Organizational Learning in the Morbidity and Mortality Rounds

by

Michelle Batthish

A thesis submitted in conformity with the requirements for the degree of Master of Science (Health Services Research)

Institute of Health Policy, Management and Evaluation

University of Toronto

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2015

ABSTRACT

The morbidity and mortality conference (M&MC) is one of many organizational strategies used to address patient safety and quality of care. Organizational learning theory would suggest that learning from error in the M&MC would be optimized by particular organizational and team cultures. The aim of this study was to describe how adverse events are reviewed in the M&MC using an organizational learning framework.

I used a qualitative, prospective, multiple Case study design for this study. I selected three Cases, which were running well-structured M&MCs. All three Cases displayed double-loop learning and utilized organizational memory strategies to ensure that new knowledge stemming from their reviews was being retained within the organization. The presence of a patient safety culture was linked to the promotion of open communication, thereby fostering learning from adverse events. The M&MC can therefore provide a context for organizational learning, allowing optimal learning from adverse events.
ACKNOWLEDGMENTS

I would like to express my sincere appreciation to all those who have contributed to the completion of this thesis. Thank you to Dr. G Ross Baker who was my thesis supervisor and mentor throughout my graduate studies. Your expertise in the field of patient safety and quality improvement, as well as organizational learning, proved to be instrumental in the design and completion of this study. I would also like to thank my other thesis committee members for their constructive advice and support in completing this work: Dr. Ronald Laxer, for his mentorship throughout my training and his experience, both practical and administrative, in the implementation of M&MCs and Dr. Ayelet Kuper for her knowledge of research in the qualitative paradigm as well as research on the M&MCs.

I am grateful for my parents, Fadl and Amy, and my sister Natalie for their ongoing love and support through my many years of education and training.

My two beautiful children, Sophie and Maxim, have taught me so much in life and I hope to inspire them to continue to learn at every stage in their lives.

Finally, I want to send all my love and gratitude to my husband, Jason. He has supported me throughout all of my training and I could not have completed this work without his everlasting support.
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CHAPTER 1: INTRODUCTION

1.1 Adverse Events in Healthcare

The 1999 Institute of Medicine report – *To Err is Human: Building a Safer Health System* – exposed the magnitude of the patient safety problem in medicine (Kohn, Corrigan et al. 1999). It suggested that 44,000 to 98,000 people die each year as a result of medical error in the United States (Kohn, Corrigan et al. 1999). These errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them. Since the publication of *To Err is Human*, there has been increased attention of professional, governmental, private organizations, and even media (Gupta 2012), on the extent of the medical error problem. These groups believe that increased reporting and study of errors will lead to system improvements and safer health care. Openness to discussion and study of adverse events and errors, with a realization that “errors must be accepted as evidence of system flaws, not character flaws” (Leape 1994) is essential.

In the Canadian Adverse Events Study, an estimated 7.5% of patients admitted to acute care hospitals in Canada in the fiscal year 2000 experienced one or more adverse events (Baker, Norton et al. 2004). The study also reports that 36.9% of these patients were judged to have highly preventable adverse events (Baker, Norton et al. 2004). Similarly, the Canadian Paediatric Adverse Events Study reported an adverse event rate of 6.6%, of which 44.7% were preventable (Matlow, Baker et al. 2012). Historically, medical errors were regarded as someone’s fault, caused by a lack of sufficient attention, or worse, lack of caring enough to make sure you are correct (Leape
Reviewing medical errors and the individual practices that led to these errors was commonly done while root causes, the underlying systems failures, were rarely sought (Leape 1994).

1.2 The Morbidity and Mortality Conference

The morbidity and mortality conference (M&M) is one of academic medicine’s most visible fora for discussion of adverse events and errors. The evolution of the medical audit goes back to the early 20th century (McIntyre and Popper 1983). Ernest Armory Codman, surgeon and outspoken reformer, published abstracts of all cases admitted to his hospital and analyzed all unfavourable results (Codman 1996). He called for open acknowledgment of these “end results” to physicians and to the public. Codman’s passionate views were faced by extreme resistance from physicians and hospitals. However, the American College of Surgeons took over the work of Codman and introduced a “hospital standardization program” in 1916. Unfortunately, the program omitted an element with which Codman was most concerned - the identification of preventable errors.

In 1935, the Philadelphia County Medical Society formed a group initially called the Anesthesia Mortality Committee, which further changed to the Anesthesia Study Commission. Its purpose was to share knowledge about fatalities secondary to anesthesia (Ruth 1945). The commission generated regular reports of its meetings and in 1945 published a review identifying approximately two thirds of fatalities as preventable (Ruth 1945). The purpose of these meetings was clear: to improve
anesthesia practice by an open review of cases likely to reflect medical error. It served as a forum for education as well as system improvement. The objectives and the structure of the Anesthesia Mortality Committee continue to influence many elements of current M&MC programs in academic hospitals.

Despite its longstanding tradition and venerated role in medicine, it is unclear whether the M&MC is effective in its role (Prasad 2010). In fact, Atul Gawande describes the M&MC as “a rather shabby approach to analyzing error and improving performance in medicine” (Gawande 2002). The M&MC lacks a precise definition, a standard format, and identified goals. There is marked variability in the process and standards for the M&MC (Friedman, Pinard et al. 2005, Gore 2006, Bal, Sellier et al. 2012). Descriptions of local M&MC programs have been reported in almost all fields of medicine, including but not limited to, internal medicine (Orlander and Fincke 2003), general surgery (Steiger, Stummer et al. 2010, Falcone and Watson 2012), anesthesia (McDonnell, Laxer et al. 2010), primary care (2011), psychiatry (Kinzie, Maricle et al. 1992), gastroenterology (Hasan and Brown 2008), radiology (Mezrich 2011), intensive care (Ksouri, Balanant et al. 2010), emergency medicine (Seigel, McGillicuddy et al. 2010), obstetrics and gynecology (Sultana and Baxter 2011), pathology (Pereira and Silverman 2009), and even maritime medicine (Valle, Bounes et al. 2011).

The M&MC were originally created in an attempt to improve medical practice through the examination of adverse outcomes and errors (Orlander, Barber et al. 2002). However, there are few reports in the literature regarding the extent to which adverse
events are actually discussed. In a survey of US academic hospitals, adverse events were discussed in 37% of the case presentations in Internal Medicine M&MC (Pierluissi, Fischer et al. 2003). Similarly, medical errors were only discussed in 18% of the cases (Pierluissi, Fischer et al. 2003). In another survey of US Internal Medicine training programs, over 80% reported that when present, medical error was discussed with moderate to high success (Orlander and Fincke 2003). However, only half of the programs had an established method or procedure for handling the discussion of errors (Orlander and Fincke 2003). In a prospective observational study of M&MCs in a teaching hospital, discussion of adverse events was shown to lack a structured method (Bal, Sellier et al. 2012). Several barriers to discussing adverse events have been identified, including anxiety inherent in exposing individual fault, potential loss of respect, fear of legal action and difficulty facing mistakes as well as the attitude of the M&MC moderator (Orlander, Barber et al. 2002, Bal, Sellier et al. 2012, Falcone, Lee et al. 2012).

There are several reports in the literature indicating that participants like the M&MC, believe them to be useful or believe they had learned from the M&MC (e.g. about practice-based learning and improvement and systems-based practice) (Harbison and Regehr 1999, Murayama, Derossis et al. 2002, Gore 2006). It has been shown that the M&MC can be an effective forum for addressing patient safety and quality improvement competencies under certain contexts (Kuper, Zur Nedden et al. 2010). Staff and resident doctors agreed that these rounds represented a forum for addressing system-wide problems as well as identifying, learning from and, if necessary, planning
responses to medical error (Fussell, Farrar et al. 2009, Kuper, Zur Nedden et al. 2010). However, how the open discussion and handling of medical error and adverse events as well as how systems issues can be identified and promoted remains to be well defined.

Several conceptual models and M&MC frameworks have been developed and reported to date. Aboumatar et al. describe a model, which shows that the M&MC should start with explicit goals to provide direction for the conference leader (Aboumatar, Blackledge et al. 2007). In addition, the M&MC process is described in 8 phases (Figure 1). Together, the M&MC goals and structure will determine the M&MC performance and extent to which it enhances medical education and improves patient care (Aboumatar, Blackledge et al. 2007). Others have described the process of establishing a well-structured M&MC program and have evaluated their effectiveness and feasibility (Campbell 1988, Orlander, Barber et al. 2002, Deis, Smith et al. 2008, Calder, Kwok et al. 2014). The M&MC has also been redesigned with the goal of enhancing staff attitudes toward patient safety and system-based improvements (Bechtold, Scott et al. 2007, Szekendi, Barnard et al. 2010, Szostek, Wieland et al. 2010, Higginson, Walters et al. 2012).

Little is known regarding the extent to which adverse events and errors are actually discussed in the M&MC and how system issues can be identified. The M&MC has the potential to be an effective forum for an open discussion of medical error and to handle adverse events in a systems approach. The aim of this study is to describe how
adverse events are discussed and handled in various models of the M&MC and to explore under which conditions system changes are identified and improved. Given that the M&MC is one of many organizational strategies to address patient safety and quality of care, this study will also examine how an organization can best learn from the M&MC. The nature of the M&MC is to help improve individual practice as well as improve organizational policies and systems. Therefore, to better understand how an organization can learn from the M&MC, organizational learning theory must be understood.

**Figure 1:** M&MC Conceptual Model (Aboumatar, Blackledge et al. 2007).
1.3 Organizational Learning Theory

Improving patient care begins with acknowledging the need to improve and a clear understanding of where to improve. Hospitals are being mandated by government, accrediting specialty societies, hospital credentialing committees, patients and even media to demonstrate quality of care assurance and improvement (Kohn, Corrigan et al. 1999, Pronovost, Nolan et al. 2004, Gupta 2012). Healthcare organizations can improve healthcare services, improve patient/client outcomes and reduce medical errors by enhancing their capabilities for organizational learning (Nutley and Davies 2001, Carroll and Edmondson 2002, Tucker and Edmondson 2003).

Argyris and Schön were one of the first to define the concept of organizational learning describing it as involving the detection and correction of errors (Argyris and Schön 1978). Organizational learning can also be defined as “the way organizations build and organize knowledge and routines, and use the broad skills of their workforce to improve organizational performance” (Dodgson 1993). With improved knowledge and understanding, organizational learning can increase the capacity for successful organizational outcomes (Fiol and Lyles 1985). Despite, the various definitions of organizational learning in the literature, they all focus on one similar point – organizational learning is the end result of knowledge creation, retention or transfer (Argote 1993).

A distinction must be made between individual and organizational learning. Although individual learning is important to organizations, “organizational learning is not
simply the sum of each member’s learning” (Fiol and Lyles 1985). A key difference relates to how learning systems are transmitted to members of an organization. In organizational learning, unlike in individual learning, organizational norms and values are the mechanism by which key learning is shared (Hedberg 1981). These norms and values can allow experiences and practices to be shared freely. That is, an open environment can allow learning to occur across individuals and teams without restriction. Organizational learning can therefore allow organizations to better understand and interpret their environment (Daft and Weick 1984).

Organizations that routinely develop effective organizational learning systems are often referred to as learning organizations (Dodgson 1993). Learning organizations have been described as having a strong sense of direction and are especially attentive to the role of each individual within them (Garside 1999). Peter Senge defines learning organizations as “organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together” (Senge 2006).

*Single, double and triple-loop learning*

Learning routines utilized in learning organizations are described as either adaptive or generative (Senge 2006). Adaptive learning routines help organizations follow pre-set pathways (Nutley and Davies 2001). Adaptive learning arises when an organization’s set of rules is strictly followed and the detection and correction of errors
occurs solely within this set of rules (Argyris and Schön 1978). This basic level of learning is referred to as single-loop learning (Figure 2). For example, when an error is detected and corrected within an organization’s predetermined policies, then that error-and-correction process is single-loop learning. As a result, simple associations between behaviour and outcomes may be established; however, these are usually of short duration and may have little impact on the organization as a whole (Fiol and Lyles 1985).

Unlike adaptive learning, generative learning or double-loop learning, involves the creation of new paths (Nutley and Davies 2001). Argyris and Schön argue that double-loop learning can lead to changes in the basic assumptions about an organization (Argyris and Schön 1978). Double-loop learning “involves questioning the role of the framing and learning systems which underlie actual goals and strategies” (Argyris and Schön 1978) (Figure 2). Higher-level learning leads to modification of overall rules rather than particular activities or behaviours (Fiol and Lyles 1985). For example, double-loop learning occurs when an organization’s norms and policies are revised as a result of the detection and correction of an error. Senge expands on the idea of double-loop learning with his theory of systems thinking. Systems thinking is the discipline of comprehending and addressing the whole and examining the interrelationship between the parts of a system (Senge 2006). This emphasis on systems thinking allows for a more holistic appreciation of an organization. Thus, a better appreciation of systems will lead to more appropriate action.
Figure 2: Loop learning (Nutley and Davies 2001). 1 – Single-loop learning (adaptive); 2 – Double-loop learning (generative); 1, 2 & 3 – Meta-learning.

A third level of organizational learning is triple-loop learning (also known as learning about learning or meta-learning; Figure 2). This occurs when organizations learn about the contexts of their learning (Nutley and Davies 2001). As a result, triple-loop learning can lead to changes in the learning environment and the avoidance of learning traps (Bapuji and Crossan 2004). Three different learning traps have been described and include: (1) the familiarity trap (when organizations rely on known solutions, i.e. “the familiar over the unfamiliar”), (2) the maturity trap (when organizations rely on proven solutions, i.e. “the mature over the nascent”), and (3) the propinquity trap (when organizations rely on solutions closer to the known solutions instead of search for “de novo” solutions) (Ahuja and Lampert 2001). By focusing on
the learning processes, triple-loop learning can allow organizations to create new approaches for learning (Argyris and Schön 1978).

1.4 Team Learning

In contrast to a more traditional organization, a learning organization has mastered several disciplines that include systems thinking as well as team learning (Senge 2006). Senge emphasizes that the fundamental learning unit in modern organizations is teams, not individuals. Team learning is viewed as “the process of aligning and developing the capacities of a team to create the results its members truly desire” (Senge 2006). This learning process occurs when a group creates knowledge for its members, for itself as a system, and for others (Kasl, Marsick et al. 1997). Kasl et al. describe a team-learning model, which includes team-learning processes, conditions that support learning, and modes of functioning as a learning system (Kasl, Marsick et al. 1997).

Team learning processes

Team learning consists of several, interrelated learning processes, which include framing, reframing, experimenting, crossing boundaries and integrating perspectives (Table 1). The ultimate goal of these interdependent processes is to produce new collective knowledge. Edmondson has also shown that effective team learning processes include experimentation and collaborative problem solving (Edmondson 1999). Learning occurs when teams reflect on their actions and make changes to improve future performance (Reagans, Argote et al. 2005).
Table 1: Definition of Team-Learning Processes (Kasl, Marsick et al. 1997).

<table>
<thead>
<tr>
<th>Learning Process</th>
<th>Definition</th>
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<tr>
<td>Framing</td>
<td>Framing is the group's initial perception of an issue, situation, person, or object based on past understanding and present input.</td>
</tr>
<tr>
<td>Reframing</td>
<td>Reframing is the process of transforming that perception into a new understanding or frame.</td>
</tr>
<tr>
<td>Experimenting</td>
<td>Group action is taken to test hypotheses or moves, or to discover and assess impact.</td>
</tr>
<tr>
<td>Crossing boundaries</td>
<td>Individuals seek or give information, views, and ideas through interaction with other individuals or units. Boundaries can be physical, mental, or organizational.</td>
</tr>
<tr>
<td>Integrating perspectives</td>
<td>Group members synthesize their divergent views such that apparent conflicts are resolved through dialectical thinking, not compromise or majority rule.</td>
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Conditions that support learning

In order to support effective team learning, several enabling conditions must be present. These include an appreciation of teamwork, individual expression and operating principles (Kasl, Marsick et al. 1997). Table 2 defines these team-learning conditions. Similarly, a supportive context and, more specifically, a supportive interpersonal climate, has been shown to be essential for team learning (Tucker, Nembhard et al. 2007). Edmondson et al. demonstrated that teams could be successful in their learning if they shared three essential characteristics. First, teams were designed for learning. Next, their leaders framed the challenge in such a way that team members were highly motivated to learn. Finally, the leaders' behaviour created an environment of psychological safety that fostered communication and innovation (Edmondson, Bohmer et al. 2001).
Table 2: Definition of Team-Learning Conditions (Kasl, Marsick et al. 1997).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Definition</th>
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<td>Appreciation of teamwork</td>
<td>This condition includes the openness of team members to hearing and considering others' ideas. It also reflects the degree to which members value playing a team role.</td>
</tr>
<tr>
<td>Individual expression</td>
<td>Reflected in this condition is the extent to which team members have the opportunity to give their input in forming the team’s mission and goals, influence the team’s operation on an ongoing basis, as well as feel comfortable expressing their objections in team meetings.</td>
</tr>
<tr>
<td>Operating principles</td>
<td>This condition reflects the extent to which the team has organized itself for effective and efficient operation; how well the team has established a set of commonly held beliefs, values, purpose and structure.</td>
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Psychological safety can be defined as “the collective belief within a work unit that members can question existing practices and admit mistakes without suffering ridicule or punishment” (Edmondson 1999). A climate of psychological safety may play an important role in implementing improved practices. Several studies have shown that psychological safety enables team learning leading to concrete changes in work practices (Edmondson 1999, Edmondson, Bohmer et al. 2001, Tucker, Nembhard et al. 2007). Team leader behaviour is known to be a key antecedent of psychological safety (Edmondson, Bohmer et al. 2001).

*Modes of team learning*

Modes of team learning refer to the developmental stages a team undergoes as a learning system (Kasl, Marsick et al. 1997). Four developmental stages, or modes, of team learning have been described (Figure 3). Teams can move back and forth from
one mode to the other. In the Fragmented mode, individuals frequently do not work as a group and learn separately. This is in contrast to the Pooled Mode where individuals begin to share information. However, although some individuals may learn together, group learning does not occur. In the Synergistic mode, members contribute to the team’s knowledge and this knowledge is often shared outside of the group. Finally, when a team routinely learns in the Synergistic mode, they are in the Continuous mode. It is important to note that “team learning is a dynamic process in which both learning processes and the conditions that support them change qualitatively as the team adopts Fragmented, Pooled, or Synergistic modes of learning” (Kasl, Marsick et al. 1997). As teams move from the fragmented mode towards the continuous mode, higher-level team learning is achieved which can then enable organizational learning.

Figure 3: Modes of Team Learning, adapted from (Kasl, Marsick et al. 1997).
1.5 Organizational Memory

A final key component in organizational learning theory is organizational memory. This can be defined as “the ability of an organization to retain knowledge, in various ways, in order to facilitate its access when needed at a later time” (Walsh and Ungson 1991). By storing knowledge in various reservoirs, an organization can sustain new initiatives and make them routine (Virani, Lemieux-Charles et al. 2009). Stein argues that although organizational memory can facilitate organizational learning, it may also be a constraint to learning and may impede double-loop learning (Stein 1995). This may occur when an organization falls into the previously described learning traps. It is therefore essential that organizations retain new knowledge in a variety of reservoirs, or in a distributed manner, so that multiple users can easily retrieve this knowledge in the future (Lehr and Rice 2002). This will ensure that knowledge is sustained within an organization (Figure 4).

**Figure 4:** Process of organizational memory (Stein 1995, Virani, Lemieux-Charles et al. 2009).
1.6 Organizational Learning in Healthcare

There has been a call for healthcare organizations to begin to challenge norms and assumptions, “unlearn”, relearn, and adopt systems thinking in order to improve care, that is, to become learning organizations (Garside 1999). Carroll and Edmondson argue that, by adopting organizational learning strategies, healthcare organizations can improve quality and other outcomes (Carroll and Edmondson 2002). They highlight the value of leadership and a culture of openness in enabling organization learning in healthcare. Healthcare organizations must go beyond individually focused training and move towards a cycle of action and reflection for teams in order to improve existing knowledge (Carroll and Edmondson 2002).

Evidence of single-loop learning has been well documented in the healthcare literature (Tucker and Edmondson 2003, Halbesleben and Rathert 2008). Single-loop learning in healthcare is also known as first-order problem solving or work-arounds. In these instances, healthcare workers address workflow problems to continue to satisfy the requirements of the job without addressing the underlying problems with the way the work is conducted. Therefore, this can lead to counterproductive actions. For example, when an intravenous pump is malfunctioning, a nurse might replace it with one that is working and places the malfunctioning pump back in the supply room without telling anyone. Even though he/she corrected the problem at hand, the overall issue of a malfunctioning pump was not communicated to the proper individuals and therefore the same problem will likely reoccur. This type of first-order problem solving does not allow for learning opportunities to emerge.
Double-loop learning, or second-order problem solving, may be more challenging in the healthcare setting. It may be more difficult to address the root causes of a problem that a healthcare worker may face. Nevertheless, examples of second-order problem solving include: communicating to the department responsible for the problem, sharing ideas about what caused the situation, implementing changes and verifying that changes have the desired outcome (Tucker and Edmondson 2003). In the example of the nurse facing a malfunctioning intravenous pump, second-order problem solving would involve notifying both the unit manager and the supply department of the problem at hand, in addition to finding a replacement pump for immediate use.

Certain conditions are more likely to lead to second-order problem solving, thereby reducing the likelihood of work-arounds. A psychologically safe work environment can allow healthcare workers to openly discuss the problems they face, thereby reducing their chances of recurrence (Tucker and Edmondson 2002). Halbesleben and Rathert demonstrated that psychological safety promoted double-loop learning and was inversely related to work-arounds (Halbesleben and Rathert 2008). As mentioned previously, it has been shown that psychological safety can enable team learning (Edmondson 1999, Tucker, Nembhard et al. 2007). Team learning in a psychologically safe environment may therefore promote double-loop learning in a healthcare setting.

1.7 Team Learning in Healthcare and Its Role in Patient Safety

Healthcare organizations should consider using teams to promote quality care and improve patient safety (Manser 2009). Several studies have demonstrated the
benefits of teams in reducing errors and improving the quality of patient care (Adorian, Silverberg et al. 1990, Firth-Cozens 1998, Reith 1998). For team learning to occur in healthcare, an environment that is open to learning from failures is needed (Firth-Cozens 2001). High-reliability teams exhibit several values, which enable them to practice high-quality, safe care. These values include a sensitivity to operations, commitment to resilience, a deference to expertise, reluctance to simplify and a preoccupation with failure (Wilson, Burke et al. 2005). These types of teams can create an organization-wide culture of learning (Powell 2006).

1.8 Learning from Patient Safety Events

Individuals, groups and organizations can learn from patient safety failures when they are involved in the reporting of events, the examination of their causes and the changes required to prevent their recurrence (Sasou and Reason 1999). Learning from patient safety events can best occur when a culture of safety exists. When teams communicate freely in an open environment, information sharing and learning is promoted (Chuang, Ginsburg et al. 2007). Team members who feel psychologically safe are more likely to be involved in double-loop learning (Halbesleben and Rathert 2008). Ginsburg demonstrated a positive relationship between organizational leadership for patient safety and learning from minor, moderate, and major close call event dissemination (Ginsburg, Chuang et al. 2010). Goh’s conceptual framework (Figure 5) suggests that organizational learning and teamwork would directly influence patient safety culture, which can lead to improved patient safety indicators (Goh, Chan et al. 2013). It is known that organizational learning affects patient safety culture (Pronovost,
Berenholtz et al. 2006). Organizational learning processes can facilitate learning from mistakes and encourage the discussion of failures. These characteristics are key in supporting a patient safety culture. Similarly, teamwork and collaboration has a positive effect on patient safety culture (Berta and Baker 2004). Team learning increases knowledge sharing, especially when in a psychologically safe environment. Learning from mistakes is therefore encouraged, contributing to a culture of safety. There is also evidence to suggest that a positive patient safety culture can impact patient safety indicators. For example, by fostering a safety culture, medication errors can be reduced (Edmondson 1999).

**Figure 5:** Conceptual framework linking organizational learning, teamwork, patient safety culture and outcomes, adapted from Goh (Goh, Chan et al. 2013).

1.9 Learning in the Morbidity and Mortality Conference

Preventable adverse events, as discussed in the Morbidity and Mortality Conference (M&MC), should be viewed as learning opportunities. Several studies have examined the educational value of the M&MC. Survey studies of surgical trainees
revealed the widely held view that the M&MC is effective in its role as an important and powerful educational tool (Harbison and Regehr 1999, Murayama, Derossis et al. 2002, Gore 2006). An ethnographic study on teaching and learning in the M&MC revealed a disjointed view between trainees and staff physicians (Kuper, Zur Nedden et al. 2010). Trainees wanted to learn content knowledge while staff physicians thought they were role-modeling skills and attitudes related to identifying system issues affecting care (Kuper, Zur Nedden et al. 2010). Several other studies have described an improvement in the educational value of their M&MC after restructuring their local process (Rosenfeld 2005, Prince, Vallabhaneni et al. 2007, Kim, Fleming et al. 2010, Thomas, McDonald et al. 2012). For example, by increasing audience interaction (and facilitating team learning), surgical residents’ perceived educational value and confidence in managing adverse events discussed in the M&MC increased (Prince, Vallabhaneni et al. 2007). A theoretical model of the learning that occurs at the M&MC has been described (Biddle 1991). Learning, as a product of the M&MC, can occur along two pathways: (1) an intended pathway where desired learning occurred as a result of the intended goals and objectives of the M&MC and (2) an actual pathway which was characterized by what was actually learned as a side effect of the experience of the M&MC (Biddle 1991).

Organizational learning theory would suggest that learning from error in M&MCs would be optimized by particular organizational and team cultures. Based on the literature, it is clear that double-loop learning in a psychologically safe environment would be critical for learning from adverse events in the M&MC. Double-loop learning could be recognized by how adverse events are discussed in the M&MC along with the
types of recommendations made at the conclusion of the M&MC. Understanding what happened and how to prevent it from happening again requires detailed, team-based discussion and analysis. M&MCs thus could provide a context for organizational and team learning via double-loop learning and systems thinking, and thus, ideally, a context for the identification and promotion of system changes.
CHAPTER 2: METHODOLOGY

2.1 Study Design

I used a qualitative, prospective, multiple Case study design for this study\(^1\). Qualitative methodologies offer opportunities to understand dimensions of social interactions that are not addressed by quantitative methods commonly used in the medical sciences (Green and Thorogood 2009). I drew on the qualitative paradigm to describe how adverse events are reviewed in the M&MC, and how systems changes are promoted using an organizational and team learning framework.

A Case study approach was used since it allows for the thorough description of the organizational and team learning processes within the context of the M&MC. According to Yin, “a Case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin 2009). The Case study method as per Yin is illustrated in Figure 6.

An M&MC review process in a hospital department formed the unit of analysis for a Case study. I limited my sample to three Cases in order to complete the study within the time framework of a Master’s thesis. Multiple Cases can provide support for the empirical validity of the findings (Yin 2009). A multiple Case study design also allows for the comparison of themes across Cases.

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\(^1\) The term “Case” will now refer to the unit of analysis studied, while “case” will refer to patient events discussed in the M&MC.
2.2 Case selection

I used purposive sampling to ensure that the data collected would be “sufficiently rich to bring refinement and clarity to understanding an experience” (Polkinghorne 2005). Based on expert nomination, I contacted several hospital departments across North America that were identified as running systematic, well-structured, or original M&MCs. I contacted the staff responsible for running the local M&MC and inquired about the structure and process of their M&M program. I also inquired about what might be required from a research ethics and legal point of view if the program participated in the study. Based on this initial feedback, I selected three Cases covering different medical or surgical specialties in both Canada and the United States. Different specialties across North America were chosen in order to maximize divergence among Cases. In fact, the third Case did not run formal M&MCs, per se. A Death Review Committee ran a well-structured, organized review of all deaths within a multi-site healthcare institution.

Figure 6: Case study method as per Yin (Yin 2009).
2.3 Data Collection

A major strength of case study data collection is the opportunity to use many different sources of evidence. This allows for triangulation of data and improves the validity of the findings (Yin 2009). In this study, I collected data via direct observations, semi-structured interviews and document analysis.

1- Direct observations:

I conducted direct observations of the M&MC at each participating site. The advantages of direct observations include the fact that one can observe events in real time and in the natural setting and context of the “Case”. I attended one M&MC at each site on the following dates: Case 1 – November 22, 2013; Case 2 – March 19, 2014; and Case 3 – June 2, 2014. I recorded a variety of elements as described by Spradley, in his guide to participant observation (Spradley 1980). Spradley highlights nine observational dimensions when in the field: space, actor, activity, object, act, event, time, goal and feeling (Spradley 1980). Using this guide, I collected data on attendance at the M&MC, choice of moderator, format of the presentations, case selection, discussion of adverse events, and practice changes identified. I also noted details such as the flow of discussion, interpersonal and team dynamics, body language and other aspects of the conversation.

2- Interviews:

I conducted semi-structured interviews with key members of the M&MC at each site. I interviewed the following individuals in Case 1: Department Head, Chair of the
Departmental M&M Committee, Member of the Departmental M&M Committee, Chief Fellow and Member of the Hospital M&M Review Committee/Quality and Risk Management. In Case 2, I interviewed the Director of the Division and M&MC Chair, a Division Staff, the Senior Vice-President of Medical Operations and Division Staff, and two Fellows. Finally, in Case 3, I interviewed the Chair of the Death Review Committee and Medical Advisory Committee, the Director of Patient Experience (Quality and Performance) and member of the Death Review Committee, a Patient Safety Specialist and member of the Death Review Committee and finally the Vice-President of Medical Affairs and Quality.

Each interview lasted approximately 30 minutes and took place in the participant’s office or a mutually convenient location. I digitally recorded each interview and transcribed verbatim the first interview (Case 1 Interview 1) while a clinical secretary transcribed all other interviews. One exception was Case 1 Interview 4 who did not consent to being digitally recorded. I therefore used my detailed interview notes for the analysis. Furthermore, I went back and interviewed the Chair of one M&M Committee (from Case 1) a second time after completing data collection in all three Cases. The reason for the second interview was to obtain a more detailed description of their M&M process and the challenges faced with its implementation.

During the interviews, I asked individuals to describe the role of the M&MC within their department, their own role in running the M&MC, the M&MC process and what happens as a result of the meetings. Specifically, I asked individuals to comment on the
strengths and weaknesses of their M&MC as well as any barriers or facilitators to effectively running their M&MC. I adjusted the interview guide (Appendix A) iteratively throughout the study based on the concurrent analysis. By Case 3, I started to focus some of my questions on how learning from adverse events took place and how that learning was shared.

3- Documents

Documentary information is very relevant to the multiple-case study approach. Quite often, documents can serve as substitutes for records of activity that a researcher cannot observe directly (Stake 1995). They can corroborate findings from other sources. I collected a variety of documents from each site for analysis. At first, I went to each site’s website and printed pages related to their Patient Safety and Quality Improvement Plan. I also collected several other documents across all three sites, which are summarized in Table 3.

2.4 Data Analysis

I used theoretical thematic analysis as described by Braun and Clarke (Braun and Clarke 2006). First, I reviewed my observation notes, interview transcripts as well as documents to describe each Case. I then developed categories and subcategories within each Case using an organizational learning framework which suggests that learning from error in M&MCs would be optimized by particular organizational and team cultures. This orientation guided the Case study analysis and helped to focus on certain data. Next, I compared and contrasted each Case description using the developed
categories and subcategories to identify common themes across Cases as well as any differences between Cases. I drew on the literature to assist with the interpretation of cross-Case findings. Case descriptions are detailed in Chapter 3 while the cross-Case analysis is reported in Chapter 4.

Table 3: Summary of documents collected from all three Cases.

<table>
<thead>
<tr>
<th>Policies</th>
<th>Templates</th>
<th>Summaries</th>
<th>Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case 1</strong></td>
<td>Hospital M&amp;M Review Minutes template <em>(Appendix B)</em></td>
<td>Departmental Patient Safety, Quality and M&amp;M Handbook</td>
<td>Published manuscript describing the changes the Department underwent in restructuring their M&amp;M process <em>(not cited to preserve anonymity)</em></td>
</tr>
<tr>
<td></td>
<td>Hospital-wide M&amp;M policy (current version from 2013 as well as previous versions from 2009, 2005, 2004 and 2002)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Case 2</strong></td>
<td>M&amp;MC PowerPoint slides template <em>(Appendix C)</em></td>
<td></td>
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<tr>
<td></td>
<td>M&amp;MC template for the Division's safety Database <em>(Appendix D)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Case 3</strong></td>
<td>Death and Adverse Event Review Policy</td>
<td>Health Record Review Guideline (used to analyze each death for adverse events)</td>
<td>Death Review Briefing Note (April – September 2013)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Death Review Committee Meeting Report template <em>(Appendix E)</em></td>
<td></td>
</tr>
</tbody>
</table>

2.5 Ethical Implications

I sought ethical approval for this study from the University of Toronto Office of Research Ethics. I also had to seek approval from the local Research Ethics Offices
from Case 1 and Case 3. No additional ethics approval was needed for Case 2. I obtained written, informed consent at every site for approval of direct observation of the M&MC as well as analysis of any site-specific documents. Similarly, I obtained written, informed consent from each individual interviewee. All data were de-identified and securely stored.

2.6 Reflexivity

My first experience of the M&MC was as a medical student. I observed several M&MCs during various medical and surgical rotations. I remember feeling uncomfortable in some cases when the rounds were not particularly well run, or were run in a confrontational environment. As a pediatric resident, I started to take on a more active role during the M&MC while on my general pediatrics rotations. It was at that time when I started to appreciate the role of the M&MC in my learning of key pediatric concepts as well as its role in preventing future adverse events from occurring. My interest in patient safety flourished. I went on to complete an elective rotation in Patient Safety at The Hospital for Sick Children in my final year of residency. As Chief resident during that year, I was also invited to attend the hospital-wide Patient Safety Committee as a resident representative. I discovered how a hospital itself could play a role in the prevention of adverse events (for example, through the regular review of patient safety indicators). With this continued interest, I agreed to be the fellow in charge of organizing the M&MC within the Division of Rheumatology, during my second year of fellowship. I became intimately acquainted with the process of running a well-established M&MC program. I started to appreciate the importance of an open forum in
the discussion of adverse events. These experiences helped form my initial interest in pursuing further research within the field of M&MCs.

My thesis committee also shaped my orientation as a researcher in several meaningful ways. Dr. Baker, my thesis supervisor, offered his expertise in organizational learning, patient safety and quality improvement strategies and the study of adverse events. He helped me link the concepts within organizational learning theory in the context of the M&MC. Dr. Laxer contributed to my study through his extensive practical and administrative experience in the implementation of M&MCs. Dr. Kuper contributed to my study through her extensive experience in conducting research in the qualitative paradigm as well as research on the M&MCs. All three members of my committee provided me with guidance in the Case selections for this study.

During the study, I became sensitive to how my education and my experiences in the M&MC could affect data gathering and interpretation. Specifically, while the literature allowed me to connect the concepts of organizational learning theory and the M&MC, I continually questioned myself whether I was observing findings I desired to see but may not have been contained within the data. I attempted to minimize this influence by being reflexive during the data collection and analysis process.
CHAPTER 3: RESULTS

3.1 Case 1 Description

Case 1 is located in a Canadian, 300-bed, university-affiliated, quaternary care children’s hospital. Quality improvement has been a longstanding strength of the hospital. It is committed to building on its international reputation in quality and patient safety.

“Leadership encourages our health-care professionals to point out any thing they feel could pose a problem or safety concern, even before it occurs. The hospital routinely reviews any information our teams provide, to learn from and improve our working environment. In this way we are constantly surveying, reviewing, and modifying our processes to ensure the safest possible surgical experience for you and your child.” (Hospital website)

A hospital-wide M&M policy mandates that all Departments and Divisions conduct monthly M&M reviews of every hospital death and significant morbidity in a multidisciplinary forum. Several years ago, one of its Departments underwent significant changes to its M&M program in order to identify areas for improvement as well as to introduce interventions and actions to increase the program’s efficiency and impact. The focus of the current M&M program is to review all cases received in a transparent fashion in order to develop new knowledge and improve systems of care delivery.

The hospital-wide policy on M&M reviews was first established in 1997 and most recently updated in 2013. M&M reviews are conducted at the Hospital to ensure that patient deaths and morbidity events are reviewed in a multidisciplinary forum with the purpose of examining whether the care provided was appropriate and timely as well as
developing new knowledge and improved systems of care delivery. As outlined in the policy, the emphasis of reviews should be learning (by all members of the Departments/Divisions of the Hospital) and prevention of similar occurrences. Each Department/Division must conduct monthly reviews of each hospital death, all significant morbidity events (actual or potential) as well as all Code Blue calls (patients in need of emergency resuscitation). Minutes from the M&M divisional review are signed off by the Department Chief and are submitted to the Hospital M&M Review Committee. An M&M documentation template, which was created in 2013, is used to ensure appropriate documentation (Appendix B).

A Hospital M&M Review Committee functions as the oversight mechanism for the M&M review process. It monitors the adequacy of M&M review processes in each Department/Division. It has a multidisciplinary membership including physicians, nurses, pharmacists, information technologies specialists, and representatives from the Quality and Risk Management Department. The Committee is responsible for identifying hospital-wide issues and trends arising from the submitted M&M minutes and from safety reports. Identified issues are assigned to the appropriate department, individual or committee for consideration/resolution. The Committee also provides guidance and acts as a resource to hospital staff as to the content, purpose and format of M&M reviews. It encourages and promotes multidisciplinary reviews that emphasize the identification of issues and any related actions plans, promoting the learning and improvement functions of the M&M process. Finally, the Committee carries out annual assessments of the M&M review process that includes compliance (submission of
minutes and timeliness of M&M reviews). The Committee’s activities are reported to the Medical Advisory Council as well as the Quality Management Council of the Hospital.

The selected Department includes 35 staff physicians, 10 fellows, 6 residents and 5 nurse practitioners. The Department receives many M&M review requests due to the high volume of patients treated. Requests arise from within the Department as well as from several other Departments within the Hospital who were involved in the shared-care of a patient. Several years ago, these requests increased to the point where the Department determined that it was necessary to review and revise its M&M program to better meet its the educational and safety needs. Prior to this, the Departmental M&M consisted of presentation of a case by a staff physician responsible for the M&M activities, followed by discussion among those present – almost exclusively staff physicians. Several problems were identified with their old process. The Department had no official system for collection or identification of cases requiring review and the storage of case information was not formalized. Meetings were not regularly held and cases were not reviewed in a timely fashion. Few departmental members attended the M&MC and the educational value was not felt to disseminate widely throughout the department. There was no organizational structure in place to follow up on the implementation of recommendations or action plans. Finally, dissemination of review findings did not progress beyond members present at the meeting itself.

A new M&M program was built with the creation of a Departmental M&M Committee and the creation and appointment of an M&M Chair. The Departmental
M&M Committee consists of 9 members, representing the different sub-specialties of the department in addition to the Department Chief. They act as a liaison to work and communicate with other departments within the hospital. The Committee holds regular meetings to discuss all requests for review. Cases are collected from several sources. First, cases are identified through the hospital’s anonymous safety-reporting database. Second, self-reporting by other staff within the Department to the Departmental M&M Committee members or Chair occurs. Finally, the Committee receives requests for review from other hospital departments.

Cases are triaged in 3 ways. First, some cases are judged to have little potential for additional educational value. These cases are reviewed by the Departmental M&M Committee and the meeting minutes are then sent to the Hospital M&M Review Committee. Other cases are judged to require only minor discussion among department members and to offer little educational value. They are therefore scheduled for discussion at a staff administrative meeting. The meeting minutes are then sent to the Hospital M&M Review Committee. Third, those cases that carry obvious educational value and require discussion among all staff in a multidisciplinary manner are scheduled for presentation at an upcoming monthly M&MC. The perceived advantage of having a Departmental M&M committee triaging these cases is that it is representative of all staff within the Department.

“I think the fact that we were well represented, like all the food groups were kind of provided by the committee, that, you know, people would be able to decide what to bring to their own respective smaller groups what did and didn’t, kind of, bear discussing.” (Chair, Department M&M Committee)
At times disagreements on whether a case merits discussion at the M&MC can occur. In these instances, the committee will try to come to a unanimous decision. However, at other times, the Committee Chair will make the final decision.

“So, while there may be disagreements sometimes at the committee level, you know, it’s like any committee. You allow the discussions to take place for a while. You kind of listen to the pros and cons, and you kind of, as the head of the committee you go, ok, how do I feel about that, and then you make the judgment. And you kind of go, yep, I think everybody needs to hear about this, whether or not they want to hear about it.” (Chair, Department M&M Committee)

The Department’s M&MCs are held monthly and attendance is mandatory. The usual attendance is approximately 25 individuals per meeting. Approximately 3 cases are discussed at each meeting. Action plans, recommendations (including changes to policy) are emailed to all department members and displayed within the department on a designated M&M notice board. Recurring issues are recirculated at regular intervals. There is also a Departmental Patient Safety, Quality and M&M Handbook, which summarizes information on close calls, trends and recurring issues. A Department M&M database was also created and houses all reviews, findings, minutes and recommendations in order to identify recurring issues and trends.

Two cases were presented during the observed M&MC. There were 31 individuals in attendance at the observed M&MC. These individuals included staff physicians, trainees, nurses (both clinical and research), clinical assistants, allied health professionals and an administrative assistant who took minutes of the meeting. The first case was presented by a senior fellow while the second case was presented by the
M&M Committee Chair. The Chair then provided a brief literature review of the topic, which would be disseminated via email to all staff after the meeting. Three staff members then shared similar experiences and several appropriate questions were raised about the case. The general tone of the discussion was non-confrontational and collegial. The audience was very engaged with widespread sharing of experiences and knowledge. The overall mood was light, candid with good-natured banter and appropriate laughter throughout the meeting. Finally, several practice changes were identified, one of which was aimed at the system level. For example, the cases presented related to patients presenting with anaphylaxis. As a result of the M&MC discussion, anaphylaxis kits were widely distributed in all areas of the Department.

Throughout the implementation of the Department’s new M&M program, the Committee Chair faced several challenges. Self-reporting of cases was initially very limited. Department members were educated on the hospital-wide anonymous safety-reporting database. Staff were also reminded that the focus of the M&MCs were neither blame nor individual error but educational.

“One of the things that I really really tried, because I wanted, I really wanted to encourage self-reporting. And I really wanted to encourage that in terms of self-reflection, but also the way the hospital was moving as regards to reporting. So one of the things that I said to people from early on, […], it’s never about blame.” (Chair, Department M&M Committee)

Another challenge related to individuals within the Department who were resistant to change.

“We felt that the best way to deal with “resistance to change” was to proceed and schedule M&M meetings as part of our
monthly grand rounds (at which attendance is essentially mandatory) and then let people see for themselves that the tone was educational and collegial and that the purpose of the program was to provide an open and fair educational review process.” (Published Manuscript)

“I would say pretty much all of the challenges were people, […], and all of the initiatives to circumvent that were trying to get around people, trying to change people, trying to change a group, one person at a time.” (Chair, Department M&M Committee)

Following the implementation of the new program, case reviews and case presentations increased as well as mean attendance and self-reporting. Staff satisfaction with the M&M process was high with Department members reporting that meetings were well organized and the tone was educational and led to a better appreciation of the topic.

Role of the M&MC

Two roles of the Department M&MC were identified. First, the M&MC served a patient safety role. With the redevelopment of the M&M program, there was a new focus on the promotion and awareness of a safety-oriented culture. One of the main goals is to examine adverse events and close calls closely in order to reduce their chance of recurrence.

“Increasing focus of the M&M program on cases that do not involve harm allows us to identify trends and implement policies to prevent future error and harm” (Published Manuscript)

The identification of trends or clusters of adverse events was a recurrent theme. It was felt that the M&MC allowed the Department to identify recurring failures and weaknesses within their system. The Hospital-wide M&M policy states that the hospital M&M Committee is responsible for identifying hospital-wide issues and trends arising
from the submitted M&M minutes. A new M&M Review Minutes Template was created in order to reliably capture common themes seen across hospital Departments (Appendix B).

“The role of the Hospital M&M Committee is to identify systemic morbidity, mortality issues and trends. […] Hospital M&Ms are to identify a trend. To identify why that trend is happening and also to share the learning, but also to make sure that somebody is looking after that trend.” (Member, Hospital M&M Committee)

The second identified role of the M&MC was educational. In the 2004 revision of the Hospital-wide M&M policy, the educational role of the M&MC was emphasized.

“to learn from the review in order to develop new knowledge and improved systems of care delivery, where possible. M&M reviews should emphasize learning and prevention of similar occurrences” (Hospital M&M policy, added in 2004)

Once again the redevelopment of the Department’s M&M process allowed for an increasing educational role.

“Presenters and attendees are reminded that the focus of these meetings is neither blame nor individual error but educational…More regular meetings with more diverse presentation topics will hopefully provide more educational value than the “cautionary tale” of a major morbidity or mortality” (Published Manuscript)

“They are there to learn vicariously through someone else’s experience” (Chair, Department M&M Committee)

Trainees also felt that the M&MC plays an important role for their continuing education and considered the discussion during the M&MC as learning opportunities.

“I view these as good occasions to actually share the kind of “oh crap” moments and hopefully learn to recognize things soon so that it doesn’t happen to you hopefully” (Chief Fellow)
Summary

The selected Department has undergone significant changes to its M&M program with the creation of a Departmental M&M Committee as well as the creation and appointment of an M&M Committee Chair. The Committee can review all cases brought to their attention (via varied sources) and decides on the need for further discussion and presentation in a transparent fashion, and follows up on recommendations and action plans at various committee levels, resulting in increased educational output at the departmental level and throughout the hospital. The two identified roles of this Department’s M&M – the recognition of system-wide trends or recurring issues and the focus on learning from error and sharing new knowledge – make it an ideal setting for organizational learning. The promotion and identification of system changes can then occur.
3.2 Case 2 Description

Case 2 is located in an American, 598-bed, university-affiliated, quaternary care children’s hospital. The hospital is dedicated to collaboration, transparency and improving outcomes.

“We closely monitor the quality of our care and services so that we can continually improve and believe that transparently sharing our results drives us toward achieving our goals.” (Hospital website)

A commitment to quality improvement permeates the organization. The hospital’s 2015 strategic plan calls for the elimination of all serious patient harm by leveraging internal and external expertise toward becoming a high reliability organization (HRO). Their journey toward becoming a HRO focuses on improving reliability through better process design, building a culture of reliability and leveraging human factors. Three of the five key characteristics of an HRO (Weick and Sutcliffe 2001) can be directly linked to the Morbidity and Mortality Conference (M&M). Preoccupation with failure is critical to the M&M wherein everyone is focused on errors and close calls, learning from them and figuring out how to prevent them from happening again. The reluctance to simplify interpretations requires constantly asking the “why” question and inviting others with diverse experience to express their opinions. Finally, a commitment to resilience is the concept that one cannot predict when things will go wrong; mistakes will be made. However, issues will be quickly identified and structures will be in place so that response can be immediate and harm will be minimized.
Although there is no hospital-wide policy on the M&MC, they are regularly held in every department in the hospital. Several years ago, one of the hospital Division’s M&MC underwent significant restructuring by instituting a more formalized process as well as the implementation of a Safety Database. The focus of their current M&M program is to transparently review and learn from all adverse events while systematically tracking them in order to find the best care approaches for their patients.

The selected Division includes 20 staff physicians, 15 nurse practitioners, 2 fellows as well as numerous trainees at various levels of training. The Division holds a weekly, mandatory M&M, which is regularly attended by a multi-disciplinary group, which includes staff physicians, trainees, observers and nurse practitioners. Prior to 2006, the process was unstructured. Cases were not always reviewed in depth and actionable items would not be identified regularly.

Currently, the two fellows within the Division identify all cases for review. Although there are no specific guidelines on which cases need review, the fellows have a clear understanding on how to identify cases.

“We have already finished residency so it is a little bit different, like you kind of learn during residency. Technically, it is supposed to be any complication that […] changes the patient’s post-operative course from […] basically a normal pathway or […] a delay in diagnosis and does that alter the course of what happens to the patient. […] There are things that happen during an operation that might kind of deviate from the course but the end result is no different and like those we don’t always present.”
(Fellow 1)

In addition, it is understood that all identified cases will eventually be reviewed.
“It’s not like we pick one or two cases out of ten to present every week. It’s expected that every case that has a complication will be presented at some point. Sometimes we delay them so we can follow up on the case a little bit further so we know actually what is going to happen but it is expected that every complication is present. It is not like there is a selection process to decide which ones are presented and which ones aren’t.” (Division director and M&MC Chair).

An updated list of all morbidities or mortalities is kept on a whiteboard in their office. Prior to every M&MC, the fellows will review the case with the responsible staff. The fellows will then prepare a presentation outlining the details of the case using a structured template (Appendix C). They have to identify whether the case was preventable as well as the level of harm. In addition, the event has to be classified according to Codman’s Errors Classification (Codman 1996). In this classification system, all results of treatment that lack perfection may be explained by one or more causes including errors that are partially controllable by the organization, errors that are partially controllable by public education and errors that should be acknowledged to ourselves and to the public (Figure 7). Following the case presentation, there is a discussion amongst all in attendance. The minutes of the meeting are taken by the M&MC Chair (or his delegate) and are inputted directly into the Safety Database using a structured template (Appendix D).

Three cases were presented by the two fellows during the observed M&MC. There were 24 individuals in attendance, comprised of division staff, trainees, visiting clinical observers, clinical and research nurses as well as nurse practitioners. All three cases were presented using the same structured PowerPoint template slides.
(Appendix C). The first case was related to a technical component of a commonly performed procedure. The second was a discussion of a possible delay in diagnosis. The final case reviewed a potentially preventable infection. The discussion following each case was very robust with several staff sharing their personal experiences. The audience members were very engaged and passionate when it came to their thoughts on the cases presented. Several, appropriate questions were raised in an open and non-confrontational dialogue. Although there were strong opinions expressed during the meeting, it was done very professionally with no allocation of blame.

**Figure 7:** Codman’s Error Classification

<table>
<thead>
<tr>
<th>Partially controllable by organization</th>
<th>Partially controllable by public education</th>
<th>Should be acknowledged to ourselves and to the public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Errors due to lack of technical knowledge or skill</td>
<td>The patients’ unconquerable disease</td>
<td>The calamities of surgery or those accidents and complications over which we have no control</td>
</tr>
<tr>
<td>Errors due to lack of surgical judgement</td>
<td>The patients’ refusal of treatment</td>
<td></td>
</tr>
<tr>
<td>Errors due to lack of care or equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Errors due to lack of diagnostic skill</td>
<td></td>
<td></td>
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</tbody>
</table>

There were no practice changes identified during the observed M&M C. However, many examples were raised during the interviews. Some changes led to a standard approach to care between different divisions.
“We had a number of patients who had G-tube complications and there was concern that the teaching for G-tube care was varied between the neonatology group and the surgery group, or that patients were being discharged without adequate teaching for their G-tubes after we placed them and so we initiated basically an education process with neonatology, the nurse practitioners in neonatology so that everybody had a more consistent approach to how we treat them. […] Those are the kind of system issues that we try to identify and then do something about.” (Division director and M&MC Chair)

Others involved introducing new steps in the process of care for patients undergoing multiple procedures.

“We had a recent event where somebody was getting ready to operate on an eye and was at risk of making an incision in the wrong site of an eye. As soon as we knew that had happened, by that afternoon we had met and by the next day, we had […] an action plan where we changed the way they did their serial time-outs, when they do multiple procedures.” (Senior Vice-President of Medical Operations and Division Staff)

Finally, certain practice changes involved other departments within the hospital.

“We had one not that long ago where unsterile instruments came up. That then obviously led to a discussion of well ‘how is the processing done, where is the processing done, where did it go wrong’. Actually, for that one in particular, we brought in someone from Sterile Processing to go through that and give them feedback of what happened and get their perspective on how it happened. […] So they worked on a new system, a double-check system based.” (Division Staff)

Role of the M&M

Two roles of the Division M&M were identified. First, the M&M served to identify system-wide problems. Cases are reviewed in order to identify system-wide
problems so that their recurrence can be avoided and practice changes can be identified.

“I think, particularly in this institution, because we have such a focus on safety, (the fellows) will sometimes identify system factors that actually may not have anything to do with the actual patient but there are things that didn’t work well in the system that should be improved.” (Division Director and M&MC Chair)

“I think both in our division and institutionally, we do have more of a slant of the systems thinking about where did our system break down.” (Division Staff)

With the new structured process that was introduced 8 years ago, the Division now has the ability to track cases in order to improve quality.

“The advantage of having all of that in this database is when you put the information in, it goes by diagnosis, by procedure, by doctor, by what the complication was, how it was [...] an error in diagnosis or something. You can go back and search that. [...] We can pull the complication data directly from the M&M database and, you know, you could really sit down and say in our practice in the last three years, there are the facts, this is what we saw and these are the different types of complications where in the old days we never would have done that because there was no recordable log.” (Senior Vice-President of Medical Operations and Division Staff)

The second identified role of the M&MC was educational. By tracking recurring events, learning can take place to prevent their recurrence.

“We track all of the things that don’t go as we anticipate in the operating room with the idea that if you made a mistake then somebody else can learn from that mistake. You can get input from other people who have had similar experiences and how to avoid that mistake in the future.” (Division Director and M&MC Chair)

Not only are the learning opportunities in the M&MC aimed at staff but at the trainee as well.
“It also serves as a learning forum by which, you know, both the partners can learn and share each other’s practice because we have a relatively large practice. And probably one of the more important things is it is a key part of our educational opportunity for our residents, fellows, medical students to hear what alternative methods are, to understand how people walk through the thought processes and things, and also to teach them transparency.” (Senior Vice-President of Medical Operations and Division Staff)

Trainees also felt that the M&MC plays an important role for their continuing education and felt that there is much to learn from participating in the case presentation and discussion.

“I think a lot of it is for learning. For us, I think it is helpful to, you know, you present something that happened […] and it is more like what did we miss, what did we do wrong, […] how can we learn from it and move on. I think for us it’s a lot of just learning.” (Fellow 1)

Summary

The selected Division works out of an institution that is undergoing a transformational change towards a High-Reliability Organization. They have an increased focus on outcomes of harm as well as detecting and measuring harm. The Division underwent a re-structuring of their M&MC in order to transparently review and learn from all adverse events while systematically tracking them in order to find the best care approaches for their patients. The two identified roles of this Division’s M&MC – to identify system-wide problems and to focus on learning from error (at both the trainee and staff level) – make it an ideal setting for organizational learning. As a result, the promotion and identification of system changes can occur.
3.3 Case 3 Description

Case 3 is a multi-site, 1,000-bed regional tertiary care facility located in Canada. The organization is committed to providing excellent care and service to the people they serve as well as following a continuous improvement cycle to meet and exceed established standards of care.

“(The organization) seeks to meet clients’ needs and to exceed their expectations by using structured processes that selectively identifies and improves all aspects of service.” (Hospital website)

In 2005, the CEO of the organization set a goal of zero preventable deaths by 2010. Although a theoretically sound goal, practically this was extremely challenging to measure. This goal was the driving force in the updating of the organization’s Death Review Committee.

Prior to 2007, a Death Review Committee, which comprised solely of physicians, reviewed all patient deaths. However, this process was laden with challenges.

“The reviews occurred primarily at the physician level, and learning, communication and resolution of issues resided primarily within a particular department. There was no structured accountability, were few/limited forums for interdisciplinary discussion and was little corporate dissemination and sharing of findings.” (Published Manuscript)

The process was unstructured and did not focus at system level issues. Information that arose from the reviews often did not reach all departments within the organization.

“We also recognized that there were a few gaps within the death review process. One was that is was strictly a physician led process and that in fact it needs to be a system process. We identified that there wasn’t […] a good structure and follow up and where all of that went and how do we know what happens with it, and how do we learn from it and make it better.
And there wasn’t a standardized process, everybody kind of did their own thing, and then there was no kind of pull together of the information (Director of Patient Experience (Quality and Performance) and member of the Death Review Committee).

A Death and Adverse Event Review Policy was created to outline the new process, with roles and responsibilities as well as the desired outcomes of death and adverse review within the organization delineated. Currently, charts are selected via three mechanisms. First mandatory reviews occur for all patient deaths within pre-specified hospital departments (those departments where few hospital death occur). Second, a patient chart can be reviewed on request following the patient’s death if the physician or other member of the care team indicates that review may contribute to improving patient care, quality or safety. Finally, charts are selected for review from a list of all patient deaths through the use of a stratified randomization process.

Patient Safety Specialists, nurses with a critical care or emergency medicine background, review charts systematically within 72 hours of the patient's death. They use a modified version of the Global Trigger Tool methodology developed by the Institute for Healthcare Improvement (IHI) (Griffin and Resar 2009). The IHI methodology involves a retrospective review of patient charts using “triggers” to identify possible adverse events. The trigger tool was adapted based on literature review and feedback from physicians and interdisciplinary practice chiefs. Any charts where it is identified that adverse events or quality of care issues may have potentially contributed to death are then referred to Departmental Death Review Committee Chairs, Chiefs of Departments and/or Professional practice Chiefs for further review. Within 30 days of
case referral, the charts are further reviewed and a Departmental Death Review Committee Meeting Report is completed (Appendix E). Findings and recommendations are then presented monthly to the Death Review Committee based on the chart review.

The Death Review Committee is comprised of an interdisciplinary group of physicians, Patient Safety Specialists (nurses), interprofessional chiefs as well as members of the Quality and Patient Safety Team (18 members in total). The Committee is chaired by the Medical Advisory Committee (MAC) chair. It was felt that the interdisciplinary approach has allowed for a better understanding of the whole system and the subsequent identification of system issues for improvement.

“Anytime we send out a review, it doesn’t just go to the physicians, it goes to the manager of the area, it goes to the interprofessional chief that was involved. And so that in itself changes the conversation […] because physicians were reviewing things from a very physician centric lens of their practice, which is totally appropriate, but often times what they were missing is that some of the things that went wrong for them were because of all the other stuff around them, but they were missing those pieces. So even though they’d fix this piece, they’d miss the bigger pieces.” (Director of Patient Experience (Quality and Performance) and member of the Death Review Committee).

The Committee meets monthly, for an hour, to review all Department Death Review Committee Reports (Appendix E) in order to identify trends, patterns and common themes that emerge through review of reports and related data. The Committee will then disseminate pertinent information and recommendations to the Medical Advisory Committee (MAC), the Professional Advisory Committee (PAC), the Quality Patient Safety Steering Committee, and other appropriate stakeholders, Programs and
Departments for action and follow-up. In addition, a summary report is prepared every 6 months detailing the adverse event rate for the organization, quality of care issues as well as outcomes of the Death Review.

Eleven cases were presented during the observed Death Review Committee meeting. There were 15 individuals in attendance, including the Chair, administrative assistant who was taking the minutes of the meeting, 3 Patient Safety Specialists, physicians representing the various departments within the organization as well as representatives from nursing and allied health practice. After each case review, an open discussion followed. A decision was then made whether the case was closed with no follow-up needed or if further action was required. Of the 11 cases reviewed, 6 were left open for further follow-up on recommendations made by the Committee. The attendees were very engaged and shared their experiences around similar cases. The Chair was very keen in ensuring the recommendations are moved forward, to the point where he volunteered himself to join another committee to guarantee that an action item was completed. At the conclusion of the meeting, the Chair reviewed all action items and, where appropriate, confirmed who was to follow-up on each item.

Overall, there is a commitment to ensuring that all recommendations or action items are followed through.

“What we’re working on now is [...] a process of prioritizing the seriousness of the recommendation. So, is this something that requires [...] large systems change, small feedback loop, simple educational initiative, and if that’s the case then who best deals with it. So was it a nursing issue or interprofessional practice (issue), was it a physician issue? [...] And so at the end of the
As a result of this commitment, several local and organizational improvement initiatives have resulted from the Death Review process. For example, after reviewing several deaths related to small gauge feeding tubes being inserted incorrectly with negative sequelae, the Death Review Committee recommended the development of a new policy around their insertion. The Committee also recommended to formally review current guidelines for the monitoring and identification of patients with sleep apnea to allow for the identification of at-risk patients and appropriate planning of care. Finally, an organizational-wide group was created to address an ongoing lack of critical follow-up of abnormal results to help prevent late rescues of patients.

Throughout the implementation of the new Death Review process, several challenges were faced. At first, the discussions were still heavily led by physicians whose focus was rarely on the systems issues related to the case.

“In the beginning, I have to say, it was really rough. You’d go to these meetings, and it was very physician dominated, and I think it was very intimidating. [...] I don’t think we’ve ever done interdisciplinary discussions, so that felt very awkward for people because especially, I mean let's face it, there’s power gradients and hierarchy in health care, so to have, you know a nursing practice chief come in the room and question the physician as to well, wait a minute, what about x? It’s really hard, and some people are more receptive to that than others. [...] So very uncomfortable for us in the beginning, especially being
new to the process, but as you can see, actually quite often, I don’t have to say anything anymore. They just do it themselves. So they’ve come a long way and they do really good work, and they’re very proud of their work I think.” (Director of Patient Experience (Quality and Performance) and member of the Death Review Committee).

Physician knowledge on patient safety and system-wide improvements was limited as well. The depth of the reviews was, at first, limited since physicians did not want to discuss provider performance and there was little analysis of the system within which the provider was working.

“Whenever you introduce something like this, people are always kind of reluctant to say what they think. So we ensured [...] a confidential process, a safe environment.” (Vice-President of Medical Affairs and Quality).

“So I think just physician knowledge of patient safety and kind of that systems, especially in the beginning […], probably people were really not all that up on that. Now we see a lot less of that because people are getting, but back then physicians still really internalized I made a mistake and it’s my fault, so I think people were less, felt less comfortable to talk about it. Whereas now, I think people feel much more comfortable to talk about it, trying to get the process right.” (Director of Patient Experience (Quality and Performance) and member of the Death Review Committee).

However, over time, the dynamics of the group have improved and reviews have become more about system issues and less about individual performance.

“(The committee members) are super engaged, they are always looking at it, for the most part, from the lens of what could we do better? So it is not a defensive, it is not sort of an academic ‘isn’t that kind of interesting’ forum that people involved really do want to see improvements come out of it. The reviewers have a really good relationship with the physicians, which I think is important. No concern is too small, no referral is inappropriate or not good enough for them and if we still have concerns that aren’t addressed, we feel comfortable saying,
‘that didn’t answer my question, I would like to see a bit more on that.’ So we have a very collegial relationship with everybody, which I think is good.” (Patient Safety Specialist and member of the Death Review Committee)

Several years after its implementation, the process was evaluated by a survey to all members of the Death Review Committee as well as key stakeholders within the organization. Members found the new process to be timely and an efficient use of time and most noted the process to be an improvement. The impact of the review process to improving patient safety was rated as good to excellent by most of the committee members as well as the stakeholder respondents.

“The culture of death review has also demonstrated significant change over the past year. The focus on interdisciplinary review, open discussion and challenging colleagues to make recommendations to ensure events do not happen again has become increasingly apparent, as have the refinement and attention to action.” (Manuscript)

Role of the Death Review Committee

Two roles of the Death Review Committee were identified. The first focused on the need to identify and respond to system factors that may have potentially contributed to patient harm and/or death. Its focus is on system improvements to prevent adverse events.

“I think we (the Committee) add sort of that last puzzle piece to where you find the problems in the hospital. […] A lot of times, people only touch one part of a patient but it takes somebody stepping back and looking at the whole chronology of events. […] I think that’s our role, to take that system’s perspective where all the other mechanisms are run up to a point in time.” (Patient Safety Specialist and member of the Death Review Committee).
With the implementation of the new Death Review process, the Committee now has the ability to identify trends and track system-level improvements.

The second identified role of the new Death Review Committee was to share the learnings that came out of the reviews themselves. This was one of the main reasons the process was changed in the first place. There is now a structured process within which findings that come out of the committee are shared at an organizational level. This is accomplished by a clear reporting framework, which reports to the MAC, PAC and Quality Patient Safety Steering Committee. Not only is learning occurring broadly, at an organizational level, but it also occurs at a more local level with program- and unit-specific results being presented biannually to management teams to share with frontline staff. The Chair of the Death Review Committee plays a key role in ensuring that learning occurs from all reviews.

“Consistent attendance by the MAC chair (also the Chair of the Death Review Committee) […] was also instrumental in the ongoing development of a learning culture that is focused on opportunities to improve safety and of clearly identified actions.” (Manuscript)

**Summary**

The selected organization has undergone significant changes to its Death Review process with the goal of reducing the number of preventable deaths across all of its hospitals. The purpose of the Death Review process is to provide the detail required to lead to system-level improvements and to continually learn from the reviews at both an organizational level as well as a local level.
CHAPTER 4: CROSS-CASE ANALYSIS

4.1 Organizational learning within the M&MC

Healthcare organizations can improve quality and other patient outcomes by enhancing their capabilities for organizational learning (Carroll and Edmondson 2002). The role of the M&MC in all three Cases described integrated two key concepts. The first included the recognition of system-wide trends or recurring issues. All three Cases reviewed their adverse events or deaths from a systems lens. Adverse events were reviewed in order to identify system-wide problems. The second identified role of the M&MC in all three Cases focused on learning from error and sharing new knowledge gained from the review process. Learning occurred both broadly, at an organizational level, as well as locally, at a team level. These two roles make the M&MC an ideal setting for organizational learning (Figure 8).

Figure 8: Role of the M&MC and its relationship to organizational learning
An ongoing debate in the organizational learning literature relates to the question of “who/what is learning”? Learning can occur at the individual, group or organizational level. Some claim that individuals are the primary learning unit in organizations (Dodgson 1993). Dodgson argues that “individuals create organizational forms that enable learning” (Dodgson 1993). However, individual learning has been linked to adaptive or single-loop learning and no broader learning is likely to occur (Yeo 2005). In healthcare, there continues to be an over-reliance on individual learning. Healthcare workers have historically worked independently of each other with the primary responsibility of each practitioner being his/her own patient’s care and not necessarily the system within which they work. For example, nurses and other healthcare workers are often encouraged to problem-solve independently and their solutions therefore have little impact on the organizational system (Tucker and Edmondson 2003). Such problems are therefore not brought to the attention of organizational leaders and are likely to recur. As a result, these types of events may not be regularly discussed in the M&MC.

Team learning is one of the five disciplines necessary to innovate learning organizations (Senge 2006). Senge and others argue that the fundamental learning unit in modern organizations is the team, not the individual (Kasl, Marsick et al. 1997, Senge 2006). Team learning can be thought of as the process through which a group creates knowledge for its members, for itself as a system, and for others (Kasl, Marsick et al. 1997). Team learning goes beyond the sum of individual members’ learning. The integration of each individual’s learning within the team can facilitate learning (Schein
1985). This level of learning is more complex and has been linked to generative or double-loop learning, ultimately leading to greater organizational impact (Yeo 2005).

Although the M&MC was historically oriented toward individual physician learning and performance, many M&MC models described in the literature focus on teamwork and have an interdisciplinary membership (Hiner, White et al. 2009, Kauffmann, Landman et al. 2011, Taylor and Tesfamariam 2012, Gonzalo, Bump et al. 2014) while paying attention to the system within which all healthcare providers function (Bechtold, Scott et al. 2007, Szostek, Wieland et al. 2010, Higginson, Walters et al. 2012). The benefits of teams in reducing errors and improving the quality of patient care have been well established (Adorian, Silverberg et al. 1990, Firth-Cozens 1998, Manser 2009). In fact, Baker et al. (Baker, Darin et al. 2010) assert that to successfully address system-based errors, “it is imperative that the case be reviewed by multiple specialties at one time.” Although attendance in the M&MC for Case 1 and 2 was diverse, they did not have a focus on an interdisciplinary approach to their reviews. However, Case 3 best highlights how its Death Review Committee membership became interdisciplinary and how a shift to systems thinking occurred.

“We have representation fairly broadly. We have representation from some interesting groups that bring a lot to the table but that might not otherwise be there, our forensicologist, who brings, you know, the coroner’s aspect of the case but is not involved in any clinical patient care, and so you can see how he would be left off without really thinking much. Involvement from pharmacy, the interdisciplinary practice chiefs, and then the quality specialists and the support that the committee has from the corporate quality group is a critical feature of success. If this were just physicians reviewing cases we would not be
Finally, learning at the organizational level occurs when organizations learn about the contexts of their learning. This allows the organization to relate their analyses for their context. Unlike individual and team learning, this level of learning takes into account external resources (Yeo 2005). The ultimate goal is to advance the organization’s vision, identity and aims. Yeo highlights the role of individuals in learning at the organizational level: “This is an example of how an organization functions like an organism through the collective cognition of individuals who constantly learn at different stages” (Yeo 2005). The management literature continues to underscore the importance of learning at the organizational level as well as the inter-organizational level (Bapuji and Crossan 2004).

There are certainly many challenges in attaining organizational-level learning within the M&MC. As previously mentioned, the M&MC has a history of evaluating individual physician performance in a closed, punitive environment. There was an element of fear in presenting cases as individuals often felt ashamed and reluctant to participate in an open discussion. Attendance was often restricted to physicians within a particular department. Although the M&MC, in some organizations, has undergone a significant transformation into systems-based analysis of adverse events, it may be difficult to let go of the history behind the M&MC.
Senge emphasizes the importance of systems thinking and a shared vision within learning at the organizational level and suggests that an organization “institutionalize learning as an inescapable way of life” (Senge 2006). Despite a call for healthcare organizations to become learning organizations, learning at an organizational level is often underutilized. This is especially the case in the M&MC context. Learning in the M&MC has been well studied (Harbison and Regehr 1999, Murayama, Derossis et al. 2002, Rosenfeld 2005, Prince, Vallabhaneni et al. 2007, Kim, Fleming et al. 2010, Kuper, Zur Nedden et al. 2010, Thomas, McDonald et al. 2012). However, the focus has been primarily at the individual or local team level.

All three Cases described in this study highlighted the educational role of their M&MC 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 has the potential to be shared at an organizational level. In fact, meta-learning or learning about the context of learning was evident. One of the roles of the Hospital-wide M&MC Committee is to provide guidance to those running M&M reviews within the hospital. In addition, the Committee carries out an annual assessment of the M&M review process across the hospital. Organizational-level learning was not as clear in Case 2 given that findings arising from local M&M reviews were not necessarily shared at a hospital level. However, the hospital is undergoing a transformational change towards a High-Reliability Organization. One of the key characteristics of an HRO is a preoccupation with failure and consistently learning from errors and close calls (Wilson, Burke et al. 2005). It has been suggested that to achieve
HRO status, high-reliability teams should be created in every department and linked together at an organizational level (Powell 2006). This has the potential for providing an environment for meta-learning with habitual learning at an organizational level. Finally, Case 3 provides an example of how organizational-level learning can occur through a regular meeting with the Death Review Committee that engages an interdisciplinary membership, including physicians, patient safety specialist nurses, interprofessional chiefs and members of the Quality and Patient Safety Team. By virtue of this membership, learning at the organizational level could be achieved.

The missing piece in all three Cases was the role of external resources in learning at the organizational level. Learning achieved through the M&MC of one particular organization should be optimally shared across other organizations. How to best achieve this has yet to be determined. For example, a new policy or best practice that is created as a result of an M&MC discussion might be integrated into sources of learning for other organizations (e.g. journal publications, coroner’s reports, inter-organizational communications, etc.).

4.2 Double loop-learning in the M&MC

One of the key learning routines of learning organizations is generative learning or double-loop learning. In healthcare, double-loop learning occurs when a healthcare worker takes action to address the underlying causes of a problem. There were several examples of double-loop learning within the reviews of all three Cases. In Case 1, specific system interventions arose out of close calls presented at the M&MC and out of
identification of a clustering of issues within the M&M database. For example, in one M&M review, it was revealed that atomizer spray nozzles for topical lidocaine did not deliver consistent doses of lidocaine with each spray and could possibly deliver toxic doses. As a consequence, a patient developed a seizure after receiving a toxic dose of lidocaine. As a result of the discussion during the M&MC, all such equipment was removed from the Department and new catheters were acquired that allow delivery of a measured dose of local anesthetic via a syringe. Several examples arose from Case 2. A new policy regarding serial-time outs prior to multiple-site surgery was created following a wrong-site surgery close call. They also implemented a new double-check system with their sterile processing department following an incident where unsterile instruments were thought to be sterile and almost used for a procedure. In Case 3, a new policy regarding the insertion of small-gauge feeding tubes was created following 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. These examples support the notion that double-loop learning is critical for learning from failures (Tucker and Edmondson 2003, Chuang, Ginsburg et al. 2007, Edmondson 2011).

As described by Senge, an extension of double-loop learning is systems thinking (Senge 2006). An emphasis on systems thinking allows for a more holistic appreciation of an organization, which can lead to more appropriate action. This is evidenced by the examples described above in all three Cases. Figure 9 illustrates how double-loop learning in the M&MC can lead to appropriate system changes within an organization.
The discussion of issues that arise from review of adverse events can lead to new knowledge which, when shared broadly, can lead to system changes.

**Figure 9:** Double-loop learning as occurring in the M&MC

Interestingly, the focus of the observed M&MCs was on double-loop learning. The presence of single-loop learning was not observed in any of the three Cases. This is likely due to the fact that errors or close calls, being corrected via single-loop learning, were never raised or discussed at the M&MC. It is well known that single-loop learning is still pervasive in healthcare (Tucker and Edmondson 2003, Jeffs, Berta et al. 2012) and can represent missed learning opportunities for an organization. What is unclear is how organizations can learn from these types of errors within the context of the M&MC. A recurring observation in all three Cases of the M&MC was learning at a level between the single- and double-loop level. For example, close calls or adverse events were often raised however no clear recommendations or practice changes were generated as
a result of the discussion in the M&MC. This is what Jeffs et al. describes as “going into a black hole” (Jeffs, Berta et al. 2012). No formal feedback is provided from an organizational level. To prevent this potential barrier for learning and encourage healthcare workers to continue to report these types of errors, Jeffs et al. suggest including close calls on the agenda of M&MC and focus the discussion on how these are detected and responded to and how the organization can put into place policy or practice changes to prevent their recurrence (Jeffs, Berta et al. 2012). Single-loop learning may therefore still have an important role in the M&MC.

In addition to moving from single- to double-loop learning, learning organizations must also be able to “unlearn”. In other words, organizations must be able to let go of past behaviours, which have been unsuccessful. Unlearning has been shown to be an essential component of organizational learning in the management literature (Hedberg 1981, Clark, Hayes et al. 1987). Hedberg best describes the process: “Understanding involves both learning new knowledge and discarding obsolete and misleading knowledge. The discarding activity – unlearning – is as important a part of understanding as is adding new knowledge” (Hedberg 1981). The inability to properly unlearn can hinder an organization’s ability to learn new knowledge. This is especially seen in healthcare. Garside argues that norms and conventional wisdom within healthcare institutions must be challenged and that “the difficulty experienced by many senior health managers is ‘letting loose’ while keeping an appropriate level of accountability, giving the room and space for individuals to do what their values dictate that they should” (Garside 1999). This can be especially challenging in the context of
the M&MC. The development of new policies or procedures in order to change prior
behaviours was described in all three Cases studied. However, what is unclear is how
successful the implementation of these policies or procedures was.

4.3 Team learning processes in the M&MC

Team learning processes include framing, reframing, experimenting, crossing
boundaries and integrating perspectives (Table 1). When teams reflect on their actions
and make changes to improve future performance, they learn (Reagans, Argote et al.
2005).

Table 1: Definition of Team-Learning Processes (Kasl, Marsick et al. 1997).

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<tr>
<th>Learning Process</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Framing</td>
<td>Framing is the group’s initial perception of an issue, situation, person, or object based on past understanding and present input.</td>
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<tr>
<td>Reframing</td>
<td>Reframing is the process of transforming that perception into a new understanding or frame.</td>
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<tr>
<td>Experimenting</td>
<td>Group action is taken to test hypotheses or moves, or to discover and assess impact.</td>
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<tr>
<td>Crossing boundaries</td>
<td>Individuals seek or give information, views, and ideas through interaction with other individuals or units. Boundaries can be physical, mental, or organizational.</td>
</tr>
<tr>
<td>Integrating perspectives</td>
<td>Group members synthesize their divergent views such that apparent conflicts are resolved through dialectical thinking, not compromise or majority rule.</td>
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The Chair of the Departmental M&M Committee in Case 1 shares his vision of team
learning during his interview:

“I would like to think that when people left today, they were more informed about (topic discussed). They were more likely
to diagnose it correctly. They were more likely to treat it appropriately quickly and that they are better informed on the resources that are available to them to either learn, diagnose or treat. It was basically an elaborately constructed plan.” (Case 1 - Chair, Department M&M Committee)

Team learning was also evident in Case 2.

“Like I said, it is not always just for the person whose case it was, in fact, it is always more for the rest of the group to learn from that because hopefully the person whose case it was has already spent a lot of time thinking about it and working through it with the fellows, kind of looking at what could we have done better.” (Case 2 – Division staff)

“Usually, it is learning from what happened to the patient and not necessarily ‘these are the things that you need to change in the hospital’. It’s more next time you have a patient that has this problem, whether the M&M was your case or you just happened to be in the room, you will know how to try and avoid that complication.” (Case 2 – Division Director and M&MC Chair)

By virtue of being in attendance at the M&M Committee, individual members of the team can learn from each other. The team learning process of “crossing boundaries” (Table 1) seeks to accomplish this exact goal. Individuals seek or give information and ideas through interaction with other individuals. This interaction was noted in my observations of all three Cases. In addition, integrating new knowledge that can arise from the M&M Committee is a key step in team learning. One of the perceived advantages of the Death Review Committee in Case 3 is its interdisciplinary team membership.

“And so physicians kind of traditionally have used morbidity and mortality rounds, but there’s really no good process to it, and so it happens in silos, you know people all say we should have done this, this and this but nobody takes that and does it, it’s kind of a discussion as opposed to an action. […] Nobody integrates the information to come together. […] So (we’re) really starting to integrate the system.” (Case 3 – Director of
This could allow for knowledge to be shared broadly across the organization. This was also evident in Case 1 with a Hospital-wide M&M Committee which itself has an interdisciplinary membership and is responsible for identifying hospital-wide issues and trends arising from the submitted M&M minutes from each department. Although the M&MC in Case 2 did not formally report to a hospital-wide committee, one of its staff, a key player in the creation of its M&MC process, also has a leadership role in the hospital’s medical operations.

“I think we do better than most on actually following up when we identify a system issue. We are also a little bit fortunate that (the Vice-President of Medical Operations) is in our division but has moved to this bigger hospital role so he is also an easy liaison for us to say, well this is a bigger hospital [...] system issue. We have it easier than other divisions because we have that connection to making sure that information gets passed on. I am pretty confident that all divisions feel that they have that access to him and to do that he is at our meetings so it is even easier.” (Case 2 – Division staff)

**Conditions that support learning**

Several enabling conditions, which support effective team learning, have been reported in the literature (Table 2). Teams that learn more effectively share three essential characteristics – (1) they were designed for learning, (2) leaders framed the challenge in such a way that team members were highly motivated to learn and (3) leader’s behaviour created an environment of psychological safety (Edmondson, Bohmer et al. 2001).
Table 2: Definition of Team-Learning Conditions (Kasl, Marsick et al. 1997).

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<thead>
<tr>
<th><strong>Condition</strong></th>
<th><strong>Definition</strong></th>
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<tr>
<td>Appreciation of teamwork</td>
<td>This condition includes the openness of team members to hearing and considering others' ideas. It also reflects the degree to which members value playing a team role.</td>
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<tr>
<td>Individual expression</td>
<td>Reflected in this condition is the extent to which team members have the opportunity to give their input in forming the team’s mission and goals, influence the team’s operation on an ongoing basis, as well as feel comfortable expressing their objections in team meetings.</td>
</tr>
<tr>
<td>Operating principles</td>
<td>This condition reflects the extent to which the team has organized itself for effective and efficient operation; how well the team has established a set of commonly held beliefs, values, purpose and structure.</td>
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In Case 1, it was evident that both the Departmental and Hospital M&M committees were designed for learning. Their members were highly motivated and engaged.

“They (Department M&M committee members) 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)

“I think the strength (of the Hospital M&M committee) is the membership. We have leadership at the table, which is very important. […] Those people can make changes. […] They are very passionate about the committee. It’s an action-oriented committee.” (Case 1 – Member, Hospital M&M committee)

These qualities were also present in the Division staff of Case 2 as well as the members of the Death Review Committee in Case 3.

“I think (we) are naturally self-critical in evaluating things because there is so much hanging in the balance and there are so many things that you can do to a patient to make things really, really bad and obviously there are so many things you can do to help. I think we are naturally self-critical people but I think (participating in the MM&C) sort of formalizes that and
makes you strive for continuous improvement.” (Case 2 – Division Fellow)

“We have a really good group now. They’re very very engaged and they have been for the last few years. [...] And they’re good, they question across. They’re starting to get the learning between themselves. You know surgery will talk about a case, and then peds or oncology will say, well wait a minute, how come, why do you do that? Because then they start to make the links, right? Whereas before I think people would talk about their cases and people just waited to talk about their cases, but I’m not sure they actually were really learning from each other, but it feels different now.” (Case 3 – Director of Patient Experience (Quality and Performance) and member of the Death Review Committee)

During the observation of the M&M in Case 1, the Chair of the Department M&M committee framed the discussion in order to enhance learning around the particular topic being reviewed.

“I also want a discussion on what we can change. I feel like I can’t influence at all what happened clinically. You just have to present the facts and you present them without judgment. [...] I find that as time goes on I can very much influence what the discussion is and how the discussion takes place. [...] I was actually trying to change behaviour a little bit and change mentality a little bit” (Case 1 - Chair, Department M&M Committee)

Throughout my observations in all three Cases, the audience was very much engaged with many participating in the discussion and sharing their experiences. The Chair of each committee led the discussion while asking attendees for similar experiences and many experienced staff in attendance shared clinical “pearls” throughout the meetings. The Chairs played an active role in challenging committee members to learn from each case 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. It has occurred to me, or I have been told that, in previous iterations, the process was more perfunctory in terms of we have to review the case – she was old, she died, it happens, next. Right? And I think we have changed that to say look, we’re reviewing the case on purpose and those things are all true, she was old and she was sick and she did die, but there could still be something to learn from it. [...] I think (that) is a strength of the committee.” (Case 3 – Chair, Death Review Committee and Chair, Medical Advisory Committee)

It was also clear that committee members were motivated to learn, including trainees.

“We also kind of have our own pseudo M&M rounds. [...] We all kind of sit together for lunch and when something goes array you kind of share it with your colleagues.” (Case 1 – Chief Fellow)

Finally, psychological safety is a critical enabler of team learning (Edmondson 1999, Edmondson, Bohmer et al. 2001, Tucker, Nembhard et al. 2007). It was clear from the observation of the M&MC that they were being run in a psychologically safe environment. The setting was usually light, collegial and candid. There were several non-confrontational questions and several trainees participated in the discussions. About a resident’s comment during the meeting in Case 1:

“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 at the staff people’s expense. I don’t think, from what I hear, they wouldn’t feel that way elsewhere.” (Case 1 - Chair, Department M&M Committee)
Similarly, trainees in Case 2 are actively involved in selecting cases for review and do so in an open and supportive environment.

“Just the way our group is, enough people hear about what is going on and it is hard to say don’t present that. A lot of people have said, have delayed and said ‘I don’t think that is a real complication’ but the fellows feel pretty comfortable and I think we have created a good environment for them that if they are getting push back from one of us, they have enough support to come to me or Dr. (M&MC Chair) or Dr. (Vice-President Medical Operations) and say ‘I think I should present this’ and the answer is almost unanimously ‘yes, you should present it’” (Case 2 – Division staff)

Although trainees are not involved in the Death Review process in Case 3, the Patient Safety Specialists, who conduct the initial chart review, work collaboratively together with the physician reviewers.

“The reviewers have a really good relationship with the physicians which I think is important. No concern is too small, no referral is inappropriate or not good enough for them and if we still have concerns that aren’t addressed, we feel comfortable saying, ‘that didn’t answer my question. I would like to see a bit more on that’. So we have a very collegial relationship with everybody, which I think is good.” (Case 3 – Patient Safety Specialist and member of the Death Review Committee)

Overall, the environment in all three Cases was described as transparent, open, benign and supportive.

“In terms of the environment, we try to have a very open discussion which I think the group maintains professionalism in a reasonable manner so people don’t scream and yell and throw stuff at each other or anything and it is not meant to be punitive in any way […] Old school […] programs, when you presented an M&M, you were always subject to being flailed for whatever complication occurred. That is very much not the environment here.” (Case 2 – Division Director and M&MC Chair)
Modes of team learning

The final element of team learning includes modes of functioning as a learning system (Figure 3).

Figure 3: Modes of Team Learning, adapted from (Kasl, Marsick et al. 1997).

Since 2006, when the Departmental M&MC process was revised in Case 1, there has been a shift from a fragmented mode of learning to a pooled and even synergistic mode of learning. There has been an increase in the number of reviews presented, the M&MC attendance, the non-staff M&MC attendance, number of staff presenting M&M cases and self-reporting. This has led to increased sharing between individuals within the Department (Pooled Mode of team learning). Leadership at the Hospital level has also made a difference in how each Department/Division learns from their M&MC. They
are driven to learn from each case presented and this new learning is fed-back to the Hospital M&M committee.

“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)

Evidence of a pooled mode of learning was seen throughout my observations in Case 2 when many in attendance shared their personal experiences relating to a particular case. Similarly, outcomes from the M&MC in Case 2, such as the creation of new guidelines, protocols or procedures, provide examples of a synergistic mode of learning. The Death Review Committee from Case 3 showed a clear evolution from the fragmented mode of learning all the way to the continuous mode. In fact, they are ensuring that synergistic learning continues.

“From what I have heard from other people who have been on (the committee) much longer than me is the attitude before was kind of like ‘ya, that was surgical misadventure’ so there wasn’t that sort of ‘let’s look to improve’ kind of lens. I do see that now. […] I think certainly (the Chair), and a lot of the docs, looking at it, like, maybe we didn’t do anything wrong but what could we have done better or differently last time.” (Case 3 – Patient Safety Specialist and member of the Death Review Committee)

“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, because in the beginning, people were like, you know, it was a very confidential meeting nobody talked about it outside, like it was kind of and it still is, like we don’t talk about specifics, but I think people are starting to have some comfort with sharing the cases in a generic way that aren’t identifying and sharing learning.” (Case 3 – Director of Patient Experience (Quality and Performance) and member of the Death Review Committee)
Several strategies were put into place when designing their Death Review Process to ensure a sustainable and continual learning process. These include dedicated reviewers who continually improve and sustain the initiative, program- and unit-specific results, which are presented biannually to management teams to share learnings with front-line staff and clear accountability and reporting frameworks.

It is clear that team learning and its processes were evident across all three Cases described. However, it remains challenging to actually measure how individuals and teams are actually learning. These limitations will be discussed in Chapter 5.

4.4 Organizational Memory in the M&MC

Organizational memory has been defined as the ability of an organization to retain knowledge, in various ways, in order to facilitate its access when needed at a later time (Walsh and Ungson 1991). Organizational memory was evident in all three Cases, which used several knowledge reservoirs to house information gained from reviewing adverse events. However, some Cases were more effective in achieving this than others. In Case 1, all case reviews are coded and entered in a de-identified fashion within the Department M&M database. All findings, minutes and recommendations from the M&MC are entered as well. Action plans, recommendations and changes to policy are emailed to department members and displayed within the department on a designated M&M notice board. Clinical issues of particular importance are re-circulated at regular intervals. The Department’s Patient Safety, Quality and
M&M Handbook also contains information and educational material on close calls, trends, and recurring issues as well as rare events with significant outcomes. Finally, at the Hospital level, a hospital M&M template and database was established in 2013 and houses recurring trends and issues reviewed within all the Department/Division’s M&MC.

“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)

In Case 2, all new knowledge gained from their M&MC was housed in their Safety Database. In addition to all the M&MC minutes, the database contains information regarding unplanned returns to the operating room, unplanned returns to the emergency department and surgical site infection data. Its main role is for internal improvement projects within the Division.

“It helps to have data if you are going to try and change something in the system.” (Case 2 – Division director and Chair of M&MC)

The database is also used by all the Divisions with the same Department to drive improvement projects at an institution level as well.

“It was part of my institution-wide effort to change the way we look at safety and things through the operating room because we couldn’t go to a practice and say ‘how often are kids going back to the ED?’, you know? That data didn’t’ exist anywhere. We defined what we thought were the important fields and then built a database to supply the divisions with the numbers, my assumption being if they had their data and it wasn’t as good as they wanted it to be then we could engage them in doing the work to improve it, but in the absence of the data everybody’s just got an anecdotal story and most people didn’t think they really had a problem.” (Case 2 – Senior Vice-President, Medical Operations and Division staff)
In addition to the Safety Database, knowledge is also shared locally within Division members via a corkboard in a hallway within the Division offices. Rapid cycle improvement projects stemming from prior M&MC case reviews are also posted.

The Death Review Committee in Case 3 established a clear framework for how new knowledge gained from their reviews would be shared and stored. At a broad level, regular reports are sent to the corporate Quality and Patient Safety Steering Committee and the Medical Advisory Committee. Locally, program- and 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.

“We do a report that goes out to the program directors and then they would share it within their teams, and then their patient safety specialists could go out and talk to their teams and say, you know, ‘here’s the stuff that’s going on’. It goes to IPAC, which is the inter-professional group, it goes to MAC, so it's shared in different ways.” (Case 3 – Director, Patient Experience (Quality and Performance) and member, Death Review Committee)

“We do have a rigorous process of tracking numbers of events and we present (a report) that goes forward to the quality committee and the board and [...] in a sense of occurrence rates, of various different things, and in comparison to previous years what the death rates look like and causes of death.” (Case 3 – Chair, Death Review Committee and Chair, MAC)

It is clear that multiple knowledge reservoirs were being created by all three Cases to ensure that new knowledge stemming from their reviews is being retained
within the organization. Table 4 summarizes the knowledge reservoirs used in the M&MC in each Case studied.

### Table 4: Knowledge reservoirs used in the M&MC

<table>
<thead>
<tr>
<th>Knowledge reservoir</th>
<th>Description (Virani, Lemieux-Charles et al. 2009)</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>People</td>
<td>Organizational members carry information about organizational best practices, past experiences</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Routines</td>
<td>Standard operating procedures</td>
<td>(Hospital requirement to hold regular M&amp;MCs)</td>
<td></td>
<td>(Organizational requirement to hold regular Death Reviews)</td>
</tr>
<tr>
<td>Artifacts</td>
<td>Documents such as policies and procedures, documenting systems, information technology, reports, educational manuals, etc.</td>
<td>(Hospital policy on running M&amp;MC, M&amp;M documentation template, Department M&amp;M database, Department's Patient Safety, Quality and M&amp;M handbook)</td>
<td>(Safety database, M&amp;M PowerPoint slides template, M&amp;M template for Safety database)</td>
<td>(Death and Adverse Event Review Policy, Department Death Review Committee Meeting Report, bi-annual summary report, Safety Occurrence Reporting Database)</td>
</tr>
<tr>
<td>Relationships</td>
<td>Relationships between people</td>
<td>(Relationship between Department M&amp;M Chair and Hospital M&amp;M Committee)</td>
<td>(Relationship between Division members and Vice-President of Medical Operations)</td>
<td></td>
</tr>
<tr>
<td>Organizational information space</td>
<td>Physical and temporal space that allows for organizational members to share information (e.g. conference rooms, emails, hallway conversations, etc.)</td>
<td>(M&amp;M outcomes emailed regularly and displayed on a designated M&amp;M notice board)</td>
<td>(M&amp;M outcomes displayed on a designated M&amp;M notice board)</td>
<td></td>
</tr>
<tr>
<td>Culture</td>
<td>Values, beliefs and attitudes</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Structure</td>
<td>Roles (expectations of individuals), reporting relationships</td>
<td>(Specified M&amp;M Chair, all staff members expected to report events to Department M&amp;M Committee, expectation to report findings to Hospital M&amp;M Committee)</td>
<td>(Specified M&amp;M Chair, fellows expected to collect and present all cases)</td>
<td>(Specified M&amp;M Chair, specified role of Patient Safety Specialist and Departmental Death Review Committee Chairs in reviewing cases)</td>
</tr>
</tbody>
</table>

A critical role of organizational memory is to ensure that new initiatives are sustained (Stein 1995, Virani, Lemieux-Charles et al. 2009). Berta and Baker suggest that the number of reservoirs accessed by a new safety initiative is directly related to its retention (Berta and Baker 2004). It is unclear whether the strategies used by the
Cases studied led to sustained knowledge transfer and how new knowledge gained through the M&MC was further retrieved. For example, how is new knowledge gained from M&MCs shared with individuals or teams not in attendance? This question highlights the importance of using a variety of knowledge reservoirs in order to facilitate learning at the individual, team and organizational level. Furthermore, although each organization spent energy in capturing their learning from the M&MC in various knowledge reservoirs, it remains unclear how often or how effectively the information stored is being used.

4.5 Safety Culture

At a team level, open communication and information sharing promote learning, which can ultimately lead to the fostering of a culture of safety (Chuang, Ginsburg et al. 2007). Safety culture has been defined as “an integrated pattern of individual and organizational behaviour based upon shared beliefs and values that continuously seek to minimize patient harm that may occur from the process of care delivery” (Aspden and Institute of Medicine (U.S.). Committee on Data Standards for Patient Safety. 2004). Its emphasis is focused on a systems approach to dealing with errors, rather than individual blame (Reason 1997). It has been shown that fostering a patient safety culture resulted in better adverse event reporting, overall improvements in care and improved financial results for the institution (Odwazny, Hasler et al. 2005).

Elements of a safety culture were evident across all three Cases. The Chair of the Department M&M Committee in Case 1 has made it clear to all new trainees that
they are working in a culture of safety and all department members are encouraged to share and learn from each other. This is clearly stated in the Department’s Patient Safety, Quality and M&M Handbook:

“We encourage all members of the Department to fill out an incident report on the Hospital Reporting System but you should also feel free to approach any member of the M&M committee and inform them that you may have a case or item for review.” (Case 1 - Patient Safety, Quality and M&M Handbook)

“The impression or what’s trying to be put out there is that yes, feel free to come and share your thoughts. […] I also like how candid they are essentially. Where it’s like you know, these are the facts, we are all human, we are all going to make mistakes and maybe we should recognize this sooner but look this is what happened and here’s how we can make sure it doesn’t happen again.” (Case 1 – Chief Fellow)

Similarly, supporting a culture of safety has been critical to achieving the safety goals in Case 2’s institution.

“I think, particularly in this institution, because we have such a focus on safety, they will sometimes identify system factors that actually may not have anything to do with the actual patient but there are things that didn’t work well in the system that should be improved.” (Case 2 – Division Director and M&MC Chair)

“We are sort of like comfortably patting ourselves on the back saying we are doing a pretty good job. A pretty good job doesn’t fit very well if you kill a kid in your operating room. Pretty good doesn’t feel good after that. I think we have completely changed how we respond. But I think that has been an institutional thing as well. […] Hospital-wide, there has been that sort of shift in the way we think about it.” (Case 2 – Senior Vice-President, Medical Operations and Division Staff)

Finally, the vision of zero preventable deaths in Case 3 was clearly the driving force for the updating of its Death Review Process. This led to a shift in the institution’s culture towards one of patient safety and learning. Attendance of key leaders within the
organization at the Committee was also critical in the ongoing development of a learning culture that is focused on opportunities to improve safety.

“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, like this is just one process. Like there's a hundred different things going on. So critical incident process has really changed how people think because I mean when we first started doing root cause analysis on critical incidence, it was like oh my god, you could have heard a pin drop, but now once they've sat through a few and they realize it's not blaming at all, in fact, they walk out and people are like, ‘oh my god, this was actually really great.’ But they're afraid when they come, right, so I think that culture has shifted as a result of many, many, many things we're doing in the organization.” (Case 3 - Director, Patient Experience (Quality and Performance) and member, Death Review Committee)

The three described Cases are all part of organizations that are attempting to promote a culture that values patient safety. In addition to the M&MC, a broader organizational strategy is needed to support this culture. It has been shown that such organizations will be more likely to learn from preventable events (Chuang, Ginsburg et al. 2007).
5.0 CONCLUSION

Historically, the purpose of the M&MC was to evaluate unfavourable results due to individual physician performance (Codman 1996). Medical errors and the individual practices that led to these errors were routinely reviewed while system failures were rarely examined (Leape 1994). One of the roles of the M&MC was shown to be punitive and individuals presenting at these meetings often felt humiliated and criticized (Biddle 1991). Its original goal was to improve patient care (Ruth 1945). However, as Atul Gawande describes, the M&MC is “a rather shabby approach to analyzing error and improving performance in medicine” (Gawande 2002).

Despite the M&MC being a ritual in medical practice, it has undergone significant changes over the last decades. The 1999 Institute of Medicine’s report on medical error has promoted a shift towards systems-based practice in healthcare (Kohn, Corrigan et al. 1999). Similarly, the M&MC has also undergone this shift towards systems-based analysis of medical error in order to fit into healthcare organizations’ new safety framework. Several studies have described the incorporation of a systems approach in analyzing adverse events in the M&MC (Bechtold, Scott et al. 2007, Szekendi, Barnard et al. 2010, Szostek, Wieland et al. 2010, Higginson, Walters et al. 2012). Higginson et al. suggest that the M&MC has the potential to improve the governance of patient safety within an organization without compromising professional learning (Higginson, Walters et al. 2012).
Learning in the M&MC has also been well described in the literature (Harbison and Regehr 1999, Murayama, Derossis et al. 2002, Gore 2006, Fussell, Farrar et al. 2009, Kuper, Zur Nedden et al. 2010). However, the focus of this learning has been at the individual level. Unanswered questions remain, including: ‘how do teams and organizations learn from the M&MC?’ and ‘can the M&MC lead to greater organizational learning?’ This study examined how learning from adverse events took place through the lens of organizational learning theory. Organizational learning theory, and systems thinking, suggest that learning from error in the M&MC would be optimized by particular organizational and team cultures. Indeed, in all three Cases of highly-functioning M&MCs described in this thesis, evidence of double-loop learning in a psychologically safe environment occurred with varying degrees of organizational-level learning. All three Cases, while running well-structured reviews of adverse events, utilized organizational memory strategies to ensure that new knowledge stemming from their reviews was being retained within the organization. However, it is unclear how new knowledge gained from the M&MC and stored in multiple knowledge reservoirs could be later retrieved. The presence of a patient safety culture was linked to the promotion of open communication and information sharing, thereby fostering learning from adverse events. The M&MC can therefore provide a context for organizational learning, allowing optimal learning from adverse events and promotion of systems changes.

There are several limitations to this study. Only three Cases were studied and selected by expert nomination. This may have led to a narrow representation of how M&MCs run across a variety of healthcare organizations. Increasing the number of
Cases studied may provide further support to the validity of the findings. Purposive sampling by expert nomination may limit the generalizability of the findings as well. Furthermore, adverse events may be reviewed across a number of different forums, outside of the M&MC. The findings of the present study could not be generalized to these other types of reviews. Therefore, the broader context of learning from patient safety events needs to be studied.

A limitation of organizational learning theory is the difficulty in measuring its outcomes. This is also the case in the M&MC. Goh et al. question whether measures that promote organizational learning are associated with increased organizational performance (Goh, Chan et al. 2013). Similarly, does team- and organizational-level learning in the M&MC lead to safer patient care? A randomized controlled trial would likely be needed to answer this question. Given the various objectives, formats and structures described in the literature, it would be challenging to complete such a study. Therefore, a question that must be answered first is: ‘how should an M&MC be best structured in order to promote organizational learning and systems thinking?’.

Based on what has been described in the literature and the Cases described in this study, several essential components within the M&MC must be present in order to maximize team- and organizational-level learning. This description is not meant to be prescriptive given the variety of contexts within which an M&MC can be run. Ideally, the M&MC should be clearly described in a hospital-wide policy in order for all departments to follow a standardized process. First, the M&MC must have clear goals and
objectives and its relationship with an organization’s safety framework must be explicit. This has the potential to facilitate organizational-level learning. The goals of the M&MC can be multiple, including teaching and education, improving patient safety and quality improvement as well as learning from adverse event analysis via systems thinking. Its membership must go beyond physicians (which has been historically the case) and include a multi-disciplinary team that is motivated to learn and translate that knowledge into action. Meetings must occur regularly to ensure learning momentum and follow-up of recommendations made in previous meetings.

M&MC leaders should be challenged to move away from individual-level learning and towards team- and organizational-level learning. Proper organizational leadership is critical, whether the leaders are present at the M&MC or work at arms-length with the M&MC members. The M&MC chair must be skilled at creating a psychologically safe environment to facilitate an open discussion and enhance team learning.

The M&MC chair should collect cases from multiple sources. Frontline staff should be encouraged to identify cases for review. The chair should also have access to his/her organization’s safety reporting database in order to select relevant cases. Preventable adverse events in addition to close calls must also be analyzed using team-based processes. Case selection must be a transparent process and must occur in a timely fashion. Cases can be presented by either trainees or faculty members and as many individuals who were involved in the case should be present at the meeting. A standard presentation format should be used.
Knowledge gained from the reviews should be stored in as many knowledge reservoirs as feasible. The chair or delegate should be charged with taking minutes of the meeting, using a standard electronic template. The electronic template of the meeting minutes will facilitate its transfer to other members of the organization. For example, the minutes can be summarized into an electronic database, which can then be shared with organizational leadership (i.e. hospital wide M&M committees, Risk Management, or similar safety monitoring committees). More importantly, new knowledge must be easily retrieved in order to sustain its transfer. A summary of “lessons learned” from each meeting should be communicated to members of the department. This can ensure that those not in attendance have access to the learnings achieved from each meeting. This summary can take the form of an e-mail or postings in the physical space within the department.

The above-described components may provide guidance on how to best structure an M&MC in order to optimize organizational learning. However, further studies are needed to demonstrate if these components in fact promote learning at a team- and organizational-level. Learning from patient safety events, both before and after the implementation of an M&MC model re-structured to promote organizational learning, would need to be well described using a Case study approach. Similarly, the findings would need to be reproduced across a variety of healthcare organizations. Ultimately, the question of whether an M&MC leads to safer patient care still needs to be answered.
In summary, despite its traditional role in medicine, the M&MC has undergone significant changes in order to fit within the new safety framework that healthcare organizations are adopting. Organizational learning theory can provide the elements necessary to facilitate learning from adverse events from a systems standpoint. The present study describes three Cases of well-structured M&MC, which contain several of these elements providing a context for organizational learning, allowing optimal learning from adverse events and promotion of system changes. The importance of the M&MC process is best highlighted by McIntyre and Popper: “To learn only from one’s own mistakes would be a slow and painful process and unnecessarily costly to one’s own patients. Experiences need to be pooled so that [clinicians] may also learn from the errors of others. This requires a willingness to admit that one has erred…It calls for a critical attitude to one’s own work and to that of others”.
References


Green, J. and N. Thorogood (2009). Qualitative methods for health research. Los Angeles, SAGE.


Appendix A: Interview Guide

A. M&MC MEETING CHAIRS

1. Can you tell me about your role in the M&MC?
2. What is the role of the M&MC at your site?
3. Can you describe the M&MC process?
4. What happens as a result of the meetings?
   a. How do you think information arising from the M&MC should be handled?
5. How does your department learn from the M&MC?
6. What are some strengths of the M&MC?
7. What are some weaknesses of the M&MC?
   a. How would you improve the M&MC?
8. Has the M&MC in your division ever been evaluated?

B. FRONTLINE STAFF

1. Can you tell me what you know about the M&MC at your site?
2. What do you see as the main purpose of the meeting?
3. What are some strengths of the M&MC?
4. What are some weaknesses of the M&MC?
5. What do you think should happen as a result of the meetings?
6. Do you think anything needs to be changed? If so, how would you improve the M&MC?
7. What is your role in the M&MC?
   a. Do you receive any training/education around this role?

C. ADMINISTRATORS

1. What is the role of the M&MC in your department?
2. What are some strengths of your M&MC?
3. What are some weaknesses of your M&MC?
4. How do you think learning takes place at the M&MC?
5. How do you think information arising from the M&MC should be handled?
6. How does your Hospital view the M&MC?
   a. With respect to the process?
   b. With respect to its role? (E.g. quality assurance, education, patient safety)
## Appendix B: Case 1 – M&M documentation template

### Morbidity & Mortality Review Minutes

**Division of**

**Meeting Date:**

**Attendance:**

**Patient Initials:**

**MRN:**

**Adm. Date:**

**DOB:**

#### Mortality and Morbidity

<table>
<thead>
<tr>
<th>Mortality</th>
<th>Date of Death</th>
<th>Morbidity</th>
<th>Date of event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autopsy Requested</td>
<td>Coroner Notified</td>
<td>Safety Report</td>
<td>#</td>
</tr>
<tr>
<td>Autopsy</td>
<td>Coroner Accepted Case</td>
<td>Details of report</td>
<td></td>
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<td>Organ/Tissue Donation requested</td>
<td>Coroner’s Autopsy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consent for Organ/Tissue Donation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cause of Death on Death Certificate:**

**Brief History:**

---

### Issues identified From Review (Check all that apply)

- Mortality with no identified issues
- Medication safety
- Communication/Handover
- Transfer in / between hospitals
- Unanticipated complications from a procedure
- Diagnostic issues (missed or delayed diagnosis)
- Health Care Acquired Infection
- Specimen Integrity
- Equipment

**Resource issues (staffing/beds)**

**Failure to appreciate deterioration**

**Supervision of trainees**

**Delay in treatment**

**Code Blue**

**End of Life care**

**Vascular Access**

**Other issues - Specify**

### Outcome, Preventability & Disclosure

**Outcome**

- Good catch/Near miss (did not reach the patient)
- Minor/No harm
- Minor harm /potential for major event
- Major harm (resulted in/may have contributed to permanent disability)
- Death

**Preventability**

- Yes
- No
- Possibly

**Disclosure**

If there was a significant harm from an adverse event, not related to a medical condition, was the disclosure conversation documented?

- Yes
- No
- N/A

**Recommendations**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>No recommendations</td>
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</tr>
</tbody>
</table>

1.  
2.  
3.  

**Comments**

**Signature:** Paste Signature picture here

**CONFIDENTIAL – DO NOT CIRCULATE**
Appendix C: Case 2 – M&MC PowerPoint slides template

**M and M template slides**
- 2012-2013 Edition
- No more than 9 slides/10 minutes
- Use format outlined here
- Case presentation (up to 2 slides)
- Preventability (1 slide)
- Level of Harm (1 slide)
- Codman Classification (1 slide)
- What we did wrong
- Lessons learned (1 slide)
- Next time I do this I will...
- Information/literature about complication (2 slides)

**Case Presentation**
- Slide 1

**Case Presentation**
- Slide 2

**Preventability**
- Yes
- Potentially
- No

**Level of Harm**
- Not Due to Error
- Circumstances with Capacity to Cause Error
- Did Not Reach the Patient
- Reached Patient, No Harm
- Reached Patient, Required Monitoring, No Harm
- Temporary Harm, Required Intervention
- Temporary Harm, Required Hospitalization
- Permanent Harm
- Required Intervention to Sustain Life
- Contributed to Death

**Codman Classification**
- Error in Judgment/Diagnosis
- Error in Technique
- System Failure
- Patient Factors

**Lessons Learned**
- "The next time I do this I will..."
- Ideally by core competency, as possible (1-3 competencies at most)
- Patient care
- Medical Knowledge
- Practice-based learning and improvement
- Interpersonal and communication skills
- Professionalism
- Systems-based practice.

**Information about complication**
- Papers/studies etc.
**Appendix D**: Case 2 – M&MC template for Safety Database

<table>
<thead>
<tr>
<th>MRN</th>
<th>Initials</th>
<th>DOB</th>
<th>Procedure Date</th>
<th>Attending</th>
<th>Scribe</th>
<th>Date Reviewed</th>
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**Complication:**

- **Diagnosis:**

**Comments & Outcomes:**

**Codman Classification:**

- Judgement Error:  
  - System Failure:  
- Technique Error:  
  - Patient Factor:  

**Narrative:**
Appendix E: Case 3 – Departmental Death Review Committee Meeting Report

<table>
<thead>
<tr>
<th>ID #</th>
<th>Death Date/ Location</th>
<th>Issues identified</th>
<th>Follow-up actions</th>
<th>Person responsible</th>
<th>Program / Service Director aware (name)</th>
<th>Referral to Chief of Staff / Chief Nursing Officer Recommended?</th>
<th>Has discussion with family taken place since death?</th>
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</thead>
<tbody>
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