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Knowledge Translation

Challenges in Knowledge Translation: Integrating Evidence on Pain in Children Into Practice

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Hospitalized children undergo multiple painful procedures daily. There is compelling evidence that well-managed procedural pain is associated with faster recovery, fewer complications, and decreased use of health-care resources. Also, the need for evidence-based acute pain management has been acknowledged by professional, quality care, patient safety, political, and policy initiatives. Furthermore, acute pediatric pain research has expanded exponentially. Yet acute procedural pain management in pediatric clinical settings is frequently inadequate. This situation, although distressing for both clinicians and researchers, is consistent with the significant delay in effective research-endorsed clinical strategies making their way into clinical practice.

Kitson stated a decade ago that research utilization is a social process involving the integration of scientifically derived knowledge within personal experience, patient preferences, and the complexities of the broader context (Kitson, 1999). This theoretical stance is congruent with the dilemmas encountered in translating knowledge on pain in children into clinical practice — a process that requires dialogue, interaction, and social exchange between researchers, clinicians, administrators, and policy-makers.

CIHR Team in Children's Pain

The goal of a program of research funded by the Canadian Institutes of Health Research (CIHR) is to determine the effectiveness of an interactive system-based knowledge translation (KT) intervention, Evidence-Based Practice for Improving Quality (EPIQ; Lee et al., 2009), in narrowing the gap between clinical practice and improved process and clinical outcomes. The program comprises two projects: CIHR Team in Children's Pain (Stevens et al., 2006–11), and Translating Research on Pain in Children (Stevens et al., 2008–12).

We have used the PARiHS framework (Rycroft-Malone, 2004), which integrates the quality of *evidence* with *context* of care and *facilitation* approaches as a model for integrating three projects in the CIHR Team in Children's Pain research as it resonates theoretically and clinically with the proposed research. In project 1, we developed a standardized database to capture (a) local evidence on current pain practices in all children admitted to 32 research units (in eight pediatric health-care centres across Canada), and (b) contextual data on all research units participating in the study. In project 2, we delineated data on unit context where acute pain is experienced and interventions are tested. In project 3, we are evaluating the EPIQ intervention while simultaneously considering the existing evidence and the unit context. The three key elements of the PARiHS framework will serve as a guide to highlight some of the KT challenges encountered in this program of research and the strategies employed to address them.

Evidence

The consequences of unrelieved pain and its associated human suffering provide a compelling argument for utilizing evidence in practice. Rycroft-Malone (2004) describes evidence as knowledge that is derived from a variety of sources, has been tested, and is credible. Knowledge, however, is more than research. It includes clinical experience, patient experience, and local contextual information; evidence-based practice is facilitated by the interplay between all forms of knowledge. Over the past two decades there has been exponential growth in the generation of research evidence with respect to pain-relieving strategies. Yet suboptimal pain management can be attributed to both inadequate knowledge of the evidence and inability to use available evidence in practice (Scott-Findlay & Estabrooks, 2004). Thus generation of new knowledge is not the primary solution; this knowledge must be translated for frontline health professionals in an understandable and usable way (Kavanagh, Stevens, Seers, Sidani, & Watt-Watson, 2008; Scott-Findlay & Estabrooks, 2004).

In our pediatric pain research, we encountered two key challenges in relation to evidence: determining comprehensive and accurate data on local pain practices, and evaluating and synthesizing key research evidence in a user-friendly format for practitioners. To address these challenges, we developed a centralized Web-based database (Canadian Pediatric Pain Research [CPPR]; www.childrenspainstudy.ca) to record data on child sociodemographic factors; pain assessment; painful procedures; and pharmacological, physical, and psychological interventions by the participating research units. We also collected data on the hospital unit, including patient census data, staff composition and complement, and whether the

unit included a pain management team. Although these data enriched our knowledge of the local context, construction of the CPPR was expensive, time-consuming, and resource-intensive. Also, the collection of patient data from approximately 4,000 patient charts over a 6-month period required heavy investment in the training, supporting, and monitoring of research personnel. Therefore, finding a rigorous yet efficient and comprehensive way of capturing clinical, patient, and local contextual information remains a priority for effective KT.

Context

We also conducted a comprehensive assessment of the context in which acute pediatric pain is experienced, with the ultimate goal of determining how context influences the KT process, pain processes (e.g., pain assessment and management), and pain outcomes (e.g., pain intensity). In the PARiHS framework, context reflects the environment or setting in which the proposed change is implemented (Rycroft-Malone, 2004) and includes organizational culture, leadership, and evaluation. Our goal was to determine evidence use, within an organizational context, by the 32 participating units from the perspective of interprofessional health-care practitioners. We struggled with two challenges. The first was how to achieve an interprofessional perspective on context, as most theory-driven KT research has been nursing-focused. Therefore, the applicability of existing nursing KT models to behavioural change in other professions has yet to be determined. The second challenge was how to adequately and accurately measure evidence use (e.g., research utilization) at the unit/organizational level in a climate where most research is focused on the individual. Estabrooks has made strides in deepening our understanding of research utilization within the organizational context and in developing a valid and feasible measure to capture the key components of organizational context and research utilization behaviour. The Alberta Context Tool (ACT; Estabrooks, Squires, Adachi, Kong, & Norton, 2008), which was developed and validated with nurses working in adult settings, has been used in our present CIHR-funded research to assess context within pediatric settings. This was also an opportunity to adapt and validate the measure for use with a wider interdisciplinary group. As such work had not been done previously, there was no existing response rate from professional groups; a response rate of 43% within five groups (nurses, physicians, allied health-care providers, managers, and advanced practice nurses) was achieved at baseline in project 2, with rigorous and assiduous follow-up, and was considered satisfactory. Analyses will include assessment of the influence of organizational context and related factors on research use in the different professional groups.

Facilitation

Facilitation enables the implementation of evidence in practice (Rycroft-Malone, 2004) and is enhanced by innovative interventions that use the best evidence and that take context and the complexities of the KT process into account. EPIQ is an interactive, multifaceted continuous quality improvement (CQI) strategy that merges *evidence* (i.e., systematic reviews, reviews of systematic reviews), identifies potential practice changes using local contextual information (i.e., baseline data in the CPPR database), and involves collaboration by interdisciplinary health professionals who *facilitate* the implementation of tailored KT strategies using CQI techniques (Lee et al., 2009). EPIQ allows for customization of a strategy to improve clinical care (e.g., introducing a new pain assessment tool on a unit where none exists), based on local data (e.g., audit of patient charts), evidence (e.g., systematic review of all existing pediatric pain measures), and involving a small group of local champions (e.g., nurse educator, quality improvement officer, and staff pediatrician) implementing strategies such as interactive education sessions, reminders, and outreach. In our program of research, we are evaluating the effects of EPIQ on acute pain practices in children and clinical outcomes, as well as examining the intervention fidelity (i.e., the degree to which the intervention is implemented as planned) and the effectiveness of KT strategies in different contexts (e.g., type of unit, age of children, and type of painful procedures).

A key challenge in facilitation is the engagement of individual unit-based health professionals in uptake and implementation of the selected clinical practice. This process requires cooperation between clinicians and researchers in terms of communication; mutual respect for roles, values, and beliefs; and appreciation of the intricacies of a complex, multifaceted KT strategy (EPIQ) and organizational context. We have attempted to meet this challenge through a comprehensive approach, one that (a) supports the unit and the organizational context (by recruiting unit leadership for research practice councils and engaging research nurses who employ enabling facilitation strategies), (b) communicates existing local information, (c) synthesizes research evidence (in the form of evidence summaries), and (d) tailors KT strategies and outcomes to the unit context. Determining the efficacy of such a tailored intervention also poses a research design dilemma. The ideal design for determining intervention efficacy would be a cluster randomized controlled trial (RCT). However, standardization of a complex customized KT intervention is problematic because of contextual factors, the potential threats (e.g., contamination) to internal validity, and the limited number of pediatric hospitals available to participate in such a study. We used a

non-RCT comprehensive allocation schema (taking into account baseline data on pain practices, geographic location, and size of hospital unit) and took advantage of the opportunity to test the acceptability and viability of the intervention prior to moving to the cluster RCT. We considered this an ethically responsible way to refine designs and methodologies prior to moving ahead. Adequate sampling for RCTs requires large sample sizes, considerable resources, and outcomes that can be clearly defined and measured. Also, just as practice change usually occurs following several trials (or a meta-analysis of pooled data) supporting the efficacy of a new intervention, standards for changing practice based on the efficacy of KT strategies will need to be carefully considered.

Conclusion

The translation of knowledge into practice is wrought with challenges. We have developed and are implementing a theoretically derived program of research to address some of these challenges. Along the way, we are discovering and evaluating unique strategies that will be the basis for future refinement and expansion of KT research.

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