Morbidity and Mortality Conference: Its Purpose Reclaimed and Grounded in Theory

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OBSERVATIONS

Morbidity and Mortality Conference: Its Purpose Reclaimed and Grounded in Theory

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ABSTRACT

Issue: The morbidity and mortality conference (MMC) remains a central activity within the departments of our academic healthcare institutions. It is deeply rooted in the premise that we can learn from our mistakes, thereby improving the care we provide. Recent advances in our understanding of medical error and quality improvement have challenged the value of traditional models of MMC. As a result the purpose of MMC has become clouded and ill-defined: Is it an educational conference that promotes mastery of clinical acumen, or is it a venue to drive quality improvement by addressing systems-based issues in delivering care? Or can it serve both purposes? *Evidence*: Review of the history of MMC, the literature, and critical application of education theory demonstrates the source of the confusion and the challenges in viewing it through the exclusive lens of either education or quality improvement. Application of experiential learning theory helps resolve this discord showing how the conference facilitates the development of clinical mastery while informing quality improvement programs about important and relevant systems-based issues. *Implication*: Building on this, we present a model for MMC involving five essential elements: case-based involving an adverse patient event, anonymity for participants, expert guided critical analysis, reframing understanding of the case presentation and related systems-based factors, and projection to practice change. This model builds on previously described models, is grounded in the literature, and helps clarify its role from both the educational and the quality improvement perspectives.

KEYWORDS
Morbidity and mortality; experiential learning; conceptual framework; Codman

Introduction

When morbidity and mortality conference (MMC) is discussed, there is a universal understanding among physicians about the general purpose of this long-standing tradition: It is an opportunity to learn from each other's mistakes. These rounds challenge us to examine how we might change our approach to a particular clinical presentation to avoid similar outcomes the next time. Despite this universal understanding, there have developed diverse positions regarding the purpose, execution, and future direction of this conference.[1–6] This evolution has left the conference with a general purpose but without a clear structure in the absence of sound theoretical grounding. Further, recent shifts in thinking on quality improvement and patient safety have also challenged traditional perspectives on MMC, further confounding its identity. We aim to address these important needs here. We begin with a historical perspective of MMC, examining its previous successes and failures and how those relate to current understanding and implementation of the conference. This understanding is then examined through the lens of current quality improvement perspectives. Finally, building on these, as well as previously described models, we propose a framework for MMC grounded in education theory and situated within the current literature.

Nightingale's pioneering leadership

One can trace the conceptual roots of MMC to Florence Nightingale's work evaluating the poor health outcomes in military hospitals. An accomplished and well-educated statistician and nurse,[7] she pioneered the idea that systematic scrutiny of healthcare delivery could lead to continuous improvement in outcomes.[7,8] With great success in the military hospitals in which she served during the Crimean War, she became highly influential in British health-related policy development. As a trailblazer in the use of adverse medical outcomes to guide practice changes, Nightingale can be viewed as the originator of this concept that underlies MMC.

Codman and the end-result system

However, most historical discussions of MMC begin with Dr. Ernest Amory Codman; he was born to an affluent family in Boston, trained as a surgeon at Harvard, and appointed to the surgical staff at Massachusetts General in 1896.[9] Codman resented the professional protection that his privileged background bought; there seemed to be little accountability among the elite Boston doctors to the quality of care provided. Codman observed that the universal avoidance of objective quality assessment not only enabled but also perpetuated a substandard level of care commonly provided by many highly ranked physicians.[9] Codman was convinced that to escape this willful ignorance, a transparent process that examined all patient outcomes was needed. To this end, he developed a patient tracking system he called "The End Result System."[9] This idea ran counter to the culture of the medical establishment of the time.

The End Result System required the tracking of each patient cared for; it documented the clinical presentation, the diagnosis established, the treatment administered, and the patient outcome. To aid in evaluating each patient outcome, Codman developed a taxonomy of errors that included errors in diagnosis, lack of physician knowledge or judgment, and unconquerable disease and the unavoidable calamities of surgery.[9] In contrast to modern quality improvement initiatives targeting systems-based approaches, Codman was convinced that the poor state of medicine in his time was exclusively the product of substandard doctoring. His brutality in assessment is captured in this excerpt from one of his books: "The lost sponge in the abdomen is a glaring error, obviously preventable, and obviously a proof of wretched carelessness."[10] (p. 66) He further opined, "When a follow-up system is once established it will do much toward weeding out the superannuated, the lazy and ill-trained surgeons of your community, even though they hold high places."[11]

Beyond quality improvement in patient care, Codman identified an educational role for case reviews in the training of house-officers.

> If some arrangement could be made by which the house officer should see these late results, it would be very instructive for them, for I feel sure that the house officer in graduating from this institution gets a very much more favorable idea of the results of surgical operations than he is really justified in having.[12] (p. 29)

Codman had a very good grasp of the issues of his day. However, he was blinded to how little the medical establishment was interested in knowing its errors, let alone having them aired in public. Ultimately, his unrelenting pursuit toward universal adoption of the End Result System saw him leave Harvard and his appointment at Massachusetts General.

The anesthesia study commission to graduate medical education (GME)

Nearly 20 years later in response to high perioperative mortality with poor understanding of its causes and preventability, Henry Ruth founded the Anesthesia Study Commission in Philadelphia.[13] The Commission examined deaths occurring within 24 hours of induction of anesthesia. Cases were solicited from all hospitals in the Philadelphia area, referred on a voluntary basis by the involved anesthesia staff, and were discussed confidentially in an open forum that included primarily anesthesiologists but also representatives from other specialties. After extensive discussion, the group would classify the case as preventable or not preventable, define the cause of death, and identify contributing factors. Recommendations on how cases could have been better managed were then generated. Results from the Commission were first published in 1945 in the *Journal of the American Medical Association*.[13] In stark contrast to Codman's experience, the confidential approach to reviewing adverse outcomes and addressing medical error was widely embraced in the medical community. Similar groups were founded across the country, and subsequently expanded across specialties. National initiatives also emerged, such as the Centers for Disease Control and Prevention's *Morbidity and Mortality Weekly Report*, which went into circulation as *MMWR* in 1952.[14]

The contrast between Codman's experience and that of the Anesthesia Study Commission is complex, involving cultural issues, social norms, and personal factors. That said, the deliberately confidential approach the Commission took was clearly central to its success. This heralded the arrival of the MMC as an open and confidential conference with a focus on improving patient care by reflecting on previous clinical encounters with poor outcomes.

The value of MMC became so central to physician education that in 1983 the Accreditation Council for Graduate Medical Education mandated it as a common requirement for all postgraduate training programs.[15] However, the mandate was (and remains) very general, affording departments and specialties much latitude in adapting it to their own needs. Without clear directives and guidelines, the consequence has been diverse approaches, ranging from draconian Codman-style shaming for all subperfect outcomes to conferences focused on interesting cases that have little to do with medical error, morbidity, or mortality.[1] This evolution has left MMC with a general sense of purpose but lacking a defined and structured

approach that is grounded in educational frameworks supporting its overall objectives.

Medical error and MMC

In 2000, the Institute for Medicine published its report "To Err Is Human: Building a Safer Health System." For the first time, the magnitude of the problem of medical error became clear; the report estimated that between 44,000 and 98,000 deaths per year in U.S. hospitals were attributable to medical error.[16] Of importance, the report identified ineffective systems for delivering care as the primary root problem, not individual mistakes. This discovery led to a major shift in how outcomes from medical errors are considered, and how quality improvement is pursued. Perhaps it was not *wretched carelessness* that resulted in the retained sponge but instead an ineffective system for counting employed and recovered sponges in the operating room. This holds true for many common medical errors, such as prescribing errors and common diagnostic mistakes.

This reconceptualization of quality improvement in healthcare further confounded MMC's objectives. From its inception MMC was designed as an open forum for physicians to discuss errors made by individual doctors caring for individual patients. However, with the understanding that adverse outcomes may be more attributable to design problems in health systems,[16] many departments have shifted MMC to evaluate systems-based problems that have been highlighted by particular cases.[1,6,17]

Systems-based improvements to healthcare require a specific and structured quality improvement (QI) methodology. This multistep approach involves root cause analysis, pilot projects, policy change, and scheduled evaluation of systems interventions.[18,19] It is a continuous process requiring monitoring and refinement of the understanding of the problem and interventions. Although MMC can inform QI programs by identifying areas for improvement, it cannot complete the iterative process needed for effective implementation and change management.

Herein lies the dilemma for MMC: As an educational conference it promotes reflective practice and learning from one's mistakes, but addressing individual errors does not represent the predominant path to quality improvement in healthcare delivery; alternatively, MMC can be implemented as a patient safety conference focusing on systems problems but without the iterative processes and structure of a well-designed QI program.

A redefined purpose for MMC

The report by the Institutes of Medicine appropriately prioritizes a systems perspective in quality improvement;

it is easily missed that important components of these systems are the patients and professionals within them. Physicians should be committed to improving both the functionality of the systems in which we work and the clinical skills and judgment we use to care for our patients within these systems. In considering the latter, as physicians we must recognize that refining our skills in pursuing clinical mastery is essential if we are to optimize patient outcomes. This is where MMC finds its purpose and identity. As an educational activity, MMC enables trainees and practitioners to carefully examine errors in clinical practice and use them as opportunities to learn and fine-tune imperfect clinical skills. This perspective is essential to the development of reflective practice and lifelong learning in trainees.

This kind of learning can be understood by looking at it through the lens of experiential learning theory. The work of David Kolb and Donald Schön on experiential learning contribute greatly to our understanding of the process by which professionals develop mastery of their trade over the course of their careers.[20] Both Kolb and Schön described a cycle in which learners engage in an authentic professional activity, reflect on and critique their performance, use that assessment to build a more robust clinical approach to the challenge, and then prepare to apply this refined approach to future presentations (see Figure 1). This process of real work experience coupled with deliberate refinement characterizes the process of developing mastery through professional practice.

Through self-awareness during workplace activities and honest self-examination after, the professional can recognize personal limitations and identify gaps in abilities and knowledge. This recognition enables the professional to envision how to approach similar problems differently and potentially more successfully.[21] This experiential learning cycle has been expanded by Zimmerman to account for motivation and contextual factors that can influence professional learning.[22]
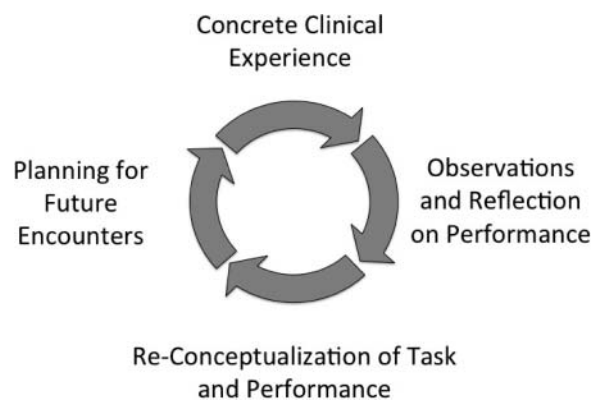

Figure 1. The experiential learning cycle. Adapted from Kolb.[43]

Implicit to viewing MMC through this lens is that individuals can learn from the experiences of others, not simply their own. MMC does not offer actual experience to participants but does allow them to enter this experiential learning cycle vicariously. Participants insert themselves into the clinical scenario, into the shoes of the anonymous clinician. In doing so, the question is invariably "Could this have been me?" This vicarious experience is then followed by personal and facilitated critical reflection and analysis of the case. This analysis, often guided by an expert evaluating the unfolding of the case, allows participants to identify the knowledge, skills, and attitudes important to the scenario that they possess and those they do not. Ideally, the conference proceeds to help translate this new understanding into a strategy for participants to address their identified weaknesses. From this perspective, MMC fits well with established models for experiential learning but is perhaps better described as experiential learning by proxy.

It also follows naturally, as others have suggested, that humility is central to learning in MMC.[1] The learner must recognize his or her own potential to fall victim to the shortcomings portrayed in the presented case. By contrast, the learner who on guided reflection cannot identify areas for self-improvement will derive no benefit. By experiencing challenging medical problems vicariously and having a structured reflective practice, clinicians can have the opportunity for professional growth and maturation through these rounds.

Proposed essentials of MMC

This leads us back to the question of the precise definition of MMC. We would propose that MMC is a focused educational event drawing from a real case in which mistakes in clinical thinking led to significant morbidity or mortality. Further, we propose that the goal is for participants to learn from the mistakes presented through a guided and expert critical analysis of the case. Finally, although MMC can be an excellent source for informing QI programs, it cannot itself drive them; QI programs require dedicated leadership and processes that go beyond the framework of MMC. Instead, MMC can inform QI efforts by identifying areas in which improvements in systems can enhance the capabilities of individual clinicians within them. Multiple systematic reviews into continuing medical education demonstrate that enhancing individual clinician performance does yield measurable improvements in health outcomes.[23–25]

Our proposal is not the first attempt at restructuring and codifying the essential features of a successful MMC. Mitchell et al. applied the Situation Background Assessment Recommendation framework to standardize and enhance surgical MMC presentations, encouraging root-cause analysis, which includes systems errors.[26] Calder et al. similarly outlined a format for emergency medicine MMCs that requires the presentation of errors but straddles the divide of cognitive errors (as in our model) and systems issues (which we argue are best addressed by QI initiatives).[6] Deshpande et al. and Szostek et al. more explicitly outlined MMC designs that primarily presented errors with a systems-based focus.[5,27] Although well developed, these systems-based perspectives do not fully consider the opportunity for MMC to support the personal development of its participants.

Our proposal draws significantly from the frameworks developed in these models but moves from a systems-based perspective to refocus MMC as an education conference within a QI context, emphasizing the lifelong development of clinical acumen in the clinician. This is similar to the philosophy and proposal put forward by Orlander, Barber, and Fincke.[3] Our article strengthens this position by grounding our "proposed essentials" in education theory. Through the lens of experiential learning theory, we clarify the sequence and style of how a case should be unpacked and discussed to optimize the learning provided through MMC.

The best way to ensure the MMC's relevance for a particular specialty cannot be easily answered. Ultimately each specialty and department should be flexible in format and case selection to best mesh with local professional environments. These choices must nonetheless be founded on several key principles that protect MMC's ability to produce meaningful educational experiences. Weaving together the historical perspectives and the theoretical educational underpinnings, we propose a framework for MMC based on five essential components (Table 1):

1. Adverse patient event
2. Anonymity
3. Critical analysis
4. Reframing understanding
5. Projection to practice change

By holding to these principles, MMC can enhance its own educational value and thereby better complement existing quality improvement initiatives. In sequence, they provide a clear path for guided reflection through clinical scenarios.

Adverse patient event

It seems intuitive that the MMC should have some focus on an aspect of morbidity and/or mortality. Surprisingly, recent surveys suggest that this approach is used in only a minority of today's MMC presentations. Prasad noted that only 30% of MMC presentations include an adverse event, with an even smaller proportion being attributed to clinical decision

Table 1. The five principles for morbidity and mortality conference.

Adverse Patient Event	The case presented must include an adverse event that was a result of clinical decisions and/or care provided
Anonymity	All individuals involved in the case must be afforded anonymity to allow for free and objective discussion
Critical Analysis	Review of the case involves a critical analysis of the clinical care provided that is based on reliable, objective data and includes careful attention to sources of bias in clinical decision making
Reframing Understanding	Examination of errors made in the case is followed by a careful reframing of the clinical approach towards the patient's presentation to prevent repetition of the same errors
Projection to Practice Change	Building on a reframed clinical approach, there follows an examination of factors that influence practice change, including systems-based factors

making.[1] On surveying 295 internal medicine MMCs, Orlander and Fincke found that 34% of programs did not identify suspected error as a primary factor in case selection.[30] MMC have instead been increasingly used as a forum to discuss cases with unexpected or interesting qualities.

Recognizing this evolution, Kuper et al. conducted an ethnographic study of staff and residents to determine the prevailing understanding about the purpose and expectations of MMC.[4] Residents were not able to identify a clear purpose for MMC and valued didactic medical expert knowledge akin to that of other teaching sessions. Staff physicians had various perspectives on the purpose of MMC; some viewed it as a means to achieve systems-based quality improvement and patient safety initiatives, whereas others, typically more senior physicians, viewed it as an educational case conference relying on autopsies as the diagnostic gold standard in evaluating a case scenario with a poor outcome. These perspectives mirror the divergent application of MMC today. It is not difficult to understand the reason for MMC's loss of identity and purpose, as its objectives begin to blend with those of other educational forums.

As a case-based educational conference, the experiential learning model proposed here clarifies this focus for MMC. At its core is the idea that mastery (or competence) develops out of years of fine-tuning an imperfect skill set. MMC can harness this process by providing participants with the opportunity to see imperfect management and its consequences. As with all experiential learning, growth comes through recognizing error, developing a better approach, and preparing for next time.

Anonymity

When comparing Codman's End Result System with the more successful Anesthesia Study Commission, anonymity stands out as the clearest distinguishing feature of the Commission. Consistent with Codman's experience, it is now established that error reporting can be significantly impaired by a lack of anonymity.[28] One study found that 40% of clinicians identified unclear anonymity as a barrier to reporting an error; the clinicians described fear of being punished or ostracized.[28] In examining the Anesthesia Study Commission and our current understanding around error reporting, anonymity is clearly essential to the success of these conferences.

The discussion in MMC can often be deeply enriched by those with personal knowledge of the case, sometimes prompting the involved clinicians to identify themselves (i.e., patient confidentiality, but without clinician anonymity). Such a decision can have a very positive influence on the discussion, but it can lead to negative consequences as well. Firsthand perspective can clarify decision-making processes and provide rich contextual information. Openness and humility from a respected clinician can promote a safe culture for the discussion of medical error. This can further promote a clinical learning environment in which personal accountability for errors becomes esteemed. In contrast, the identification of individuals involved in the case may also discourage participants, particularly junior members, from challenging diagnostic impressions and management decisions. Facilitating open discussion in MMC remains a major challenge; evaluation of a recently implemented MMC found that junior staff accounted for 46% of the MMC audience yet provided only 8% of comments.[29] The value of anonymity in MMC is clear and, in the authors' opinion, should be available to participants in MMC.

Anonymity extends beyond those directly involved in the case or rounds. The discussions themselves are often protected legally from external scrutiny. MMC, by its nature, reviews cases at high risk for legal action. In the current medical-legal environment, protecting these discussions to ensure open discussion without defensive posturing by participants is crucial. Those engaged in organizing MMC should ensure familiarity with local laws protecting these discussions to ensure appropriate compliance. The final choice in exercising that privilege should fall on the involved clinician(s), free of coercion.

Critical analysis

The presence of an error is necessary but not sufficient for learning in an effective MMC. Although adverse outcomes are typically the consequence of mistakes at multiple levels including individuals and systems, participants

must see their own practices as potentially culprit. In MMC, this follows in a natural, logical progression that begins with carefully examining the case and clinical decision making as it unfolds, then seeing the consequences of actions or inactions, followed by careful self-reflection on one's own susceptibility to falling short as a clinician in such a case. This capacity for humility and self-reflection is essential not only to MMC but also to the very process of professional mastery.[20]

Cognitive biases underlie many, if not the majority, of these shortcomings in clinical care.[31,32] Their descriptions and role in clinical decision making have previously been well described.[32,33] In MMC, the critical analysis of the case must include a careful examination of the role of bias in clinical diagnosis and management decisions. Although overcoming bias is much more complex,[32] exposing the hidden bias in a case enables learners to recognize not simply what errors were made but how and why they were made. Recognizing the large influence of cognitive bias helps prepare participants to begin the process of reframing their own understanding with a more complete view of the clinical challenge.[34] This highlights that humility and self-reflection are qualities essential to learning in MMC and to the very process of professional mastery.[20]

Clearly defining the cognitive errors committed in the course of clinical care requires accurate and reliable clinical information. Along with well-documented clinical information and studies, autopsy has traditionally been the diagnostic gold standard for MMC. Although the availability of autopsy data has decreased in recent years, its added value is clear. Winters's recent systematic review of autopsies in ICU patients demonstrated that 28% of cases had a misdiagnosis identified on autopsy. Considering only the potentially lethal clinical diagnoses, the diagnostic error rate was projected to be 6%.[35] If the purpose of MMC is to advance clinician practice toward mastery, it must employ the best available case information including clinical data; laboratory tests and studies; and when available, autopsy data. Expert guidance using reliable and objective clinical data allows for a clear and collectively accepted evaluation of the case. This is essential to effective self-reflection and understanding prior to moving toward a reconceptualization of one's approach to the task in question.

Although there is no single best approach to leading a case analysis, some common and straightforward guiding principles can be particularly helpful. Rooted in experiential learning, Irby describes five principles to case-based teaching that have endured and proven very effective.[36] Although all five principles play an important role in MMC, the first two align best with this critical analysis stage. His first principle is to anchor teaching points to

the case presented. Discussion easily moves away from the specifics of the case leading to hypothetical and theoretical considerations. Anchoring teaching points and redirecting discussion back to the case at hand promotes learning and supports a coherent take-away. The second principle is to actively involve learners. This is particularly important (and challenging), as MMC often occurs in a lecture hall setting. Engaging learners throughout the conference encourages participants to insert themselves into the case and clinical decisions. This promotes experiential learning, moving the learner from a passive state to an actively engaged learning state. Prince et al. found that increased audience participation was correlated with increased perceived educational value and confidence in handling future cases similar to those presented in the MMC.[37]

Reframing understanding

From a learning standpoint, breaking down a clinical scenario to expose flawed thinking must be followed by a process of reconstructing one's understanding toward that which is ideal. Kolb referred to this stage in experiential learning as abstract conceptualization.[38] In practical terms, MMC takes the recognition of a flawed approach, which was derived from the critical analysis, and helps build a new understanding. There is no benefit if one flawed approach is exchanged for another. This process of reconstructing one's approach in a way that moves the participant toward mastery is essential to the experiential learning cycle. It also demonstrates why expertise is needed in leading this discussion.

Revisiting Irby's five principles of case-based teaching for experiential learning, we see that Principles 3, 4, and 5 align with our reframing understanding stage of MMC. The third principle is that expert teachers should model professional thinking and action. Having an expert explicitly describe how to approach a case, with particular attention to those steps and decisions that are typically made implicitly (e.g., using heuristics), guides learners in reframing their understanding and draws learners to focus on aspects they might not normally consider explicitly. It enables the learner to assemble a more effective clinical approach and understand how tacit knowledge and skills should be appropriately applied.[36]

His fourth principle for leading case-based teaching is to provide direction and feedback. Simply put, experiential learning is enhanced when learners have the opportunity to express their understanding, ask clarifying questions, and receive feedback on these elements.

The fifth principle follows directly from the fourth: Those leading should promote a collaborative learning

environment. Despite the self-evident nature of this principle, draconian shaming characteristic of Codman's era continues to plague the learning culture in many centers and disciplines.[37–40] This type of culture is a direct threat to experiential learning by suppressing open discussion, among other problems. A leader who, by contrast, promotes a safe learning environment enables and motivates learners to participate, ask questions, and ultimately reframe their understanding more effectively. Anonymity often serves an essential role here. But going further, developing a culture that protects open discussion may empower those involved in the case to surrender anonymity, enriching the case discussion with firsthand descriptions. Developing a safe and collaborative learning environment is foundational to MMC and has the potential to resolve the tension between anonymity and learning.

Projection to practice change

Constructing a more effective clinical understanding does not complete the learning cycle. It has been well-established that continuing medical education can improve physicians' understanding and performance; however, its effect on patient outcomes is less convincing.[23] Croskerry also pointed to the challenge in translating improved clinical knowledge into practice change.[34] It is known that physicians often make clinical practice decisions that are incongruous with their clinical knowledge.[41,42] One of the most common examples is the prescription of antibiotics. In one study, 42% of physicians report prescribing antibiotics for the common cold.[43] Too often there's the presumption that improved knowledge naturally translates into clinical practice and patient outcomes. The work of Cervaro and Croskerry would suggest that, instead, implementing practice change poses the greatest challenge and requires deliberate attention.

In considering the large role of bias and cognitive errors in clinical mismanagement, Croskerry put forward a model for debiasing clinicians that aims to equip them to recognize and check bias in practice.[34] At a very practical level, he related a series of approaches to counter bias that he described as "forcing functions." Although they are a diverse group of approaches, they share the purpose of breaking clinicians out of bias-driven decision patterns. Examples he cites (p. ii69) include "standing rules," "stopping rules," "consider the worst case scenario," "consider the opposite"; all are designed to cause the physician to pause and explicitly consider those implicit factors and biases that are often at fault in clinical mismanagement. Each function describes habits or checks that, when developed, can enable the clinician to detect bias in real-time clinical practice. Although many

of these approaches require further study to confirm their effectiveness, as described they represent an excellent resource for leaders of MMC to help participants translate a reframed understanding into clinical practice.

More broadly, applying principles learned in MMC requires that physicians examine the complex clinical contexts in which they must incorporate this new understanding. Although individuality in practice contexts means that much of the responsibility for this must be delegated to the individual participants, an effective MMC will direct participants to common extrinsic challenges and barriers to incorporating this change into actual practice. This is also an important arena to consider the role of systems-based factors in clinical care. It is clear that separation of individuals' performance from performance of the system is artificial. This stage allows careful examination of this important interface. It is unsurprising that just as CME focused on individual competence can improve outcomes, so too can QI initiatives focused on system competence, as shown by Deis et al. and others.[17]

Conclusion

MMC's true potential lies in its identity as an educational conference. It can simultaneously promote attributes of humility and a culture of excellence. We have described a framework for MMC, which incorporates others' work in the field including that by Calder and Orlander,[3,6] historical experiences with MMC, and a well-established model of learning[20,21] to provide a sound educational conceptual framework on which to build this conference. The underlying design of this model focuses on supporting participants' progression toward professional mastery, or in the current medical education vernacular, professional competence. MMC best contributes to quality improvement by starting with clinicians caring for patients, improving clinical understanding, and identifying approaches, such as Coskerry's debiasing, to support the implementation of practice changes. An essential objective of MMC in this context is enhancing the knowledge and capabilities of physicians within the larger health care system.

It is clear that, as clinicians, we must develop a culture of learning from one another's mistakes. In words commonly attributed to Eleanor Roosevelt, "Learn from the mistakes of others. You can't live long enough to make them all yourself."

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