

How does “knowledge translation” affect my clinical practice?

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ABSTRACT

Knowledge translation is emerging as an increasingly important area of research and practice aiming to remedy the disconnection between evidence-based clinical care and real-life practice. The discipline is informed by a large body of literature and practical tools, which can inform providers and leaders in health care. Front-line clinicians should be aware of the principles of knowledge translation and the evidence that defines successful and suboptimal strategies for introducing evidence-based care at the system level.

RÉSUMÉ

L'application des connaissances s'impose de plus en plus comme un important domaine de recherche et de pratique dans le but de combler l'écart entre les soins cliniques fondés sur les données probantes et la pratique réelle. La discipline repose sur une documentation importante et sur des outils pratiques, susceptibles d'informer les fournisseurs de soins de santé et les chefs de file en la matière. Les cliniciens de premier recours devraient connaître les principes de l'application des connaissances et les données probantes qui sous-tendent les stratégies couronnées de succès et les stratégies sous-optimales d'introduction des soins fondés sur des données probantes dans le système de santé.

Keywords: evidence to action, implementation, knowledge translation

A significant challenge facing physicians practicing in emergency medicine relates to ensuring that their practice incorporates evidence-based approaches to clinical care.

Although some of the responsibility for achieving this goal rests with the individual provider's professional responsibility to stay up to date, this is becoming an increasingly difficult, if not an impossible, challenge

to meet. Increasingly, the impetus and process for changing practice are driven at the system level and influenced by the local environment. This article seeks to provide insight and practical direction for instituting evidence-based improvements in emergency departments through the science of knowledge translation (KT).

EDUCATIONAL SCENARIO

A 5-year-old boy with an ankle injury who presents to a community emergency department undergoes imaging for the purpose of excluding a fracture. The child meets none of the Ottawa Ankle Rules criteria for requiring imaging, but the treating physician who uses the rule for deciding which adults require radiography is uncertain if the rule is equally valid and applied in the same way for children. KT opportunity: a systematic review of the Ottawa Ankle Rules' performance in children revealed a pooled sensitivity of 98.5% in studies involving over 3,000 subjects.¹

WHAT IS KT?

This scenario represents a common situation in which knowledge from research might have led to a concrete improvement in patient care through avoidance of an unnecessary radiograph. This gap between what is known and what gets incorporated into practice lies at the focus of the KT paradigm. The Canadian Institutes of Health Research has defined KT as “a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective

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health services and products, and strengthen the health care system.”² Although this definition may seem all-encompassing and too broad to be particularly useful, this review aims to provide clinicians in emergency medicine with a practical perspective on how they can incorporate KT into their professional careers.

At the level of the practicing physician, any intentional modification in practice that either reflects the tacit acquisition of knowledge or occurs through the incorporation of research evidence can be considered a form of KT. However, it stands to reason that if a single physician has, after careful consideration, chosen to revise his or her practice on the basis of sound evidence, his or her colleagues (and their patients) should benefit from the same insight. Systematically implementing and evaluating a change in practice that can be adopted by members of a health care team are the essence of this process.

Another dimension in KT is research. This can take many forms and may include measuring the existing gaps between current practice and existing evidence. Alternatively, research in KT can involve an exploration of the barriers that prevent the uptake of interventions that would merit systematic implementation in a wide range of clinical contexts.³ Table 1 provides a useful framework in which to consider the general barriers to KT and related facilitators for both research and practical purposes.⁴

A useful component of the body of work that is KT research is the studies that build our understanding of

what works for achieving evidence-based practice. Ambitious examples of this kind of work can be found in studies that have used cluster randomized trials designed to test the efficacy of intervention strategies tied to validated clinical prediction rules.⁵

WHERE DO WE START?

One of the most widely disseminated frameworks for closing research to practice gaps is the knowledge-to-action cycle. First described in 2006, the model provides a comprehensive guidemap of the specific steps to be followed for KT to take place around a particular issue in a given health care context.⁶ Although some physicians may feel somewhat uncomfortable with using theoretical constructs, the knowledge-to-action cycle can simply be viewed as a checklist of activities and a process for ensuring that all bases are covered (or at least considered) for KT activity (Figure 1).

The cycle suggests starting (see the bottom of Figure 1) with the identification of a problem that represents a commonly encountered and clinically significant but remediable gap between knowledge and practice. An example may be the need to incorporate a widespread innovation being adopted at other centres. Alternatively, an adverse patient outcome or tension between the specialties or services that interface with the emergency department can often provide the impetus for a KT intervention. Another key component of the

Table 1. Barriers and matching facilitators to knowledge translation

Barrier	Examples of facilitators
Lack of awareness	In-service programs for all providers CME/CPD activities Journal club dedicated to subject
Skepticism/attitudes	Support by local opinion leaders
Is the evidence valid?	Sharing experience with other adopters
Uncertainty about local application	Inviting outside experts to present evidence
No local buy-in	Memo, newsletter, e-mail communication about initiative
Organizational	
No time or support for KT/QI efforts (administrative/financial)	Selecting priorities for KT efforts
No structure for introducing innovation	Identifying and supporting champions/change agents, i.e., determining who in the institution can effectively lead the charge for change and who may be key allies for the project to meet with success (see Key Ingredients section)
Lack of electronic health record to monitor change	
Sustainability	
Initial enthusiasm and change in behaviour fade	Ongoing feedback in the form of newsletters and continuous performance reports with robust metrics

CME = continuing medical education; CPD = continuing professional development; KT = knowledge translation; QI = quality improvement.

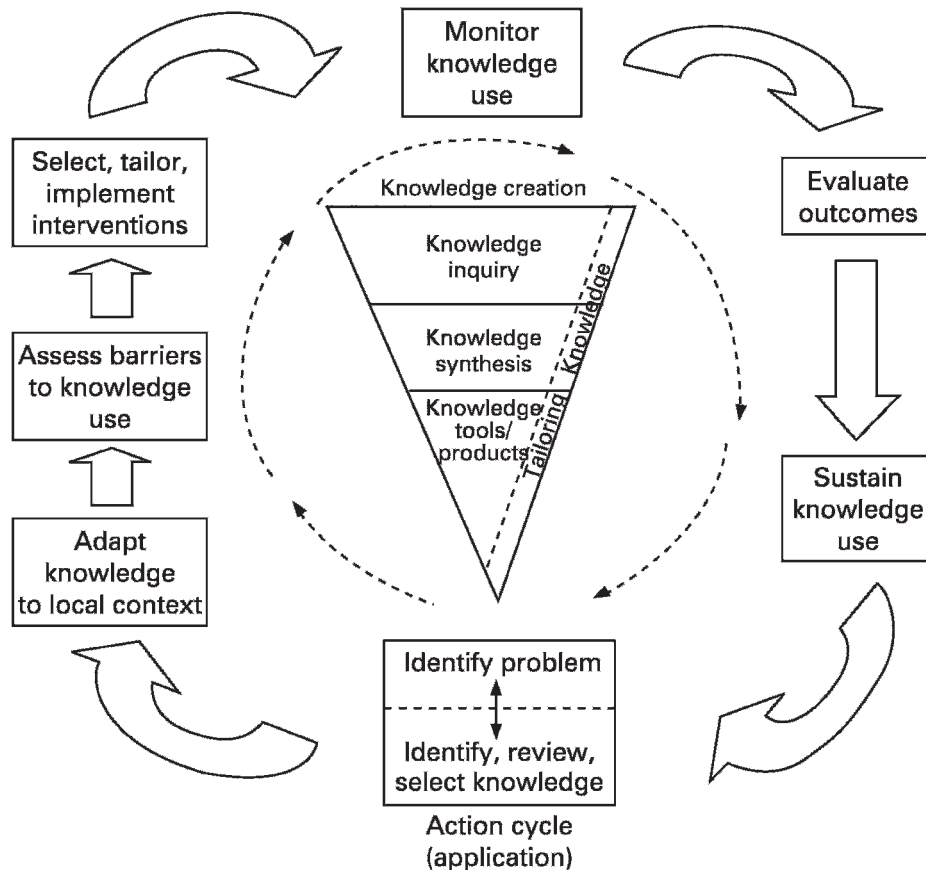


Figure 1. The knowledge-to-action cycle.

cycle is represented by the process of identifying and synthesizing the knowledge that will drive the entire process. Represented by the triangle at the core of the model is the idea that knowledge is continuously being updated and tailored to inform both the content of the intervention and the optimal modalities for implementation. Using the cycle means incorporating a process for reviewing the evidence or knowledge that describes the intervention and developing a mechanism for ensuring that the interventions being proposed remain current.⁶ A feature of the model and a recurrent theme in the KT literature relates to the importance of understanding the local landscape for evidence implementation. As specifically as possible, this includes an appreciation of what may constitute the unique barriers to evidence implementation and from that selecting and developing strategies that address these much in the way a key fits a lock. Finally, the knowledge-to-action cycle should be viewed as an iterative and fluid process whose progress should be continuously monitored, with the details surrounding early success or failure being used to

fine-tune the process. A description of how the knowledge-to-action cycle might be applied to the educational scenario is provided below.

KEY INGREDIENTS: CHAMPIONS AND SUPPORT FROM LEADERSHIP

Although not specifically addressed in the knowledge-to-action cycle, a key ingredient that is often found in successful KT interventions speaks to the crucial role played by one or more individuals who champion the cause of a specific project. Without a specific individual or core of persons who are passionate about a project and can be identified as accountable and as resources, most efforts are at risk for failure. Although passion is crucial, administrative support, incentives, and protected time from clinical responsibilities are often necessary to bring about change. Similarly, the support of local and institutional leadership is often identified as being among the two most important facilitators that can support KT. In a survey of 365 hospitals, the support of

senior management was identified as one of a small number of predictors for successfully introducing programs that reduce door-to-balloon times in ST elevation myocardial infarction.⁷

SELECTING A KT INTERVENTION

A well-organized approach to KT, informed by popular models and understanding of barriers to change, is of value only if the implementation strategy selected is likely to yield positive and sustainable results. What may be best suited for the hectic emergency department environment has yet to be fully elucidated,⁸ but a useful resource that provides details about a variety of intervention strategies and their effectiveness can be found within the Effective Practice and Organization of Care section of the Cochrane Database of Systematic Reviews.⁹ This work contains a series of systematic reviews that can be perused to identify which options are most likely to be effective in one’s own setting. Table 2 highlights common KT strategies that are of particular relevance to emergency medicine.

MEASURING OUTCOMES AND ENSURING SUSTAINABILITY

One of the most important components of a KT program is evaluation. As a result, KT efforts should always include a quality improvement measure and a

performance marker dimension that allows the champions of the program to measure their impact, share this with relevant stakeholders, and troubleshoot difficulties. Although some changes in practice are greeted with enthusiasm and high rates of compliance when they are first launched, the attrition that frequently accompanies such efforts must also be planned for with elements and strategies that promote sustainability. There should be audit and feedback to providers about their compliance with recommended care. This is generally labour intensive if not automated through some kind of automatically generated performance report.

RESOLUTION OF SCENARIO: APPLYING THE KNOWLEDGE-TO-ACTION CYCLE

In the example provided, one would begin by identifying the issue of excess radiographs in ankle injuries as the focus of the appropriate focus of a KT initiative. This might be confirmed by a review of ankle radiograph ordering in patients under age 12 to confirm high ordering rates and few radiographic studies actually revealing a fracture (identifying the problem). A multidisciplinary working group, led by an enthusiastic and knowledgeable emergency physician, is convened to address the problem and using the knowledge-to-action framework decides that the evidence base is robust and can be applied to their

Table 2. Common knowledge translation interventions

Intervention	Description
Audit and feedback	Performance reports on individual physicians or health care teams to examine adherence to evidence-based practice and reporting this back to providers
Academic detailing	Outreach education to providers that presents new evidence-based management options with tools to support changes in practice
Clinical pathways	Predetermined approaches for care of specific patients, often multidisciplinary and consisting of delegated nursing acts and checklists
Opinion leaders	Engaging a well-respected leader in the health care community to advocate for the kind of evidence-based change in question
Multifaceted strategies	Approaches that incorporate more than one approach to implementing change, i.e., continuing medical education sessions and the creation of an electronic order set
Tailored interventions	Interventions oriented to address and overcome systematically identified barriers to change and implementation of new approaches
Electronic reminders	Often used for screening or preventive care, this approach reminds providers to perform frequently overlooked interventions
Computerized order entry/order sets	Optimized content and format within electronic prescribing software to augment evidence-based care
Pay for performance	Financial incentives to support evidence-based interventions

emergency department (adapting knowledge to the local context).

The process represented in the central triangle of the framework would amount to a review of existing evidence to determine its validity and applicability to the setting in question (identifying knowledge). The development of knowledge tools or products can refer to the creation of user-friendly applications, for example, laminated cards or posters that can carry the key messages about the use of the Ottawa Ankle Rules and their validity in children.

The team leads a short focus group session for physicians and nurses to reveal that a lack of awareness about current evidence and perceived parental expectations constitute the major obstacles to implementing the Ottawa Ankle Rules in a systematic fashion in children (assessing barriers to knowledge use).

With this understanding in mind, a program (selecting, tailoring, and implementing interventions) is developed that involves training the triage nurses to attach the laminated cards to a patient's chart, regardless of age, and provide parents with a pamphlet explaining how the clinical assessment can reliably exclude the presence of a fracture in children. In addition, the computerized physician order entry interface now incorporates decision support, so ankle radiographs can be ordered only if one of the ankle rules criteria are met.

Three months after the program launch, a pre-planned evaluation of the program (monitoring knowledge use) demonstrates a 30% decrease in radiograph ordering, a higher rule-in rate, and no adverse effects. The results of the program were fed back to the emergency department staff as individualized performance reports with anonymous comparisons of ordering and rule-in rates against peers (sustaining knowledge use), leading to an additional 10% reduction in ordering globally. The program is also being featured during the hospital's accreditation program and presented at a national quality improvement conference.

CONCLUSIONS

KT refers to the systematic and intentional creation of a program of action that facilitates closure of the gap between knowledge and practice and the consequences that this entails for patient care. The KT literature is now rich with practical information and an understanding of how best to effect lasting change in your emergency department.

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