/post evaluations demonstrate a 29% to 43% mean change in confidence in appraisal skills. This position undergoes an annual review of activities and outcomes before renewal of funding. Annual reports of the activities and outcomes of the position are available at <<http://physicaltherapy.med.ubc.ca/research/physical-therapy-knowledge-broker/>>.

#### SUPPORTING EVIDENCE-INFORMED PRACTICE IN RESPIRATORY CARE

With respect to supporting evidence-informed practice specifically in respiratory care, the KB has been instrumental in facilitating six important projects for British Columbian and Canadian health care providers. Using the five steps outlined by Ward et al (6), Table 1 provides the essential components of each of these KT projects.

#### OTHER KT RESOURCES

The recent emphasis on KT is a reflection of the lack of uptake of research findings into clinical practice. The KB role is an increasingly popular method to enhance evidence-informed practice. Although knowledge brokering can be an effective means to link clinicians, decision makers, educators and researchers to improve clinical care,

the responsibility for effective KT does not fall solely on the role of the KB. The KB can help facilitate these important processes but there are numerous strategies to support evidence-informed practice in health care that any health care professional, researcher and decision maker can adopt. The Hospital for Sick Children and the University of Toronto (Toronto, Ontario) have developed several leading KT plans as well as certificate programs ([www.sickkids.ca/Learning/AbouttheInstitute/Programs/Knowledge-Translation/Knowledge-Translation-Professional-Certificate/Knowledge-Translation-Professional-Certificate.html](http://www.sickkids.ca/Learning/AbouttheInstitute/Programs/Knowledge-Translation/Knowledge-Translation-Professional-Certificate/Knowledge-Translation-Professional-Certificate.html)) for professionals interested in KT and brokering responsibilities. Additional information regarding courses and resources are available on the KT Canada website (<http://ktclearinghouse.ca/ktcanada>). There is also detailed KT literature offering step-by-step approaches to KT practices (3). (See the KT plan in Camp et al (8) in the current issue of the *Journal* (pages 281-284), which summarizes a logistic plan for the dissemination, implementation and evaluation of the decision-making tool.)

### CONCLUSION

Funding agencies, such as the Canadian Institutes for Health Research, government agencies, such as the Public Health Agency of Canada, nongovernmental organizations, such as the Canadian Lung Association and health care professional societies, such as the Canadian Thoracic Society and the Canadian Respiratory Health Professionals, are united in their support for best evidence-based KT activities. The need for KT in respiratory care is vast, from the requirement of urgent and accurate communication with health care practitioners and patients (eg, in surveillance and identification of disease, such as during the SARS outbreak), to detailed management guidelines for complex chronic diseases (eg, chronic obstructive pulmonary disease, asthma and idiopathic pulmonary fibrosis). However, while most researchers are adept at producing end-of-grant KT items, such as peer-reviewed articles and presentations at conferences, there is less experience and expertise in designing, implementing and evaluating

KT activities. Similarly, health care professionals often voice concerns about the time and proficiency required to efficiently access, synthesize, interpret and apply the findings of research articles. The inclusion of the KB role to our health care community provides a vital communication link that has enabled respiratory-related KT activities to expand beyond end-of-grant activities to include a wide variety of evidence-based strategies to improve patient care.

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