

the Ottawa M&M Model:

A Guide to Enhancing Morbidity & Mortality Rounds

Included in this package:

For **Presenters**

Case Selection and Analysis guide

Presentation Preparation template

Tips for enhancing your session

For **Facilitators**

Guide to preparing for and administering M&M rounds

Recommendations on moderating M&M rounds

Tips for increasing the effectiveness of M&M rounds

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Kwok ES, Calder LA, Barlow-Krelina E, Mackie C, Seely AJ, Cwinn AA, Worthington JR, Frank JR. Implementation of a structured hospital-wide morbidity and mortality rounds model. BMJ Qual Saf. 2016 Jun 29. pii: bmjqs-2016-005459. doi: 10.1136/bmjqs-2016-005459. [Epub ahead of print]

Calder LA, Kwok ES, Cwinn AA, Worthington J, Yelle JD, Waggott M, Frank JR. Enhancing the quality of morbidity & mortality rounds: the Ottawa M&M Model. Acad Emerg Med 2014; 21(3):314-321

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Special recognition also goes to the Department of Emergency Medicine at the Ottawa Hospital, Ottawa, Canada. You are truly an amazing group of individuals who are always open to new ideas in the endless pursuit of improving quality of care for your patients. The wonderful, blame-free collegiality amongst all members of the Department made it the ideal birthplace of the development and trial of a novel M&M rounds model.

Finally, we must extend our heartfelt thanks to the mentors throughout this process: Jason Frank for your ongoing academic and professional support; Adam Cwinn for believing and investing in us; and Jim Worthington for your wisdom in plunging us into the world of quality improvement & patient safety.

- Lisa Calder & Edmund Kwok

¹ Calder LA, Kwok ES, Cwinn AA, Worthington J, Yelle JD, Waggott M, Frank JR. Enhancing the quality of morbidity & mortality rounds: the Ottawa M&M Model. *Acad Emerg Med* 2014; 21(3):314-321

² Kwok ES, Calder LA, Barlow-Krelina E, Mackie C, Seely AJ, Cwinn AA, Worthington JR, Frank JR. Implementation of a structured hospital-wide morbidity and mortality rounds model. *BMJ Qual Saf*. 2016 Jun 29. pii: bmjqs-2016-005459. doi: 10.1136/bmjqs-2016-005459. [Epub ahead of print]

BACKGROUND

ORIGINS OF M&M ROUNDS

The first documented morbidity and mortality review activity in modern medicine occurred at the beginning of the 20th century. Ernest Codman, a surgeon at Massachusetts General Hospital, developed and published the idea of an “End Result” system - individual patients were tracked with regards to their clinical course, and identified errors would be reviewed with the goal of preventing future ones.³ However, Codman’s system was framed more as a physician-focused punitive process rather than a patient-centered quality and safety activity, and the medical community rejected this idea.

Two decades after Codman’s initial work, a group of anesthesiologists in Philadelphia created the Anesthesia Mortality Committee in 1935, where peri-operative mortalities would be submitted for open peer review with the goal of developing recommendations for improved future management of similar cases.⁴ This seminal work laid the foundations for M&M rounds as we know them today. The Accreditation Council for Graduate Medical Education declared regular M&M review activities as a mandated requirement for residency training certification in 1983,⁵ and M&M rounds have become ubiquitous across specialties in modern medicine.

THE PROBLEM WITH CURRENT M&M ROUNDS

Despite decades of regular M&M rounds held throughout medicine, there has been very little published evidence on the overall quality of these rounds, and even less on their effectiveness in reducing preventable medical errors. A number of observational studies have shown that while M&M rounds were regularly held by many different groups, only a small minority of them had explicit discussions around medical errors^{6,7} or formal structures in place to assist in proper case analyses.^{8,9} Only a few studies

"We can't solve problems by using the same kind of thinking we used when we created them." - Albert Einstein

³ Mallon B. Ernest Amory Codman: The End Result of a Life in Medicine. Philadelphia, PA: WB Saunders; 2000

⁴ Ruth HS. Anesthesia study commissions. JAMA 1945;127:514-517

⁵ Accreditation Council for Graduate Medical Education. Essentials and information items. Graduate Medical Education Directory 1995-1996

⁶ Pierluissi E, Fischer MA, Campbell AR, et al. Discussion of medical errors in morbidity and mortality conferences. JAMA. 2003;290:2838-2942

⁷ Orlander JD, Fincke BG. Morbidity and mortality conference: a survey of academic internal medicine departments. J Gen Intern Med. 2003 Aug;18(8):656-658

⁸ Bal G, Sellier E, Tchouda SD, Francois P. Improving quality of care and patient safety through morbidity and mortality conferences. J Healthc Qual. 2014 Jan-Feb;36(1):29-36

⁹ Aboumatar HJ, Blackledge CG Jr, Dickson C, Heitmiller E, Freischlag J, Pronovost PJ. A descriptive study of morbidity and mortality conferences and their conformity to medical incident analysis models: results of the morbidity and or tacitly conference improvement study, phase 1. Am J Med Quality. 2007 Jul-Aug;22(4):232-8

(with narrow scope of specialty groups) have been published to definitively demonstrate any measurable impact on improved patient safety or reduced medical errors.

MAKING M&M ROUNDS EFFECTIVE

After a current state analysis of our own academic tertiary care hospital, we found 4 main reasons why M&M rounds (regardless of specialty) were ineffective:

1. For those clinical groups that hold regular M&M rounds, the actual goal/purpose of these rounds were unclear, or if stated at all, to both the presenters and the participants
2. Presenters were frequently tasked with M&M rounds activities without structured guidance on how to prepare a M&M case for presentation and discussion
3. Cases often entered around rare and unusual cases (fascinomas) with limited learnings and generalizability
4. There was a universal lack of explicit mechanisms for actioning any potential issues arising out of M&M rounds discussions

If one or more of these reasons apply to your group, then this guide may help you address them!

The Ottawa M&M Model (OM3) was developed in response to the perceived gaps listed above. A working group consisting of experts in patient safety, medical education and healthcare change management (in addition to frontline healthcare professionals) initially developed a guiding document to assist the average M&M rounds presenter in case preparation. Over time, additional important contributing factors to effective M&M rounds were realized and incorporated - the cumulation of these efforts evolved into the final OM3 approach that was implemented and evaluated across different specialties.^{10,11} In a nutshell, the critical components of the OM3 are summarized in Box 1.

This document is designed to provide guidance and advice for both a) individuals who are tasked with presenting cases at M&M rounds (i.e. the **Presenter**), and b) those who are responsible for organizing and moderating those rounds (i.e. the **Facilitator**). Our research and experience have demonstrated the importance of having a dedicated M&M

Box 1: Components of the OM3.

KEY COMPONENTS
Appropriate Case Selection
Structured Cases Analysis (Cognitive/System Errors)
Creation & Dissemination of Bottom Lines/Summaries
Development of Effector/ Administrative Pathway for Action Items
Encourage Inter-professional & Multidisciplinary Involvement

¹⁰ Calder LA, Kwok ES, Cwinn AA, Worthington J, Yelle JD, Waggott M, Frank JR. Enhancing the quality of morbidity & mortality rounds: the Ottawa M&M Model. *Acad Emerg Med* 2014; 21(3):314-321

¹¹ Kwok ES, Calder LA, Barlow-Krelina E, Mackie C, Seely AJ, Cwinn AA, Worthington JR, Frank JR. Implementation of a structured hospital-wide morbidity and mortality rounds model. *BMJ Qual Saf*. 2016 Jun 29. pii: bmjqs-2016-005459. doi: 10.1136/bmjqs-2016-005459. [Epub ahead of print]

“Champion” in a group, who can serve as both the **Facilitator** during M&M rounds discussion as well as the person to help ensure followup of any potential issues identified from those discussions. There may even be more than one **Facilitator** depending on the size of the group. While the **Presenter** section (and associated Appendices) can be used on its own by those preparing a M&M case, we recommend **Facilitators** to be familiar with all sections of this package.

Feel free to contact us if you have any questions or comments related to the OM3, or if you require PowerPoint templates for your presenters to use:

Edmund Kwok: ekwok@toh.ca

Lisa Calder: LCalder@cmpa.org

We would also just love to hear about how other centres are adapting the OM3 into their process, so drop us a line!

For **Presenters**

FOR PRESENTERS

So, you've been tasked with presenting a M&M rounds case at your clinical group's next M&M rounds...and if you're like many other of your colleagues, you might be experiencing any (or all!) of the following:

- slightly nervous about talking about “errors” or adverse outcomes
- don't have a case in mind and/or not sure where to find one
- unsure about how to approach analyzing the case
- feeling lost as to how to structure your presentation in maximize potential lessons out of this case

Have no fear! Read on for a step-by-step guide on how to prepare and deliver an effective M&M rounds presentation that's meaningful for your group. The OM3 is designed to help focus M&M discussions around potential issues that can happen to anyone, by providing a structured, blame-free approach. Who knows, in the process you may even learn a little bit more about quality and patient safety, and ultimately find this to be a fun and rewarding experience!

CHOOSING AN APPROPRIATE CASE

The first step is to find an appropriate case for your M&M rounds. It is important to recognize that not all cases with morbidity and/or mortality are suitable for discussion at rounds. You really want to maximize the valuable time the audience is spending at these rounds and focus the group's attention to issues that can help prevent similar future cases. As such, we recommend that cases presented at M&M rounds should have **all** of the following 3 criteria:

1. Adverse outcome
 - a. death, disability, harm or injury
 - b. near miss (potential harm avoided), for example, a patient given incorrect medication due to mislabeling of syringe - potential for harm but the patient ultimately wasn't affected
2. Preventable
3. Lessons to be learned about cognitive biases and/or system issues

While it may be tempting to present rare and unusual cases, or *fascinomas*, generally speaking they are often less impactful for M&M rounds discussion than learning from more common cases that have the potential to occur frequently in your group's practice setting. For example, a case of the “pain-free aortic dissection” that a physician might see once every 10 years, will be less impactful than M&M rounds discussions around a missed opportunity to give antibiotics in a patient with early sepsis. Fascinomas should be reserved for other medical education

*Tip: If you have the time, we suggest reading through the **whole** package before you actually begin doing any work towards preparing for your rounds. We are certain it will make your presentation more impactful!*

“When you hear hoofbeats, think of horses not zebras.” - Theodore Woodward

rounds such as interesting Case Rounds.

It is also important that you present a case *in which you were primarily involved in*. Often, potential factors that may have contributed to the case can only be more fully recalled and analyzed by those individuals in the patient's circle of care. Retrospective chart reviews by someone not involved in the case may provide a limited perspective, as many nuances related to cognitive biases and environmental factors (e.g. business aspects of running a clinic) are usually not documented. Having another person reviewing someone else's case may also create the setting for an unwanted "blame and shame" culture, instead of creating a blame-free environment where each individual in the group feels safe to openly discuss ways to improve quality of care and patient safety.

"Experience is simply the name we give our mistakes." - Oscar Wilde

With the above criteria mind, you can now start looking for a suitable case. Presenters often ask where one should even start looking, since many clinicians do not have a robust system in place to prospectively keep track of all their patients and any associated morbidity/mortality. In our experience here are some potential ways for you to identify a case:

- Cases identified in your group/hospital's patient safety database or voluntary reporting system
- Cases with an unexpected bounce-back or readmission
- Cases highlighted to you by Department Head or the coroner
- Cases where you were provided followup by a colleague or consultant
- Cases related to a patient complaint
- Cases which causes you to think about them long after they occurred
- Cases which highlight a recurring system issue/frustration

Tip: This may be an opportunity to prompt your Department/ Division Head to explore having an explicit adverse events surveillance system or database!

Remember, you can always ask advice from your group's M&M Rounds [Facilitator](#) for guidance and advice!

PERFORMING A CASE ANALYSIS

Now that you have a case selected, the next step is to do a proper case analysis in preparation for the actual M&M rounds presentation. Keep in mind that the ultimate goal of your M&M rounds is to discuss cases of adverse outcomes which provide lessons that may help prevent future adverse outcomes and improve quality of care. To that end, we recommend that you review your case from 2 perspectives:

1. Were there any *cognitive biases* that contributed to the outcome?
2. Were there any *system issues* which contributed to the outcome?

Cognitive Biases

Clinical decision making is an extremely complex process, and healthcare professionals often develop adaptive mechanisms (referred to as

heuristics) in order as we are faced with repeated similar experiences in a busy clinical environment.¹² There is a large body of psychology literature which has developed the widely accepted dual process theories (DPTs) of reasoning in trying to understand how we subconsciously utilize Type 1 (intuitive, fast) vs Type 2 (analytical, slow) processes, and how clinicians predictably make cognitive errors as a result of well-defined biases.^{13,14} It has been proposed that one of the best ways we can combat these decision making errors is to first explicitly be made aware of these biases, before we can then develop cognitive forcing strategies to prevent them in the future.¹⁰

To help you identify potential cognitive biases that may have contributed to your M&M rounds case, **Appendix A** provides a summary of some of the more common diagnostic cognitive biases. Remember that many of these are common “cognitive traps” that any one of your colleagues in the same situation could’ve be subject to; as human beings we are all subject to these regardless of level of training or expertise. Framing your discussions around these biases will help encourage an open, blame-free forum where lessons can be learned.

System Issues

System-level issues often relate to problem(s) beyond just the individual clinical or team, and pertains to how your clinical setting operates. The following is one example of how system issues can be categorized:¹⁵

Patient factors: e.g. any communication barrier (due to language, intoxication, obtunded, critically ill, etc), behaviour eliciting affective bias

Skill-set errors: e.g. procedural complications or errors in interpretation of ECGs, laboratory/diagnostic imaging tests

Task-based errors: e.g. failure of routine behaviours such as regular bedside care, attention to vital signs and appropriate monitoring - often reflects work overload

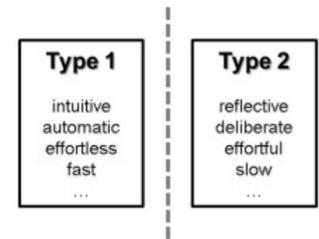


Figure 1. Type 1 and 2 dichotomy of Dual Process Theory in clinical decision making.

“It is an acknowledged fact that we perceive error in the work of others more readily than in our own.” - Leonardo da Vinci

¹² Croskerry P, Signal G, Mamede S. Cognitive debiasing 1: origins of bias and theory of debiasing. *BMJ Qual Saf* doi:10.1136/bmjqs-2012-001712

¹³ Kahneman D. *Thinking fast and slow*. Canada: Doubleday, 2011.

¹⁴ Jenicek M. *Medical error and harm: understanding, prevention and control*. New York: Productivity Press, 2011

¹⁵ Cosby KS, Roberts R, Palivos L, et al. Characteristics of patient care management problems identified in emergency department morbidity and mortality investigations during 15 years. *Ann Emerg Med*. 2008;51(3): 251-261

Personal impairment: e.g. personal factors that impact job performance such as fatigue, illness, emotional distress

Teamwork failure: e.g. breakdown in communication between team members, across shifts, between teams, and across specialty boundaries or due to inappropriate assignment of unqualified personnel to a given task - this includes resident and student supervision

Local environmental contributors: e.g. appropriate staffing, stocking, functional equipment, sufficient policies & guidelines

Hospital-wide contributors: e.g. access to patient services, consultants, inpatient beds, specialty treatments

Hospital administration contributors: e.g. budgetary constraints, hospital policies & guidelines

External contributors: e.g. paramedic services, provincial regulations and priorities, public health campaigns

Tip: Discuss with other individuals or care providers who were involved with the case. They may provide further insights - and perhaps even co-present with you!

There are often multiple cognitive/system issues at play to ultimately lead to an adverse outcome. Consider Reason's Swiss Cheese Model of error causation:

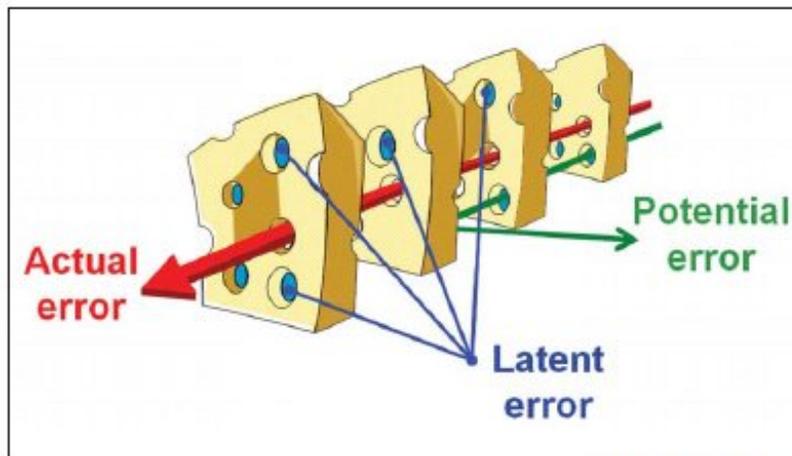


Figure 2: James Reason's Swiss Cheese Model¹⁶

The different layers can represent points throughout a patient's journey where cognitive and/or system errors could have been potentially prevented. Using such frameworks to systematically review your M&M

¹⁶ Reason J. Human error: models and management. BMJ. 2000;320(7237):768-770

rounds case will help you identify cognitive and system issues that may have gone unnoticed at first glance.

Framework for Surgical Specialties

Our experience with implementing the OM3 in various surgical groups have identified the need for a slightly different case analysis framework which reflected commonly understood processes of care. In consultation with surgeons, we have developed a Surgical Specialty Case Analysis Tool to help reframe cognitive/system issues as they relate to specific steps within the Pre-OP/Intra-OP/Post-OP continuum. Please refer to **Appendix B** to help you identify potential issues in your surgical M&M case.

M&M Bottom Lines

Now that you have finished analyzing your case, it is time to create “bottom lines” that summarize cognitive and system issues which are suitable for action by your group. When drawing lessons from your M&M rounds case, consider *action items* that could be made:

1. Any cognitive debiasing strategies
2. Education regarding evidence, practice guidelines, policies, procedures, use of simulation
3. Changes to the system and how the department/division works
4. Ways that the adverse outcome in a similar patient could be mitigated

Tip: Be wary of concluding “we should try harder next time”. This is unlikely to bring about any meaningful changes.

The following is an example of what a Bottom Lines slide may look like:

Department of
Emergency Medicine


The Ottawa M&M Model

M&M Rounds Bottom Line

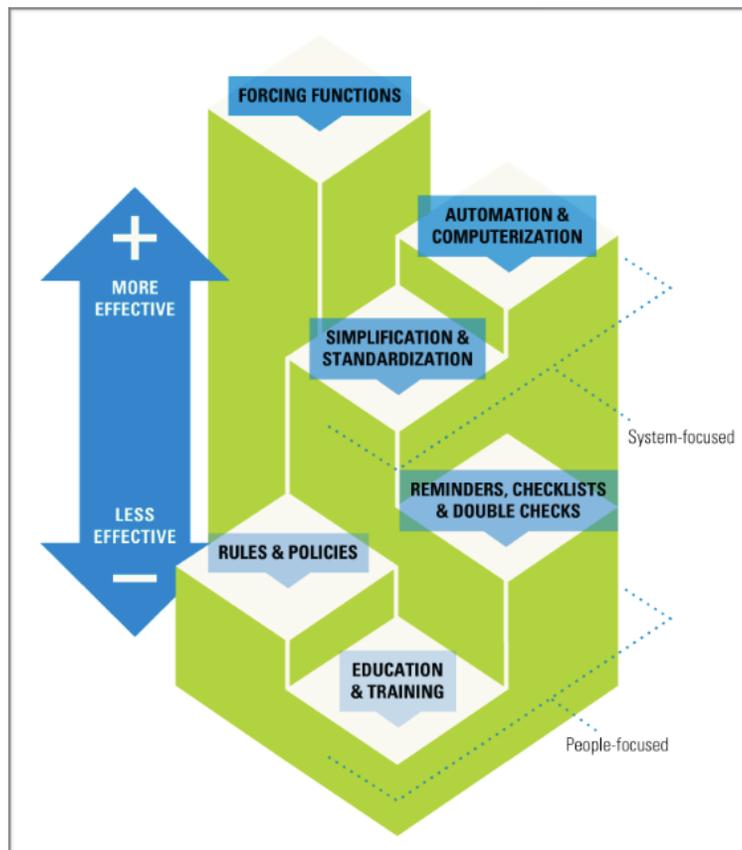
Case 1: [Massive hemoptysis and unknown DNR/Code status]

- Proactively seek resuscitation status of any arresting patient in the ED
- There is room for improvement in our current process of CPR designation
- Crash intubation in the setting of massive hemoptysis is best performed in the OR; a double lumen tube is a poor second

Action Items:

- Quality Committee to discuss the development of a guideline on the management of massive hemoptysis in the ED
- Quality Committee and leadership (MDs & RNs) to discuss enhancing the identification and communication of DNR status of patients in the ED< including admitted patients boarded in the ED

When contemplating your proposed actions and recommendations, be cognizant that certain types of interventions are much more effective and consistent than others in reducing errors and improving patient safety. The following diagram depicts the hierarchy of effectiveness, based on human factors theory, which ranks various categories of intervention based on their overall effectiveness:



“Every system is perfectly designed to get the results it gets.” - Paul Batalden

Figure 3: the Hierarchy of Effectiveness¹⁷

PREPARING FOR PRESENTATION

Time Structure

You are now ready to make the final preparations for your upcoming M&M rounds presentation. One of the most neglected aspects of traditional M&M rounds is proper planning around how much time to spend on different aspects of the case presentation. Instead of devoting a majority of the session to simple recounting of a case’s clinical details, you should spend a majority of the time sharing the findings of your thorough case analysis. We recommend splitting up your session into *thirds*: *one-third* for

¹⁷ <http://www.cassiemcdaniel.com/blog/hierarchy-of-effectiveness-process/>

describing the case to the audience; *one-third* for your analysis; and *one-third* for open discussion.

So, for a 30-min M&M presentation:

- 10 minutes for review of the case and state of evidence on current management
- 10 minutes for case analysis in terms of cognitive and system issues
- 10 minutes for discussion, review of bottom lines and consensus on potential action items

Slides

Every M&M case presentation should have a few mandatory slides (see Appendix C for templates):

- Title slide
- Goal of M&M rounds - opening with a reminder statement about the purpose of M&M rounds will help frame your audience's mindset, and focus blame-free discussions around improving quality of care and patient safety
- Confidentiality - there will often be rotating learners or new staff members at your rounds; it is good practice to always remind the audience about patient confidentiality
- Section slides
 - Case Presentation - remember not to spend too much time on this section, just enough information to set the stage for open discussion. Recall that there should not be any patient identifiers.
 - Case Analysis - walk through the cognitive/system issues you found during your review
 - Cognitive
 - System
 - Discussion - open this part of the presentation to the group. They may have further insights into other cognitive/system issues you didn't think of.
 - Bottom Lines

"By failing to prepare, you are preparing to fail." - Benjamin Franklin

Confidentiality

Please remember these rounds are confidential and we need to endeavour to protect the privacy of patients. No patient initials, dates, times, or names of staff involved should appear in your presentation. Different institutions operate under different medico-legal policies and legislations - be sure to check with your own institution's policies and consult the appropriate privacy officer for more details on how to structure your M&M processes for a safe, open, and blame-free environment.

Other Tips & Advice

- Think about whether you can make your rounds inter-professional and multi-disciplinary. Email the nurse manager and ask them to invite nurses involved in the case. Would it be helpful to have a pharmacist or social worker present? Are there consultants from other services you could invite? Other allied health members? Any of these individuals may even be willing to “co-present” the case with you!
- Involving patients and/or their families can be powerful in M&M rounds. If this seems appropriate, speak to the Head of your Department first to help you coordinate with Patient Care Relations and ensure it is done in a sensitive manner.
- Consider briefly discussion your selected case at least 1-2 weeks ahead of time with a colleague to confirm you have identified a clear cognitive/system issue. Check with your group’s M&M [Facilitator](#) for ideas and advice.

Tip: In order to maximize the impact of your M&M rounds, consider reviewing your bottom lines at your departmental quality & patient safety committee and prioritizing them for action!

For **Facilitators**

FOR FACILITATORS

So, you've been tasked with organizing and/or moderating your clinical group's M&M rounds...and like many others in your positions, you might be wondering:

- How often should we hold M&M rounds? How many cases should we review?
- Who should be invited to these rounds?
- How do I help presenters prepare their cases to have impactful discussions?
- What is my role during the presentations?
- What can I do to ensure meaningful actions arise out of M&M rounds?

The following few pages will aim to help provide some guidance to those questions.

PRE-M&M ROUNDS

Who to Invite

One of the critical components of the OM3 is encouraging inter-professional and multidisciplinary participation at M&M rounds (Box 1). Traditionally M&M rounds have been held in silos; physicians reviewing cases amongst themselves, hospital administration in another forum, and allied health professionals on their own, etc.. However, healthcare today is delivered in a team-based approach, with physicians, nurses, allied health professionals, and anyone within the patient's circle of care being actively involved. All participants within that team can have important insights into not only the identification of cognitive/system issues related to a case, but also the development of potential solutions to address those issues.

We strongly recommend that, if not already happening, you open up invitations for M&M rounds to nursing and allied health professionals. In appropriate cases, it can be beneficial to also invite representatives from other specialties, hospital administration, and even patients/families (see **Confidentiality** in the "For **Presenters**" section).

Frequency & Duration of Rounds

There is no right answer when it comes to how often a clinical group should hold M&M rounds, or how many absolute number of cases should be reviewed at these forums. Each group will have their own frequency of potential M&M cases relative to the acuity of their practice, and the most important first step is to simply start holding regular M&M rounds!

Our experience with different groups have revealed that some groups are comfortable with holding it twice a year (1-2 cases each time), while other groups host monthly or even weekly M&M rounds. Do keep in mind

Box 1: Components of the OM3.

KEY COMPONENTS
Appropriate Case Selection
Structured Cases Analysis (Cognitive/System Errors)
Creation & Dissemination of Bottom Lines/Summaries
Development of Effector/ Administrative Pathway for Action Items
Encourage Inter-professional & Multidisciplinary Involvement

however that, for groups like Critical Care, it is not practical to review all mortalities at this forum. M&M rounds serve a different purpose than critical incident reviews, case rounds, and medical grand rounds - you want to devote the time set aside for M&M rounds to really highlight examples of cases where tangible lessons can be learned to improve quality and patient safety.

Once you have set a regular time slot for M&M rounds, it is important to consider how long to devote to each individual case. Based on our experience, **at the minimum** your presenter should be provided **30 minutes** to present his/her case according to the OM3 structure. Depending on the complexities involved in the case, you may need to allot 60 minutes to allow for meaningful discussion and generation of potential action items.

Preparing the Presenter

As the **Facilitator** for your group's M&M rounds, the **Presenters** will likely turn to you for guidance and advice. The materials provided in the OM3 package contain information on many of the common questions people have when preparing for their rounds, so it is important for you to be familiar with the contents of this entire package in order to help assist your colleagues. As a quick reminder, your presenters should:

- present a case that they are actually involved with (their own cases)
- review the "For **Presenters**" portion of the OM3 package
- consider reviewing their presentations with you 1 week prior to the actual M&M rounds for feedback and advice

We recommend sending your presenters all the relevant materials **one month** ahead of their scheduled M&M rounds; it usually takes busy healthcare professionals some time to look for an appropriate case, review the OM3 structure, and to do a proper case analysis.

MODERATING M&M ROUNDS

Setting the Stage

At the beginning of each M&M rounds you should provide a very brief introduction of the presenter(s), as well as a reminder to the audience as to the ultimate goal of these rounds. You can help set the tone for a blame-free environment for your presenters to openly discuss potential areas of improvement related to their cases, and to create psychological safety so that participants feel able to comment and discuss errors without retribution.

Confidentiality

It is important to emphasize patient confidentiality while making your rounds more inter-professional and multidisciplinary. Ensure that your

Tip: Some groups have found it useful to change the name of M&M rounds (e.g. "Quality and Patient Safety Rounds"), to help facilitate a blame-free and open culture for discussion.

presenters remembered to de-identify all their materials, and remind the audience at the beginning of each rounds about confidentiality. Discussions about the cases outside the M&M rounds forum should not be held in hallways/elevators, etc..

Time

One of your roles as Facilitator is to maintain timeliness, which may include actively moving presenters along throughout their presentations (see **Time Structure** in the “For **Presenters**” section), well as asking the audience to hold their questions until the Discussion section of the presentation.

Facilitate Discussion

Our experience with improving the quality of M&M rounds have shown that one of the most critical factors to success is having a Facilitator actively moderate discussions. You can help highlight and reiterate key cognitive and system issues for the group; jot down feedback from the audience and seek consensus on bottom lines; maintain a blame-free environment throughout the rounds, and focus on recommendations that can be actioned.

POST-M&M ROUNDS

Bottom Line Summaries

After each M&M rounds, collect the Bottom Line slides from each of your presenters. Review and edit them as necessary based on the open group discussions (remember, try and avoid “try harder” type of bottom lines or “more training”, but seek out actual system changes). Have the original presenters review your final, de-identified Bottom Line summaries, and then disseminate them to your group members, nursing, allied health and senior management (this is particularly useful for those who missed attending rounds, but also for serving as a quick database of M&M issues discussed over time).

“It is not enough to do your best; you must know what to do, then do your best.” - W. Edwards Deming

Effecting Change

Efforts to improve the impact of your M&M rounds do not end once the presentations are over. If your group was successful in holding high quality M&M rounds, you should end each one with potential ideas for change and concrete action items. Your final role as Facilitator is to help bring those suggestions to the appropriate effector mechanism - for most clinical groups, this usually means a standing “M&M rounds” item on their Quality Committee (or equivalent) agenda. Make sure you have a seat at that table, and utilize any effector mechanisms available to you to help bring about improvements in quality of care and patient safety, including actions for individual clinicians, the department and beyond. Consider ways in which you can feed issues up to senior management of the hospital, or to other clinical groups.

FINAL THOUGHTS

We sincerely hope the OM3 have provided you and your group a useful structure to enhancing your M&M rounds. We encourage all clinical groups to customize the OM3 framework to their suit specific needs. As the Champion for your group, remember:

- Don't give up!
- Cultural Change (especially in healthcare) takes time!
- Be persistent - improving quality of care is worth it!

"If you want something you've never had, you've got to do something you've never done." - Thomas Jefferson

Appendix A:

Classification Scheme for Cognitive Dispositions to Respond (CDRs)¹⁸

Errors of over-attachment to a particular diagnosis

- **Anchoring:** the tendency to perceptually lock on to salient features in the patient's initial presentation too early in the diagnostic process and failing to adjust this initial impression in the light of later information. This CDR might be severely compounded by the Confirmation Bias.
- **Confirmation bias:** the tendency to look for confirming evidence to support a diagnosis rather than look for disconfirming evidence to refute it, despite the latter being more persuasive and definitive.
- **Premature closure:** a powerful CDR accounting for a high proportion of missed diagnoses. It is the tendency to apply premature closure to the decision making process, accepting a diagnosis before it has been fully verified. The consequences of the bias are reflected in the maxim: "when a diagnosis is made, the thinking stops."

Errors due to failure to consider alternative diagnoses

- **Multiple alternative bias:** a multiplicity of options on a differential diagnosis might lead to significant conflict and uncertainty. The process might be simplified by reverting to a smaller subset with which the physician is familiar, but might result in inadequate consideration of other possibilities. One such strategy is the 3 diagnosis differential: "it is probably A, but it might be B, or I don't know (C)". Although this approach has some heuristic value, if the disease calls in the C category and is not pursued adequately, it minimized the change that serious diagnoses are made.
- **Representativeness bias:** drive the diagnostician toward looking for prototypical manifestations of disease: "if it looks like a duck, walks like a duck, quacks like a duck, then it is a duck." Yet, restraining decision making along these pattern recognition lines leads to atypical variants being missed.
- **Search satiation:** reflects the universal tendency to call off a search once something is found. Co-morbidities, second foreign bodies, other fractures, and co-inhestants in poisoning may all be missed.

Errors due to inheriting someone else's thinking

- **Diagnostic momentum:** once diagnostic labels are attached to patients they tend to become stickier and stickier. Through intermediaries (patients, paramedics, nurses, physicians) what might have started as a possibility gathers increasing momentum until it becomes definite, and other possibilities are excluded.
- **Framing effect:** how diagnosticians see things might be strongly influenced by the way in which the problem is framed, e.g. physicians' perceptions of risk to the patient may be strongly influenced by whether the outcome is expressed in terms of the possibility that the patient might die or might live. In terms of diagnosis, physicians should be aware of how patients, nurses, and other physicians frame potential outcomes and contingencies to the clinical problem to them.
- **Bandwagon effect:** the tendency for people to believe and do certain things because many others are doing so. Group-think is an example, and it can have a disastrous impact on team decision making and patient care.

¹⁸ Campbell SG, Croskerry P, Bond WF. Profiles in patient safety: a "perfect storm" in the emergency department. *Acad Emerg Med.* 2007;14:743-749

Errors in prevalence perception or estimation

- **Availability bias:** the disposition to judge things as being more likely, or frequently occurring, if they readily come to mind. Thus, recent experience with a disease might inflate the likelihood of its being diagnosed. Conversely, if a disease has not been seen for a long time (is less available), it might be underdiagnosed.
- **Base-Rate neglect:** the tendency to ignore the true prevalence of a disease, either inflating or reducing its base-rate, and distorting Bayesian reasoning. However, in some cases clinicians might (consciously or otherwise) deliberately inflate the likelihood of disease, such as in the strategy of “rule out worst-case scenario” to avoid missing a rare but significant diagnosis.
- **Hindsight bias:** knowing the outcome might profoundly influence perception of past events and prevent a realistic appraisal of what actually occurred. In the context of diagnostic error, it may comportise learning through either an underestimation (illusion of failure) or overestimation (illusion of control) of the decision maker’s abilities.

Errors involving patient characteristics or presentation context

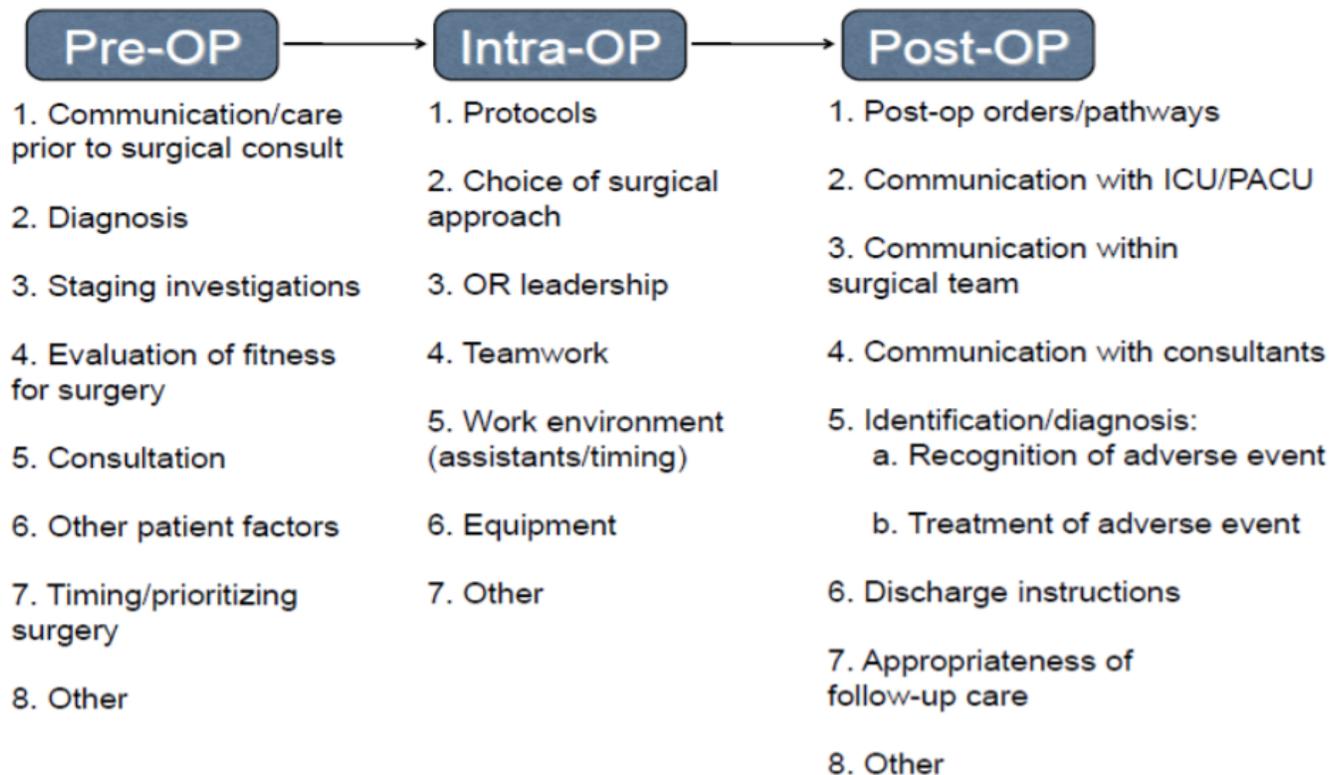
- **Fundamental attribution error:** the tendency to be judgemental and blame patients for their illness (dispositional causes) rather than examine the circumstances (situational factors) that might have been responsible. In particular, psychiatric patients, minorities, and other marginalized groups tend to suffer from this CDR. Cultural differences exist in terms of the respective weights attributed to dispositional and situational causes.
- **Triage cueing:** the triage process occurs throughout the healthcare system, from the self-triage of patients to the selection of a specialist by the referring physician. Many CDRs are initiated at triage, leading to the maxim: “geography is destiny.” Once a patient is referred to a specific discipline, the bias within that discipline to look at the patient only from their own perspective is referred to as “deformation professionnelle”.
- **Ying-yang out:** when patients have been subjected to exhaustive and unavailing diagnostic investigations, they are said to have been worked up the yin-yang. The yin-yang out is the tendency to believe that nothing further can be done to throw light on the dark place where, and if, any definitive diagnosis resides for the patient, i.e. the physician is let out of further diagnostic effort. This might prove ultimately to be true, but to adopt the strategy at the outset is fraught with the change of a variety of errors.

Errors associated with physician affect, personality, or decision style

- **Commission bias:** results from the obligation toward beneficence, in that harm to the patient can only be prevented by active intervention. It is the tendency toward action rather than inaction. It is more likely in over-confident physicians. Commission bias is less common than omission bias.
- **Omission bias:** the tendency toward inaction and rooted in the principle of non-maleficence. In hindsight, events that have occurred through the natural progression of a disease are more acceptable than those that may be attributed directly to the action of the physician. The bias might be sustained by the reinforcement often associated with not doing anything, but it may prove disastrous. Omission biases typically outnumber commission biases.
- **Outcome bias:** the tendency to opt for diagnostic decisions that will lead to good outcomes, rather than those associated with bad outcomes, thereby avoiding chagrin associated with the latter. It is a form of value bias in that physicians might express a stronger likelihood in their decision-making for what they hope will happen rather than for what they really believe might happen. This may result in serious diagnoses being minimized.
- **Overconfidence/underconfidence:** a universal tendency to believe we know more than we do. Overconfidence reflects a tendency to act on incomplete information, intuitions, or hunches. Too much faith is placed in opinion instead of carefully gathered evidence.
- **Zebra retreat:** occurs when a rare diagnosis (zebra) figures prominently on the differential diagnosis but the physician retreats from it for various reasons: perceived inertia in the system and barriers to obtaining special or costly tests; self-consciousness and underconfidence about entertaining a remote and unusual diagnosis and gaining a reputation for being esoteric; the fear of being seen as unrealistic and wasteful of resources; under- or overestimating the base-rate for the diagnosis; team members may exert coercive pressure to avoid wasting the team's time; inconvenience of the time of day or weekend and difficulty getting access to specialists; unfamiliarity with the diagnosis might make the physician less likely to go down an unfamiliar road; fatigue or other distractions may tip the physician toward retreat.

Appendix B:
Surgical Specialty Case Analysis Tool

WERE THERE ISSUES RELATED TO:



For each area selected above, were there COGNITIVE and/or SYSTEM issues?

Pre-Op	Definitions
1. Communication/care prior to surgical consult	-Includes referral from primary care physician and any specialist care prior to receiving consult
2. Diagnosis	-Includes cognitive issues such as anchoring on a simpler rather than complex diagnosis (Anchoring : the tendency to perceptually lock on to salient features in the patient's initial presentation too early in the diagnostic process and failing to adjust this initial impression in the light of later information.) -Includes a system issue such as delay in diagnostic imaging
3. Staging investigations	-Includes both cognitive and system issues where appropriate investigations may have been omitted
4. Evaluation of fitness for surgery	-Includes omission bias which may have led to incomplete information -Includes clarity of written communication
5. Consultation	-e.g. Anesthesiology, cardiology, etc. -Includes lack of appropriate consultation (system or cognitive issues) -Includes conflicting opinions potentially due to system related communication issues or teamwork failure -E.g. of a cognitive issue: Bandwagon effect : the tendency for people to believe and do certain things because many others are doing so.
6. Other patient factors	-Includes patient's personality or potentially psychiatric diagnoses which may lead to affective bias (counter-transference) among health care provider/team
7. Timing/prioritizing surgery	-Includes system issues which may have led to delays
8. Other	
Intra-Op	Definitions
1. Protocols	-e.g. Surgical checklists, sponge counts, antibiotic administration, etc. -Includes failure of an existing protocol to achieve objectives in a given case -Includes the identification of an opportunity to standardize care
2. Choice of surgical approach	-Includes cognitive biases which may have led to a given decision as well as other factors such as fatigue, personal impairment -Includes system issues if there was a lack of availability of equipment to perform a given preferred approach
3. OR leadership	-Was situational awareness maintained (did the leader know what was going on around them at all critical points or were they fixated on a task)? -Was decision making clear to all team members? -Was communication effective with team members?
4. Teamwork	-Consider all members of the team – was situational awareness maintained? (i.e. did all team members know what was going on around them at various critical points) -Were there any communication barriers within the team – could be related to personality conflicts or fatigue or team dynamics or response to stress
5. Work environment (assistants/timing)	-e.g. late night, post-call residents, etc. -Includes fatigue of providers -Includes availability of personnel -Includes heating/cooling issues of room
6. Equipment	-Includes access/functioning/trouble-shooting of equipment
7. Other	

Post-Op	Definitions
1. Post-op orders/pathways	<ul style="list-style-type: none"> -Includes clarity of orders, errors of omission -Includes opportunities identified for standardization of care -Includes failure of existing protocols/pathways to achieve objectives
2. Communication with ICU/PACU	<ul style="list-style-type: none"> -Includes cognitive issues related to teamwork communication -Includes oral and written communication
3. Communication within surgical team	<ul style="list-style-type: none"> -Includes availability and responsiveness of team -Includes oral and written communication -Includes teamwork failure in communication
4. Communication with consultants	<ul style="list-style-type: none"> -Includes oral and written communication -Includes conflict management -Includes teamwork failure in communication
5. Identification/diagnosis: a. Recognition of adverse event b. Treatment of adverse event	<ul style="list-style-type: none"> -a. Recognition of Adverse Events: <ul style="list-style-type: none"> -Includes appropriate identification of adverse outcome related to healthcare provided rather than progression of disease -Includes disclosure of adverse event to patient and/or family -b. Treatment of Adverse Events: <ul style="list-style-type: none"> -Includes appropriate mitigation of harm once adverse event identified -Includes appropriate communication with team members involved and discussion of methods to prevent recurrence
6. Discharge instructions	<ul style="list-style-type: none"> -Includes errors of omission -Includes affective bias if patient factors influence communication -Includes written and oral communication
7. Appropriateness of follow-up care	<ul style="list-style-type: none"> -e.g. physio, social work, etc. -Includes system issues such as access to primary care and specialist care -Includes system issues such as efficiency of booking -Includes communication issues with patients and/or family
8. Other	

Appendix C:
Sample PowerPoint Slides



M&M Rounds

Department:

Date:

Presenter:



Confidentiality Statement

- We need to protect the privacy of patients
- These rounds are strictly **confidential**
- No patient initials, dates, times or names of staff involved will appear in this presentation.

Goal of M&M Rounds

To improve quality of care and patient safety outcomes



Case Presentation



Case Analysis

Cognitive Issues: **System Issues:**



Discussion



Bottom Line/Action Items