

**IMPROVING PATIENT CARE BY LINKING EVIDENCE-BASED MEDICINE
AND EVIDENCE BASED MANAGEMENT**

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INTRODUCTION

Not until about 100 years ago could a typical patient expect to benefit from the medical care provided by a typical physician.¹ Today most patients benefit from medical care, but all patients could benefit more if clinicians routinely provided care consistent with the latest scientific knowledge. One report suggests that only 55% of US adults receive care consistent with current recommendations.²

Another report suggests that only in eight of 306 regions do physicians comply with evidence-based guidelines for at least 80% of their patients.³ In 2001, the Institute of Medicine concluded that there lies a chasm, “between the healthcare we have and the healthcare we should have.”⁴ Moreover, the results of efforts to improve medical quality have been modest and uneven to date.^{5,6}

Two components are necessary to improve the quality of medical care: advances in evidence-based medicine (EBM), which identify the clinical practices leading to better care, i.e., the content of providing care,⁷ and knowledge of how to put this content into routine practice. These advances in evidence-based management (EBMgt) identify the organizational strategies, structures, and change management practices that enable physicians and other health care professionals to provide evidence-based care, i.e., the context of providing care.⁸ Until both components are in place – identifying the best content (EBM) and applying it within effective organizational contexts (EBMgt) - consistent, sustainable improvement in the quality of care that Americans receive is unlikely to occur.

PROVIDING HIGH QUALITY CARE

Ensuring the delivery of high quality care requires integration of knowledge from EBM and EBMgt. The content of what should be done, e.g., evidence on which drug, medical device, procedure, or treatment plan is most likely to improve patient outcomes needs to take into account the organizational and community context in which the care is delivered. Randomized clinical trials (RCTs) emphasizing internal validity are the gold standard for creating EBM, but have limited generalizability to patients, providers, and treatment settings different from those in the RCTs.⁹ Practical or pragmatic clinical trials (PCT's) can address some of the generalizability issues, but can be costly and generally do not address explicitly the underlying organization of care.^{10,11} EBMgt focuses on the underlying organizational issues that influence how care is delivered. The evidence base comes largely from the social and behavioral sciences, human factors engineering, and the field of health services research. In addition to RCTs, EBMgt uses observational data and approaches such as the plan-do-study-act (PDSA) quality improvement method for making small scale changes to improve care.¹²

To understand the value of using EBM and EBMgt together, consider the treatment of patients with acute coronary syndromes (ACS). Evidence-based guidelines recommend that symptomatic patients presenting in the emergency department (ED) receive immediate evaluation, in an effort to decrease the time between the onset of symptoms and the initiation of treatment. In practice, not all patients at risk for an ACS receive prompt evaluation or treatment because of factors that can vary across EDs, e.g., limited space creating triage bottlenecks.¹³

One hospital, however, reduced its door-to-balloon time for patients with acute myocardial infarctions (AMI) after reviewing the existing management research on workflow processes and drawing upon case studies from similar hospitals on ways to initiate electrocardiograms faster in symptomatic patients.¹³ This hospital was able to use EBMgt knowledge to help put EBM into practice.

There is substantial clinical evidence and established guidelines recommending the use of certain medications in AMI patients; yet, use of beta-blockers after an AMI continues to be uneven across hospitals. Four organizational characteristics of hospitals are associated with greater improvement in beta blocker use over time than lower performing hospitals. These include developing shared goals for improvement, providing substantial administrative support, having strong physician leadership, and using credible data feedback.¹⁴

Using the best knowledge to identify what to do and how to make it part of routine practice appears obvious, but this integration of content and context rarely happens. Within both EBM and EBMgt, there are substantial, similar barriers to evidence use: time pressures, perceived threats to autonomy, the preference for “colloquial” knowledge based on individual experiences, difficulty in accessing the evidence base, difficulty differentiating useful and accurate evidence from the inaccurate or inapplicable, and lack of resources.^{8,15,16} Integrating the two bodies of knowledge also requires practitioners who are aware of and able to draw upon evidence from the two areas. Few physicians read management studies; few managers read clinical studies; and few persons read all relevant studies within their own field.

EVIDENCE BASED MANAGEMENT FOR CHRONIC ILLNESS AND PATIENT SAFETY

More than over 90 million Americans have at least one chronic condition; many have more than one; and chronic conditions account for nearly 75% of all healthcare expenditures.^{17,18} The evidence suggests that disease registries, clinical guidelines, automatic reminder systems, system redesign processes, physician feedback reports and patient self management education programs, i.e., elements of the chronic care model, are associated with better patient outcomes.^{19,20} Yet practices with 20 or more physicians in the United States on average use fewer than half of the recommended chronic care model elements when caring for patients with asthma, congestive heart failure, depression and diabetes, and only 1% of such practices use all recommended elements for all four conditions.²¹

EBMgt can help expand the use of recommended chronic care processes by providing knowledge about incentives and about organizational capabilities. For example, existing research examining the influences of financial rewards to physician practices for meeting quality standards (“pay for performance” programs) have found mixed effects.²²⁻²⁵ Future evaluations of these programs should inform such questions as how much payment is required to induce desired behavior; what are the unintended or negative consequences; whether payment incentives are best placed at the group, or individual physician level (or both); and how the payment incentives interact with the practice setting, organizational structure, or with other quality improvement initiatives.²⁶

Effective management for patients with chronic illness also requires the effective use of health care teams. The current evidence suggests the importance of providing

teams with the necessary information, resources, autonomy to experiment, to select members suited to each task, and feedback to track performance.²⁷ Evidence also suggests that teams with such characteristics make a greater number of changes and more in-depth changes (e.g. creating disease registries) in implementing the chronic care model elements to improve care.²⁷

Medical care is not nearly as safe as it could and should be.²⁸ EBMgmt can help using knowledge from human factors engineering²⁹, high reliability organizations,^{30,31} on changing organizational culture, and on developing high performing teams.^{32,33} For example, using Lean Production process engineering methods, Virginia Mason Medical Center reports decreasing ventilator-acquired pneumonia cases from 40 per year in 2000 to 5 in 2006 saving an estimated 10 lives and \$1.7 million in costs.³⁴ Further, a recent study of over 100 intensive care units found a significant reduction in catheter-related bloodstream infections by developing a comprehensive-unit based safety program (CUSP) which involved changing the culture of senior leaders, team leaders, and front line staff.³⁵ Specifically, the management evidence suggests that better performance comes from having a culture in which caregivers tell each other about their mistakes, ask for help when needed, share with each other how they have fixed their mistakes, and continually question what is being done and how to do it better.³⁶

RECOMMENDATIONS

The nexus of EBM and EBMgt represents an important frontier for improving the nation's health care system. Given the likely increased demand for better and measurably valuable care, combined with increasing cost and quality pressures and calls for health

care reform, the following suggestions may be helpful for promoting the integration of EBM and EBMgt and for reducing the barriers to their use.

1. Synthesizing the EBMgt Knowledge Base

The federal government should establish a National Evidence-based Healthcare Management Center. For example, the Agency for Health Research and Quality (AHRQ) could extend its Evidence-Based Practice Centers initiative with input from the National Quality Forum, and related groups. The program's primary responsibilities would be to ensure that management/organizational research is rigorously assessed and synthesized in meta-analyses; made widely available in usable forms for managers and clinicians; and effectively linked to other evidence-based management and medicine repositories.

Related efforts from other countries include the National Institutes for Clinical Excellence (NICE) in the UK, which has established an NHS service delivery and organization program (<http://www.sdo.lshtm.ac.uk/>); the Cochrane Collaborative on Effective Practice and Organization of Care Group (EPOC); the UK National Library for Health (<http://www.nelh.nhs.uk/>); and the Canadian Health Services Research Foundation with the development of HEALnet (<http://www.chsrf.ca/>). The national program also would provide an annual assessment of gaps in knowledge and suggest areas for further research attention for funding agencies and the research community. Of particular importance is the need for meta-analyses and syntheses of organization-wide interventions and initiatives to improve the uptake of evidence-based clinical guidelines and practices, increase patient safety and improve the overall quality of care provided.

2. Adding to the EBMgt Knowledge Base

Practice-based research networks should be expanded, such as AHRQ's Accelerating Change and Transformation In Organizations and Networks (ACTION).³⁷ This network involves partnerships of hospitals, health plans, providers, and researchers to address questions regarding the scientific evidence on what does and does not work to improve care in real-world settings. Similarly, the joint National Academy of Engineering / Institute of Medicine Report on Building A Better Delivery System²⁹ has recommended that Congress fund university-based practitioner-linked Engineering / Healthcare Management Research Centers that bring together engineers, clinicians, researchers from multiple disciplines, and executives to work on expanding the applications of tools and methods for improving care, evaluating the applications, and rapidly sharing the learning. The federal government also can require that all Medicare demonstration projects involve explicit evaluation of both patient outcomes and implementation efforts, i.e., both content and context. These initiatives should be linked with the NIH translational roadmap research agenda and are consistent with the goal of translating scientific knowledge from the bedside to the community.

3. Creating the Market for EBM and EBMgt Integration

External accreditation, certification, and licensing bodies should look for “evidence” of EBM and EBMgt linkages in their reviews. While such reviews should emphasize outcomes rather than the methods used to achieve them, organizations and individuals should be held accountable for not using evidence-based approaches, much like clinical performance efforts target both process and outcome endpoints. The Quality Improvement Organizations (QIO's) of the Center for Medicare and the Medicaid Services (CMS) can provide assistance in the implementation of both EBMgt and EBM

and assure that interventions to improve care use the best available EBM and EBMgt.³⁸

These entities can help create a national expectation that clinicians and managers will work together to identify issues, formulate questions and interventions, and work with the research community to address both content and context. Further, hospital and health system governing boards might create financial incentives for managerial and clinical leaders to implement evidence-based changes that result in improved quality and cost performance.

4. Developing the Intellectual Capital to Support Integration

There is great need for improving the education of all healthcare professionals in the use of EBM and EBMgt.³⁹ Relevant topics would include assessment of what constitutes credible and applicable evidence; how to conduct meta-analyses and systematic reviews and how to apply evidence in everyday practice. Clinical residency and management accreditation groups should include these topics in their list of requirements for training programs.

CONCLUSION

Practice and policy recommendations and interventions are needed to bring both components together- EBM and EBMgt, the content and the context - to provide better patient care. Only an integrated evidence-based approach can reduce the quality gap and instill greater confidence in the US healthcare system.

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