



Organizational Learning in the Morbidity and Mortality Conference

Michelle Batthish • Ayelet Kuper • Claire Fine • Ronald M. Laxer • G. Ross Baker

ABSTRACT

Introduction: The focus of morbidity and mortality conferences (M&MCs) has shifted to emphasize quality improvement and systems-level care. However, quality improvement initiatives targeting systems-level errors are challenged by learning in M&MCs, which occurs at the individual attendee level and not at the organizational level. Here, we aimed to describe how organizational learning in M&MCs is optimized by particular organizational and team cultures.

Methods: A prospective, multiple-case study design was used. Using purposive sampling, three cases covering different medical/surgical specialties in North America were chosen. Data collection included direct observations of the M&MC, semistructured interviews with key M&MC members, and documentary information.

Results: The role of the M&MC in all cases integrated two key concepts: recognition of system-wide trends and learning from error, at an organizational and team level. All cases provided evidence of double-loop learning and used organizational memory strategies to ensure knowledge was retained within the organization. A patient safety culture was linked to the promotion of open communication, fostering learning from adverse events.

Conclusion: This study describes three cases of systems-oriented M&MCs that reflected elements of organizational learning theory. The M&MC can therefore provide a context for organizational learning, allowing optimal learning from adverse events.

Keywords: Morbidity and Mortality Conference, organizational learning, adverse events

Introduction

The Morbidity and Mortality Conference (M&MC) has a longstanding role in medicine as a forum to discuss adverse events.¹ Although M&MCs have the potential to be valuable learning opportunities, improved approaches to these conferences can increase their educational impact.²⁻⁴ Historically, M&MCs involved a critique of clinical decisions made by individual doctors, and rarely followed a methodical approach to implement systemic changes.⁵ More recently, there has been a growing emphasis on just culture and the contribution of system-level causes to adverse events.⁶⁻⁸ The Ottawa Morbidity and Mortality model is a formal framework to enhance the effectiveness of M&MCs. This model focuses on a systems approach, recommending that cases presented have “lessons to be learned about cognitive biases and/or system issues.”^{9,10} Resiliency engineering has also been used to learn not only

from complications, but also successful outcomes within a newer version of an M&MC.³

Systems-based M&MCs can potentially improve patient safety in a wide range of specialties.^{2,11,12} Although several institutions have successfully implemented a systems-based M&MC, there are still few resulting system-based changes.^{5,13,14} Case presentations and discussions may benefit individual attendees; however, the lack of follow-up on recommendations are recognized challenges for system learning.^{8,14} Individual and team learning alone may not be enough to foster impactful progress in patient safety, especially when adverse events result from multisystem-level failures. More broadly, health-care institutions increasingly have recognized that learning as an organization is essential for managing and making system changes.¹⁵⁻¹⁷ Understanding how improved M&MCs could support broader system-level change needs to be framed in the principles and practices of organizational learning.

Organizational learning is a system-level phenomenon defined as the process by which an organization improves itself over time through knowledge creation, retention, and transfer. Peter Senge, who popularized the idea of learning organizations, described five elements that distinguish learning

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For more information on this article, contact Michelle Batthish at batthim@mcmaster.ca

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organizations from traditional ones: systems thinking, personal mastery, mental models, building shared vision, and team learning.¹⁸ Important organizational learning theories include double-loop learning for creating knowledge and knowledge reservoirs for retaining and transferring knowledge.^{19,20} Double-loop learning involves “questioning the role of the framing and learning systems which underlie actual goals and strategies.”¹⁸ For example, double-loop learning occurs when an organization’s policies are revised as a result of error detection and correction, translating learning from the individual to a broader set of activities. Organizational memory is the accumulation of knowledge that is created from an organization’s previous learnings.²¹ Knowledge reservoirs are the “mechanisms that serve to retain knowledge within the organization’s memory,” and may include individuals with expertise, documented policies, and formal role expectations.^{22,23} These reservoirs can then play a role in translating single-loop to double-loop learning.

Organizational learning in healthcare requires that interconnected systems share and communicate knowledge, and health professionals engage in maintaining and updating knowledge to provide safe patient healthcare.¹⁶ Organizational learning theory would therefore suggest that M&MCs need to be optimized through organizational and team cultures supporting system-based changes to prevent the repetition of errors. An organization’s culture can influence the development of critical organizational mechanisms, such as double-loop learning and the creation of knowledge reservoirs.²⁴ The concept of organizational learning captures important objectives of effective M&MCs, such as a systems-based focus, blame-free collaboration, and institutional-level process improvement. However, established cultures and processes of M&MC may be difficult to change. Our study aims to describe how organizational learning theory assists in understanding the roles and contributions of various M&MC models, and to explore the conditions under which system changes are implemented.

Methods

Study Design

We used a qualitative, prospective, multiple-case study approach. A case study approach allows for the thorough description of the organizational and team learning processes within the context of the M&MC.²⁵

A hospital-based M&MC review process formed our unit of analysis. By purposive sampling via expert nomination, we selected M&MCs in different medical/surgical specialties in North America.

Data Collection

We collected data via direct observations, semistructured interviews, and document analysis. Authors sought to identify key organizational learning practices, including those in the organizational learning literature such as double-loop learning, team learning, and the use of knowledge reservoirs within each M&MC review process.

Direct Observations

The first author (M.B.) directly observed M&MCs at each participating site and collected data on attendance, choice of moderator, presentation format, case selection, discussion of adverse events, and practice changes identified. She recorded details such as the flow of discussion, interpersonal and team dynamics, and body language.

Interviews

Semistructured interviews with key M&MC members at each site were conducted by one of the authors (M.B.). Interviews lasted approximately 30 minutes and took place in a mutually convenient location. Two interviews were digitally recorded and transcribed verbatim and for the third, the interviewer took extensive field notes during the interview. Individuals described the role of the M&MC within their department, their role in running the M&MC, the M&MC process, and what happens as a result of the meetings. Individuals commented on the strengths and weaknesses of their M&MC, and any barriers or facilitators to effectively running their M&MC.

Documents

Documents related to each site’s M&MC process were collected (Table 1).

Data Analyses

Theoretical thematic analysis²⁶ was used. Observation notes, interview transcripts, and documents were first reviewed to describe each case. Categories and subcategories within each case were developed within the context of an organizational learning framework. This theoretical orientation guided case analyses. Next, each case description was compared using the developed categories and subcategories to

Table 1. Summary of Documents Collected From all Three Cases

	Policies	Templates	Summaries	Publications
Case 1	Hospital-wide M&M policy (current version from 2013 as well as previous versions from 2009, 2005, 2004 and 2002)	Hospital M&M Review Minutes template	Departmental Patient Safety, Quality and M&M Handbook	Published manuscript describing the changes the department underwent in restructuring their M&M process (<i>not cited to preserve anonymity</i>)
Case 2		M&MC PowerPoint slides template M&MC template for the Division's safety Database		
Case 3	Death and Adverse Event Review Policy	Health Record Review Guideline (used to analyze each death for adverse events) Death Review Committee Meeting Report template	Death Review Briefing Notes	Published manuscript describing the process that was developed in the creation of the Death Review (<i>not cited to preserve anonymity</i>)

M&MC = morbidity and mortality conference.

identify common themes and differences between cases.

Ethical Implications

This study was approved by our institution's Office of Research Ethics and local Research Ethics Offices as needed. Informed consent was obtained at every site for direct observation of the M&MC and analyses of site-specific documents. Data were de-identified.

Results

Case 1

Case 1 has a hospital-wide policy mandating all departments conduct monthly M&M reviews of every death and significant morbidity in a multidisciplinary forum. They formed an M&M Committee and appointed a senior physician as Chair. The Committee reviews all cases, decides on the need for further discussion and presentation in a transparent fashion, and follows up on recommendations at various committee levels.

Case 2

Case 2 is part of an institution working towards becoming a High-Reliability Organization with a focus on measuring harm and outcomes of harm. Although there is no hospital-wide policy, M&MCs are regularly held in every hospital department. Case

2 underwent a restructuring of its M&MC by instituting a formalized process and implementing a safety database used to track themes across reviewed events. The focus of its current M&M program is to transparently review and learn from adverse events, while systematically tracking them to identify the best care approaches for their patients.

Case 3

Case 3 is a multihospital organization that has undergone significant changes to its mortality review process aimed at reducing the number of preventable deaths across all hospitals. A Death and Adverse Event Review Policy was created to outline roles and desired outcomes of adverse event reviews within the organization. The purpose of this new process is to inform system-level improvements and continually learn from reviews at a local and organizational level.

All three cases had varied approaches to the review of deaths and/or adverse events (Table 2).

Cross-Case Analysis

Organizational Learning Within the Morbidity and Mortality Conference

The role of the M&MC in all cases enabled two key integrated activities: (1) recognition of system-wide recurring issues, and (2) learning from adverse events and sharing new knowledge. Learning occurred broadly, at an organizational and team level (Figure 1).

Table 2. M&MC Process Across all Three Cases

	Case 1	Case 2	Case 3
Chair	Senior physician	Senior physician (Division director)	Senior physician (Chair of the Medical Advisory Committee)
Case identification	Hospital safety reporting database	Identified by senior fellows	All patient deaths within pre-specified hospital departments
	Self-reported by staff physicians within division	Any event with self-identified complications	Patient deaths where an adverse event or quality of care issue identified using a structured method
	Cases identified from other departments		
Meeting frequency	Monthly	Weekly	Monthly
Attendance	Multi-disciplinary	Multi-disciplinary	Multi-disciplinary
	Trainees	Trainees	
Case presentation			
Presenter	Trainees or staff physician	Trainees	Staff physician or patient safety specialist
Format	No specific format	Structured template	Structured template
Documentation of review	Minutes saved in M&M database to identify recurring issues and trends	Minutes saved in M&M database to identify recurring issues and trends	Minutes documented on structured template and biannual summary reports created
Outcomes and follow-up	Action items and recommendations are emailed to all division members and displayed on designated M&M notice board	Action items tracked in M&M database	Recommendations disseminated to the Medical Advisory Committee, Professional Advisory Committee, Quality Patient Safety Steering Committee and other appropriate stakeholders
M&MC = morbidity and mortality conference.			

Each case highlighted the educational role of M&MCs with varying evidence for organizational-level learning. In case 1, learning occurred mostly within the department. However, with a hospital-wide M&MC committee, learning can also be shared at an organizational level. Organizational-level learning was not as clear in case 2, given that findings arising from local M&M reviews were not consistently shared at a hospital level. This hospital is working toward becoming a high-reliability organization, and with these efforts, there is potential for providing an environment for meta-learning, or learning to learn, with habitual learning at an organizational level. Case 3 exemplifies how organizational-level learning occurs through regular meetings that engage an interdisciplinary membership, including physicians,

and quality and patient safety specialists. By virtue of this membership, learning at the organizational level can be disseminated for action and follow-up.

Double Loop-Learning in the Morbidity and Mortality Conference

There were several examples of double-loop learning within the reviews. In case 1, system interventions arose out of close calls and identification of a clustering of issues within the M&M database. For example, after a cluster of patients who presented with anaphylaxis was identified, anaphylaxis kits were widely distributed to all areas of the department. In case 2, front-line staff work with hospital leaders to implement a new double-check system with their sterile processing department after an incident

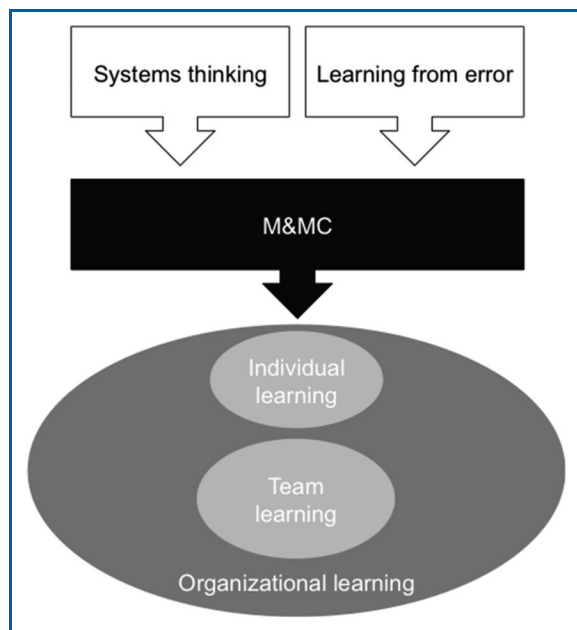


Figure 1. Role of the M&MC and its relationship to organizational learning. M&MC = morbidity and mortality conference.

where unsterile instruments believed to be sterile were almost used for a procedure. In case 3, a policy regarding the insertion of small-gauge feeding tubes was created after multiple adverse events related to their incorrect insertion. In addition, an organizational-wide group was created to address an ongoing lack of critical follow-up of abnormal results.

Team Learning in the Morbidity and Mortality Conference

Teams that learn more effectively share three essential characteristics: (1) they were designed for learning by virtue of the team membership, (2) leaders framed challenges in such a way that team members were highly motivated to learn, and (3) leaders' behaviors created an environment of psychological safety.²⁷ In case 1, it was apparent that the departmental and hospital M&M committees were designed for learning. Their members were highly motivated and engaged.

“They have the ability to hone in on a problem. They are driven to improve. The status quo can never be acceptable. Major practice changes have occurred because of the acceptance to speak against conventional wisdom” (Case 1—Department Chair)

Throughout all observations, the participants engaged in discussions and shared experiences openly. The Chair played an active role in challenging committee members to learn from each review.

“Certainly, the expectation is that it’s widely open, no stupid questions, those kinds of concepts of quality improvement and teamwork, I think, are very clearly evident. I think that the environment is also one of curiosity, which is important. [...] I think (that) is a strength of the committee.” (Case 3—Chair, Death Review Committee)

The overall setting of the observed M&MCs was usually light, collegial, and candid. There were several nonconfrontational questions raised and trainees participated in discussions. About a trainee’s comment during an observed M&MC:

“I was looking at him kind of going, you’re pretty brave to make fun of everyone at these rounds and that’s why I made a joke about it. But I was like, the guy feels pretty comfortable in here to make a joke [...]. I don’t think, from what I hear, they wouldn’t feel that way elsewhere.” (Case 1—Chair, Department M&M Committee)

This highlights the underlying open culture within their M&MC and the Chair’s role in reinforcing a learning rather than a punitive environment.

Organizational Memory in the Morbidity and Mortality Conference

For learning to be translated from team-based experiences to organizational practices, organizations must create effective knowledge reservoirs. There were several knowledge reservoirs used to house information gained from reviewing adverse events, contributing to their organizational memory (Table 3). These include people (e.g., committee members), routines (e.g., standard operating procedures), and policies and procedures.²² In case 1, reviews were coded and recommendations were entered within the division’s M&M database. Action plans and changes to policy were emailed to department members and displayed on a departmental M&M notice board. A divisional handbook contains information and educational material on close-calls, trends, and rare events with significant outcomes. Finally, at the hospital level, a hospital M&M template and database was established.

“We are hoping with this new database, it will share learnings better. If you don’t have minutes you can’t trend, you can’t track and you can’t share broadly. [...] Unless they write it down, it’s lost.” (Case 1—Member, Hospital M&M Committee)

Table 3. Knowledge Reservoirs Used in the M&MC

Knowledge reservoir	Description [18]	Case 1	Case 2	Case 3
People	Organizational members carry information about organizational best practices, past experiences	✓	✓	✓
Routines	Standard operating procedures	✓ (Hospital requirement to hold regular M&MCs)		✓ (Organizational requirement to hold regular Death Reviews)
Artifacts	Documents such as policies and procedures, documenting systems, information technology, reports, educational manualsetc.	✓ (Hospital policy on running M&MC, M&M documentation template, Division M&M database, Division's Patient Safety, Quality and M&M handbook)	✓ (Safety database, M&MC PowerPoint slides template, M&MC template for Safety database)	✓ (Death and Adverse Event Review Policy, Department Death Review Committee Meeting Report, bi-annual summary report, Safety Occurrence Reporting Database)
Relationships	Relationships between people	✓ (Relationship between Divisional M&M Chair and Hospital M&M Committee)	✓ (Relationship between Division members and Vice-President of Medical Operations)	✓ (Relationship between Death Review Committee and Quality and Patient Safety Steering Committee and the Medical Advisory Committee)
Organizational information space	Physical and temporal space that allows for organizational members to share information (e.g., conference rooms, emails, hallway conversations)	✓ (M&MC outcomes emailed regularly and displayed on a designated M&M notice board)	✓ (M&MC outcomes displayed on a designated M&M notice board)	
Culture	Values, beliefs and attitudes	✓	✓	✓
Structure	Roles (expectations of individuals), reporting relationships	✓ (Specified M&MC Chair, all staff members expected to report events to Division M&MC Committee, expectation to report findings to Hospital M&MC Committee)	✓ (Specified M&MC Chair, fellows expected to collect and present all cases)	✓ (Specified M&MC Chair, specified role of Patient Safety Specialist and Departmental Death Review Committee Chairs in reviewing cases)

M&MC = morbidity and mortality conference.

In case 2, knowledge gained from M&MCs was housed in a safety database. In addition to minutes, the database contains information regarding unplanned returns to the operating room and emergency department, and surgical site infection data. Its main role is for internal improvement projects. Knowledge is also shared via a corkboard in a hallway. Rapid cycle improvement projects stemming from previous case reviews are also posted.

Case 3 established a clear framework for how knowledge gained from their reviews would be shared and stored. Broadly, regular reports are sent to hospital-level committees. Locally, unit-specific results are presented biannually to management teams to share with front-line staff. The committee also ensures that all reviews are tracked within a safety occurrence reporting database. The ultimate goal is the broad sharing of knowledge.

Evolution of Morbidity and Mortality Conference

Many observers have commented on the historical origins of the M&MC and its shift in culture, structure, and role in enabling team and organizational learning.^{28,29} These three cases shifted their approaches to the M&MC. This learning evolved over time and there was a shift toward sharing information within the M&MC structure.

"I think we can still do better sharing the learning that we have. I think we had to build some culture first that people had some comfort to share." (Case 3—Member, Death Review Committee)

Knowledge sharing and the development of a learning culture were also essential components to this evolution.

"We have a very open, transparent process here and I've seen an evolution of people sharing. It used to be this is my information; I'm not going to share it with another Division. So the minutes are much better, they are much more open" (Case 1—Member, Hospital M&M Committee)

"I think the thing that has changed the most is that whole culture of the meeting, which unfortunately, you can't really measure. [...] I just think it's evolved. [...] I think that culture has shifted as a result of many, many, many things we're doing in the organization" (Case 3—Member, Death Review Committee)

Limitations

This study included only three cases that were selected by expert nomination, which may have led to a narrow representation of how M&MCs run across different healthcare organizations. Increasing the case number may provide further support to the validity of the findings. Purposive sampling by expert nomination may limit the generalizability of the findings. Furthermore, adverse events may be reviewed across several different forums, outside of the M&MC, suggesting our findings may not be generalized to other types of reviews. Therefore, the broader context of learning from patient safety events needs further study.

Discussion

Individual learning in the M&MC has been well described.³⁰⁻³⁴ This study examined how learning from adverse events can be sharpened by examining the M&MC role through the lens of organizational learning theory. Organizational learning theory and systems thinking suggest that learning from adverse events in the M&MC can be optimized by organizational and team cultures that enable and connect

learning at the team and organizational levels. All three cases of M&MCs used double-loop learning in a psychologically safe environment, and organizational memory strategies to ensure retention of new knowledge. The new role of M&MCs contributing to a more effective safety culture and the transfer of knowledge across departments and programs strengthens organizational learning from adverse events and promotes systems changes.

This study provides insight into the use of M&MCs as a practical way to increase organizational learning in a hospital setting. Based on the literature and the cases studied, several essential components within the M&MC should be present to optimize organizational-level learning. These processes (Table 4) are not meant to be prescriptive, but rather provide an approach to assessing organizational learning in an M&MC. One key process involves broader membership of the M&MCs. Traditional, physician-only M&MCs limit communication within and across teams and are often inadequate in addressing errors rooted in multidisciplinary care coordination.³⁵⁻³⁷ Therefore, multidisciplinary participation is key to systems-focused M&MCs and organizational learning in healthcare institutions.^{9,10,17}

Leaders who build trust, create purpose, promote a culture of openness, and take a broad view of the interdependencies of teams, systems, and cultures can facilitate organizational learning and patient safety.^{16,38} Although formal, executive leaders can create vision and are crucial for creating a psychologically safe space; Carroll and Edmondson³⁸ argue that local informal leaders are critical for change. These informal leaders can be any healthcare professional with little or no formal authority, who accelerate organizational learning by building informal networks, creating communication structures to bridge boundaries, and convincing team members to address the cause.³⁹ For example, in case 1, M&MC discussions about a cluster of patients who presented with anaphylaxis resulted in anaphylaxis kits being widely distributed to all areas of the department. To sustain this practice, informal local leadership will be needed at every unit/ward to promote, monitor, and evaluate the initiative.

Organizational learning theory suggests that knowledge gained from reviews should be stored in as many knowledge reservoirs as feasible.^{22,40} All cases used several knowledge reservoirs, such as divisional M&M databases, designated M&M corkboards, regular emails on changes to policy and the circulation of clinical issues. Berta and Baker suggest a correlation between the number of reservoirs accessed by a new safety initiative and its retention.⁴¹ It is unclear whether the strategies implemented in our cases led

Table 4. M&M Processes That Can Maximize Organizational-Level Learning

M&MC process	Description	Advantages
Goals and objectives	Review of adverse events from a systems lens Learning and sharing new knowledge gained from the review process	Identifies system-wide problems Promotes individual, team and organizational learning
Attendance	Multidisciplinary, including but not limited to physicians, nurses, allied health providers, and administrators	Allows for a better understanding of the whole system Knowledge is shared broadly across the organization
Chair	Experienced in leading reviews in psychologically safe environment	Enhances team learning
Outcomes and follow up	Detailed and standardized documentation of reviews	Promotes storage of new knowledge via several knowledge reservoirs

M&MC = morbidity and mortality conference.

to sustained knowledge transfer and how knowledge gained was retrieved from those not in attendance.

Conclusions and Implications

In summary, despite its traditional role in medicine to debrief individual physician experiences, the M&MC has shifted to focus on systems-based improvements consistent with the new safety framework adopted by healthcare organizations. Organizational learning theory can provide the elements necessary to facilitate learning from adverse events from a systems standpoint. This framework can contribute to a better design of M&MC activities. This study describes three cases of system-oriented M&MCs containing several of these elements and provides context for optimal organizational learning from adverse events and promotion of system changes. Healthcare institutions have the potential to advance patient safety by increasing their capacity for organizational learning from M&MCs.

Author's Biographies

Michelle Batthish, MSc, MD, FRCPC, Division of Rheumatology, Department of Pediatrics, McMaster University, Hamilton, Ontario, Canada. M Batthish conceptualized and designed the study, completed data collection and analysis, drafted the initial manuscript, and reviewed and revised the manuscript.

Ayelet Kuper, MD, DPhil, FRCPC, Division of General Internal Medicine, Department of Medicine, University of Toronto, Wilson Centre, University Health Network, Toronto, Ontario, Canada. A Kuper reviewed and revised the proposed study design, reviewed data analyses, assisted with data interpretation, and reviewed and revised the manuscript.

Claire Fine, MD, Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada. C Fine drafted the initial manuscript and reviewed and revised the manuscript.

Ronald M Laxer, MD, FRCPC, Division of Rheumatology, Department of Pediatrics, University of Toronto, Toronto, Ontario, Canada. R Laxer reviewed and revised the proposed study design, reviewed data analyses, assisted with data interpretation, and reviewed and revised the manuscript.

G Ross Baker, PhD, Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario, Canada. G Baker reviewed and revised the proposed study design, reviewed data analyses, assisted with data interpretation, and reviewed and revised the manuscript.

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