# Executive Summary: Knowledge Translation in Emergency Medicine: Establishing a Research Agenda and Guide Map for Evidence Uptake

Knowledge translation (KT) describes any process that contributes to the effective and timely incorporation of evidence-based information into the practices of health professionals in such a way as to effect optimal health care outcomes and maximize the potential of the health care system. The 2007 *Academic Emergency Medicine* Consensus Conference was conceived to stimulate the development of a KT research agenda and a coordinated initiative within the specialty of emergency medicine (EM). This article provides an executive summary of the consensus conference initiative by describing the overriding themes that emerged as central to the KT enterprise for EM, as well as the specific research recommendations that received the greatest support.

The KT domain has emerged largely from the observation that there is a gap, and in some instances a chasm, between what is known from high-quality clinical research and what is consistently done in clinical practice.[1] As such, the science of KT is the endeavor that seeks to quantify discrepancies between current practice and evidence-based care and understand the barriers to evidence uptake, and then designs and rigorously tests implementation strategies. While traditional research compares the effectiveness of intervention "A" versus "B" on a patient-oriented outcome, KT research (also known as implementation science) focuses on how to implement the better of the two interventions in an emergency department setting.

Achieving widespread closure of the gap between research and practice is a complex and multifaceted problem. To capture the breadth and scope of the issues that can impact the solutions to this dilemma, the consensus conference conceptual framework developed into 13 distinct themes that are set out in the accompanying articles. We will describe the development of these themes and the global questions they addressed.[2] Each theme team was charged with the formulation of a specific research agenda, which are laid out in this issue of *Academic Emergency Medicine*. The purpose of this article is to provide an executive summary of the consensus conference effort by describing the major common emerging themes and specific high-priority research recommendations that emerged from this process.

## OVERVIEW OF THE CONSENSUS CONFERENCE DAY

The consensus conference day was constructed as an opportunity to bring together experts in the field of KT research and interested individuals and other academic leaders from within EM. The day itself began with a series of plenary sessions organized into an "application" and "research" track. The "application" track was designed to cater to those with a predominantly nonresearch academic focus, with an emphasis on the definition and theoretical constructs of KT,[3] as well as practical applications through informatics,[4] preappraised resources,[5] and lessons learned through attempts at implementing clinical decision rules.[6] The "research" track, on the other hand, was created as a means of establishing direction and describing the path forward in creating a sustained initiative of this line of study. Plenaries in this track included examples of KT research,[7] an understanding of the methodology of this research,[8] and funding opportunities.[9] The afternoon witnessed 13 distinct workshop sessions fashioned along the 13 themes and the conceptual framework for the entire initiative.[2] These workshop sessions served as something of a public hearing for the ideas that had been forged through online discussions and telephone exchanges among the 13 theme leaders and the individuals who had expressed an interest in contributing to each theme team's project.

## OVERRIDING THEMES AMONG CONSENSUS RECOMMENDATIONS

The theme leaders, despite coming from different disciplines and working independently, developed many common ideas. The following five items describe these overriding themes.

### 1. Collaborative Networks of KT/EM Researchers

KT research poses unique challenges both conceptually and from a methodological perspective. The required infrastructure and specific approaches to developing KT research in EM are well defined by two of the proceedings papers in this issue. Compton et al.[8] provide guidance as it pertains to the key methodological and study design considerations that underlie the foundations of KT research. Dayan et al.[10] take a broader view of the challenge of KT research and outline what measures are needed to develop the capacity (expertise, resources, strategic planning) that will sustain this effort in our specialty. For example, a multicenter KT research network would facilitate the conduct of studies that examine implementation strategies at the departmental or even institutional level by allowing both intervention and control


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sites to demonstrate measurable, and possibly contrasting, efficacy of uptake. Even less ambitious research endeavors would benefit from the enhanced generalizability that a broader cross section of perspectives and experiences would provide.

**2. The Multidisciplinary Research Imperative**

The success of KT research is, perhaps even more than most other research endeavors, dependent on the EM-trained clinical researcher reaching beyond his or her traditional team of local collaborators. This is in keeping with the practice of EM, which is inherently team-based, multidisciplinary, and interdisciplinary. The successful implementation of complex interventions, such as treatment pathways and care maps, will involve collaborative models of shared planning and execution with nurses and other specialty disciplines in our institutions. To understand and measure barriers to evidence uptake demands expertise in qualitative research methods and cognitive psychology that have not traditionally been within the purview of EM research. In summary, success in KT research will require the input of other scientific disciplines (nursing, psychology, sociology, and so on) as well as technical expertise from leaders in both informatics and education.

**3. Defining What Knowledge Is Ready for Translation**

Although ostensibly a straightforward notion, many of the consensus building teams struggled with establishing what constitutes knowledge and when is specific research evidence sufficiently robust so as to merit incorporation in a KT initiative or trial. There are no clear, black and white answers to this conundrum, but many groups found it particularly helpful to consider an evidence-based model of decision-making, based on the principle of hierarchy of evidence, to help clarify this uncertainty. Once the strengths, limitations, and a quantitative assessment of the results suggested by a body of research evidence have been established, it is still not yet ready for translation into practice. Rather, research evidence must be integrated with the values and perspectives of all of the relevant stakeholders (patients, practitioners, and administrators) before evidence is ready for a KT intervention.[11] Even evidence from the highest quality of clinical research remains subject to modification and refinement resulting from new and conflicting evidence. In this regard, the importance of responsiveness in KT systems so that they can be updated and adjust with developing knowledge is a point of emphasis for this consensus conference and is developed by the work of Wyer et al. in this issue.[5]

**4. Evidence-based Medicine and KT**

A challenge faced by many of the groups developing recommendations was to understand the relationship between evidence-based medicine (EBM) and KT. To some degree, KT can be viewed as a natural outgrowth of EBM insofar as the skills and knowledge associated with the latter frequently center on the identification and grading of research evidence, as well as on structured critical appraisal of such evidence for purposes of individual decision making. The interest in KT among EBM proponents and educators may stem from the appreciation that these core EBM skills are often insufficient to achieve widespread change in clinical practice and, hence, have an impact on patient outcomes. Without the science of implementation and systematic approaches to overcoming the barriers to evidence uptake, the EBM movement may never achieve optimal impact in improving the health care system in which we work. Another way of understanding the distinction between EBM and KT is implied by David Eddy.[12] An important objective of the EBM mission is the empowerment of individual practitioners to arrive at scientifically informed shared decisions together with their patients.[13] KT, on the other hand, seeks to ensure that validated ways of achieving improved evidence uptake are embedded in our health care system and in our academic institutions.

**5. Conceptual and Theoretical Frameworks for KT Research and Projects**

The KT literature is replete with examples of well-developed and often rigorously tested theoretical models for how to effect evidence-based change in health care.[3] These models range in breadth from those that touch on the dissemination of innovation and change theory in large organizations to more detailed models of the barriers that prevent the adoption of new evidence by individual health care providers. These models are largely untested in EM. These frameworks can have application to the formal study of barriers and facilitators to KT interventions but can also be adopted for the empirical design of KT projects at the level of an emergency department or health care institution. The consensus emerging on this topic, and reflected in many of the proceedings papers included in this issue, is that theoretical models that are relevant to the KT enterprise represent a largely untapped wealth that can nourish and guide research and practice in EM.

## SPECIFIC RESEARCH RECOMMENDATIONS WITH STRONG CONSENSUS SUPPORT

1. The specialty of EM would benefit from a meta-journal resource that would provide clinicians with timely preappraised syntheses of important and high-quality EM-relevant literature designed for bedside application. The effectiveness of evidence synopses in advancing the KT agenda needs to be investigated.
2. Health care policies offer an important opportunity for improving uptake of evidence-based care. To be successfully implemented, they must be ethical and noncoercive in nature and be founded on high-quality evidence derived from clinical research. Appropriate outcome measures should be used to evaluate the effectiveness of these health care policies. These measures, which identify both intended and unintended consequences, are necessary. The effectiveness of alternative approaches to implementing health care policies in EM needs to be investigated.
3. Health care policies and regulatory measures designed to improve evidence uptake need to be developed with broad involvement from multiple relevant stakeholders. Optimal strategies for identifying, recruiting, and achieving consensus among multistakeholder

policy and guideline development groups merit investigation.
4. Clinical practice guidelines that are relevant to EM require greater investment related to availability, clarity of recommendations, and the development of accompanying implementation tools that will facilitate uptake of such efforts. Ideal formats for practice guidelines that facilitate successful implementation should be elucidated with rigorously tested approaches.
5. Emergency departments should actively engage processes that identify priorities in KT as informed by perceived and objectively measured gaps in evidence-based and actual care. Research efforts should focus on identifying high-impact strategies, including informatics-based approaches, which are most likely to result in the development of successful local implementation plans.
6. Educating emergency health care providers and future providers at the undergraduate, graduate, and continuing medical education levels should incorporate an appreciation of the obstacles that often prevent the incorporation of high-quality research evidence into clinical practice, as well as a corollary understanding of facilitators for improving KT. Educational research should focus on how best to impart this curriculum to trainees and physicians in practice.
7. Moving from knowledge to action is an important determinant of global health, but evidence implementation strategies in developing emergency medical systems must be keenly sensitive to the political, cultural, and social dimensions and repercussions of such efforts. Optimal models for disseminating innovation in the setting of a developing emergency medical system need to be identified and tested in these same settings.

## FUTURE DIRECTIONS

### The Consensus Conference Initiative in the Larger Context of Translational Science

Translational research refers to any scientific enterprise that connects discoveries and advances in basic and clinical sciences to improved outcomes for humankind. The field of translational science is a vast and rapidly growing endeavor, spurred by the frequent observation of a disconnect between the various components of the research pipeline.[14] The failure to move these biomedical advances to the point of clinical trials involving human subjects is often referred to as the first translational block (T1). The second translational block (T2) describes the failure of discoveries from high-quality clinical research to reliably achieve integration into routine clinical care. The consensus conference effort, as illustrated in the content of this issue of *Academic Emergency Medicine*, is largely focused on overcoming this T2 through the creation of a multidimensional research agenda. The most ambitious expression of the re-engineering of the biomedical research enterprise that emphasizes collaboration between clinical and translational scientists is being led by the National Institutes of Health. In its recently announced Clinical and Translational Science Awards (CTSA), the National Institutes of Health is investing hundreds of millions of dollars to develop expertise that can more effectively address gaps in translation of innovations on the basic science level into direct benefits for patients.[15] While the CTSA initiative seems largely centered on the realm of laboratory or bench research (T1), the academic institutions that have been awarded CTSA grants, and those that are applying for seed grants, are also encouraged to develop their expertise in overcoming the other blocks as well (T2). The research agenda presented in this proceedings issue of the journal can be considered in large part a road map for meeting the T2 challenge in EM.

Although only a one-day event, the conference was a culmination of a process that had been evolving for several months and that is hoped to continue well into the future of research and practice in EM. Similarly, the 2007 *Academic Emergency Medicine* Consensus Conference on KT should be judged not on the basis of a one-day meeting but to the extent to which the momentum in advancing the KT agenda in EM will be realized. No other specialty has undertaken the concerted effort involved in establishing a research agenda and guide map for approximating the research-to-practice gap in a specific domain of medical care (i.e., EM). As the academic mission of our specialty develops, it is our hope that we will witness traction for the KT research agenda and the emergence of successful KT research networks. If it comes to fruition, this effort will not only advance our understanding of the barriers and facilitators to evidence uptake but may also serve to help lead other fields in an examination of what might optimize evidence uptake in other contexts.

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