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

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

| Project | Identify the problem | Analyze the context | Select the knowledge | Select the intervention | Support use in practice |
|---------|----------------------|---------------------|----------------------|-------------------------|-------------------------|
| SAFEMOB (Safe mobilization of acutely ill patients) (http://physicaltherapy.med.ubc.ca/files/2012/05/SAFEMOB_Final18673.pdf) | 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. | 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 Journal by Cam 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. | Two components: 1. Identify the current evidence from the literature; 2. Address the gaps in the existing literature. | Three steps: 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. | 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. | 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                              | Identify the problem                                                                 | Analyze the context                                                                 | Select the knowledge                                                                 | Select the intervention                  | Support use in practice                                      |
|--------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|
| Indications 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 (e.g., percussions, vibrations) for pts in which these techniques are either contraindicated or not indicated. | 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. | 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.

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) 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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