Morbidity & Mortality Conference

Manual v. 1.1

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OREGON HEALTH & SCIENCE UNIVERSITY

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Manual developers

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Project Team

PHASE 1: **Development and validation of M&M assessment tool**	**PHASE 2:** **Development, implementation and evaluation of M&M improvement intervention**
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Contents

Introduction

Patient safety is receiving growing attention worldwide with numerous studies showing that approximately 10% of patients admitted to hospital suffer an adverse event.[1] Over half of these adverse events are associated with a surgical procedure and, importantly, most are deemed preventable.[2-4] Causal factors for such iatrogenic harm include technical factors such as procedural complications and poor 'non-technical' skills such as breakdowns in communication and team leadership.[4] It is, therefore, essential that surgical training programs ensure residents achieve technical and non-technical proficiency so as to ensure high-quality patient care.[5] Given the era of ever-reducing working hours, the challenge for surgical educators is to maximize workplace-based learning opportunities so as to achieve these positive educational goals.

A key component of workplace-based learning is the surgical morbidity and mortality conference (M&M). The goal of M&M is to provide physicians with the opportunity to discuss errors and adverse events in an open manner.[6,7] The conference itself is mandated by the Accreditation Council for Graduate Medical Education (ACGME)[8] and satisfies the Joint Commission requirement for a focused review of practitioner performance.[9]

However, while all academic surgery departments are required to hold a "weekly review of all complications and deaths", the structure, content and format of M&M vary widely among institutions. To date there is no standardized presentation style or formal guideline on how best to present complications in a manner that maximizes the learning value of the M&M. Lack of a consistent approach contributes to substantial variation in presentation quality and educational outcomes achieved – and perhaps more worryingly to the devaluation of the M&M in the eyes of both experienced clinicians and also more junior trainees (i.e. M&Ms becoming a mandatory 'tick-box' exercise). In fact, there are no robust measures or evaluations of what conference attendees learn from the presented cases. This has resulted in very little data demonstrating the effectiveness of M&MC as a learning or care improvement tool and mostly subjective perceptions of its value.[10, 11]

This manual aims to provide a toolkit for effective M&M presentations – including (i) a standardized format for M&M presentation to improve presentation quality and learning outcomes for junior and senior attendees using the SBAR approach to standardizing communications (Situation, Background, Assessment & Analysis, Review of literature and Recommendations), and (ii) a relevant assessment tool.

Project Summary

We take the view that an assessment and improvement approach to the quality of the M&M presentation is required to provide trainees with feedback on how to communicate adverse events to colleagues, how best to analyze these events, and how to discuss learning points so as to prevent similar errors in the future – such that real care improvements and relevant clinical learning stem from M&Ms.

We, therefore, undertook a research project to scientifically enhance presentation quality and learning outcomes of the M&M. We specifically aimed to (Figure 1):

- Assess the quality and educational outcomes of the current, non-standardized M&M presentation
- Develop and implement a standardized format for M&M presentation
- Assess presenters' satisfaction with the novel presentation format
- Assess the quality and educational outcomes of the novel standardized presentation format

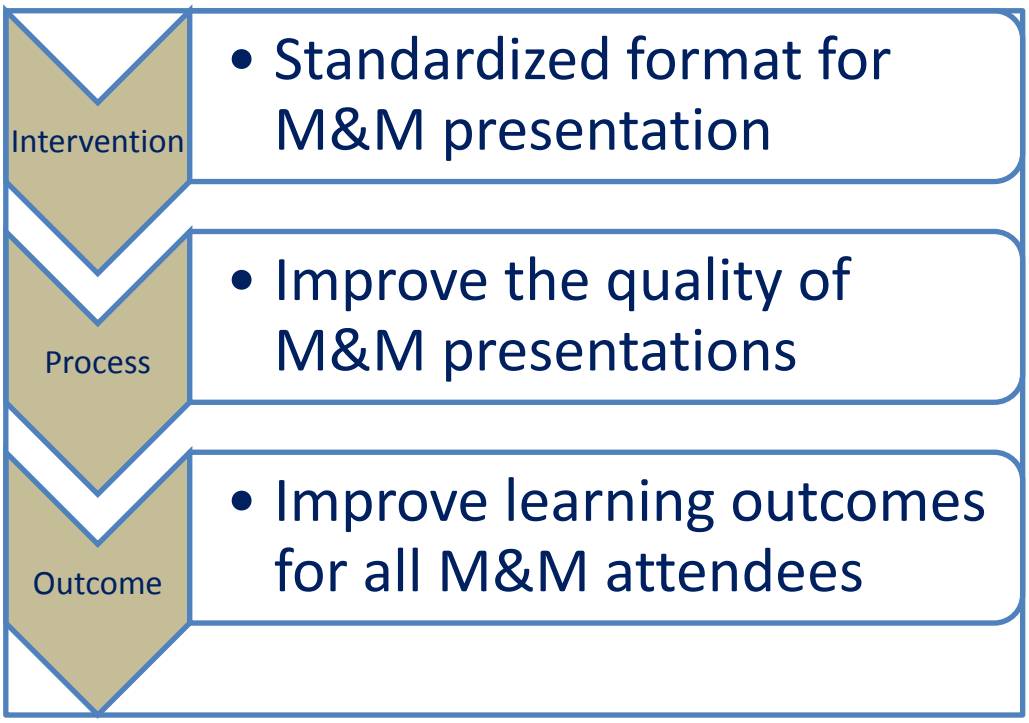

Figure 1: Project rationale

Research Approach

A multi-phase, multi-method approach was taken to first developing a tool to assess the quality of M&M presentations, then developing an appropriate format for standardization and evaluating its impact (Figure 2):

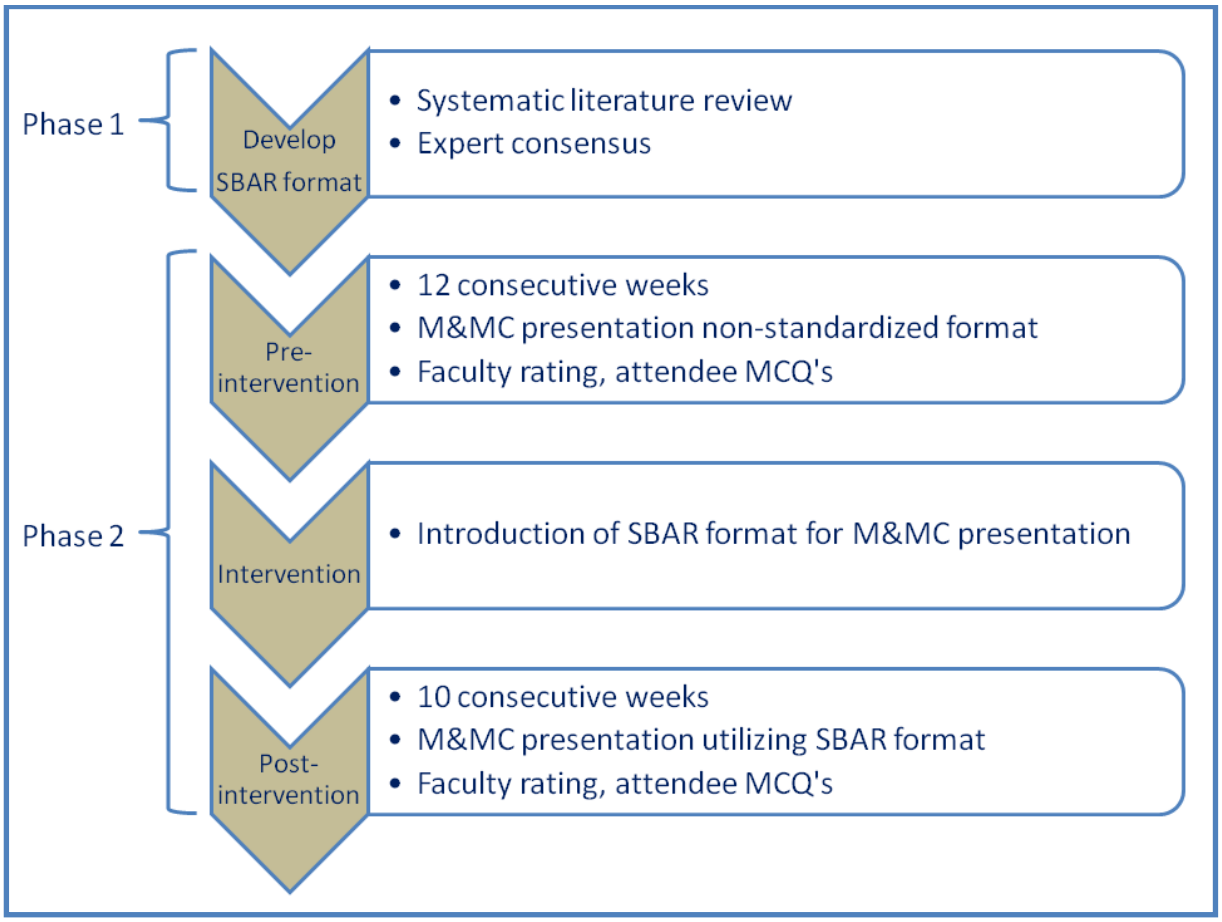

Figure 2: Project phases

- **Phase 1-Stage 1. Literature review:** An extensive review of the literature was conducted to identify the current best evidence on the components of an effective M&M presentation. The databases of PubMed, Medline, Embase, and PsycINFO were searched using the following keywords and their combinations: “morbidity and mortality”, “conference”, “presentation”, “surg*”. The literature review identified key components of an effective M&M (Table 1).

Table 1: Items considered important for a successful Morbidity & Mortality Conference

Mandatory resident and Faculty attendance[11]
Decreasing defensiveness and blame[11]
Improving the efficacy of the case presentations
Use of slides[16]
Use of radiographic images[16]
Focused analysis of error
Integration of evidence-based literature into the morbidity and mortality discussion[10]
Providing educational points related to the complication[14]
Audience participation in the process[10]
Allowing for a consensus to be met with respect to analysis of the cases presented[15]
Facilitation of the conference by a moderator[16]

- **Phase 1-Stage 2. Development of standardized format for M&M presentation and a relevant assessment tool:** All potential elements of an effective M&M presentation derived from the literature search were reviewed by an international panel of 9 Consultant-level experts from the USA and UK with backgrounds in Surgery, Patient Safety, Education and Psychology.

  Consensus was reached by the expert group regarding these elements and 2 outputs were produced: first, a framework for effective M&M presentations (Table 2) and, second, a relevant assessment tool to capture the quality of a M&M presentation in real-time (Table 3).

  For both outputs, a standardized communication framework developed for high-risk industries and increasingly applied within clinical settings, the 'SBAR',[12] was utilized as a framework to integrate these elements. The SBAR stands for *Situation* (i.e. what the complication was), the *Background* clinical information pertinent to the adverse outcome, an *Assessment* of the root causes of the complication, and a *Review of literature* relevant to causality and finally, *Recommendations* for similar adverse outcome prevention in the future (Table 2).

Table 2. SBAR-standardized format for M&M presentation

Situation Statement of the problem	Admitting diagnosis Statement of procedure or operation Statement of adverse outcome
Background Clinical information pertinent to adverse outcome	**Patient History:** Present pertinent HPI/PMH/PSH/Meds **Indication for intervention:** Describe reason for intervention **Labs and imaging studies:** Present studies relevant to outcome **Procedural details:** Describe technical or physiologic details related to outcome **Hospital course:** Present non-procedural events related to outcome **Recognition of the complication:** State how/when complication was recognized **Management of the complication:** Describe how the complication was managed
Assessment & Analysis Evaluation of what happened and why it happened	**What happened? Error analysis.** Describe sequence of events leading to adverse outcome **Why did it occur? Root Cause Analysis.** Provide description of fundamental cause(s) of the adverse outcome in relationship to: 1. **Human Errors** Error in diagnosis, technique, judgment, communication 2. **Systems Errors** Error(s)/problems in care system/organization (e.g., poor supervision, low staffing, inadequate coordination of care, etc) 3. **Patient related factors** Patient disease or non-compliance
Review of Literature Evidence-Based Practice	Present literature pertinent to the complication
Recommendations Proposed actions to prevent future similar problem	Identify how problem could have been prevented or better managed Identify learning point(s) from case

Note: HPI, history of present illness; PMH, past medical history; PSH, past surgical history

- **Phase 2-Stage 1. Pre-intervention stage:** During this stage surgical complications were presented in the usual fashion without a standardized format (baseline evaluation). Trainee presentation quality was assessed by Faculty trained in using the newly developed assessment tool, which was validated prior to launching this Phase of the project .[13] Faculty assessors' training was proficiency-based and was deemed complete when the assessors exhibited adequate inter-rater reliability (defined as intra-class correlation coefficients of 0.70 or higher).

  Evaluation included assessment of the quality of the presentation, assessment of attendees' knowledge and finally self-reported satisfaction with the novel presentation format from those who utilised it. "Learners" attending each M&M were asked to complete 3 multiple choice questions (Figure 3). Each MCQ was specifically written to match the learning point of each M&M case presentation.

- **Phase 2-Stage 2. Intervention stage:** Trainee "presenters" responsible for upcoming M&M presentations were provided with guidelines on how to prepare their M&M presentation using the newly developed standardized format. "Presenters" were provided with written instructions (covering materials of Table 2), and a PowerPoint template for their presentations (included in the Appendix). 1:1 coaching with a Consultant surgeon regarding presentation format was also available if requested.

- **Phase 2-Stage 3. Post-intervention stage:** During this period "presenters" presented their surgical complications using the novel, standardized SBAR format for M&M presentation. Presentation quality and attendees' learning were assessed as in Phase 2-Stage 1 (baseline).

- **Results:** The "presenters" universally thought the standardized format for M&M presentation was simple to implement and provided a helpful guide for structuring presentations.

  Significant improvement was obtained in the presentation of Background, Assessment & Analysis, and Recommendations sub-sections (all Ps < 0.05) – as well as in the overall presentation quality (Global quality score pre-standardization=61, range 48-69; global quality score post-standardization=67.50, range 40.30-73, $P<0.05$; maximum possible quality score 75).

  The knowledge of M&M attendees also improved post-standardization as assessed by significant improvement in their MCQ scores (correct MCQs pre-standardization=60%, 95% CI 56-63%; correct MCQs post-standardization=78%, 95% CI 74-82%, $P<0.01$).

Table 3: SBAR M&M assessment tool

Evaluation of M&M Presentation					
Situation Statement of the problem	**Neither clear nor concise**				**Clear & concise**
Admitting diagnosis	1	2	3	4	5
Statement of procedure or operation	1	2	3	4	5
Statement of adverse outcome	1	2	3	4	5
Background Clinical information pertinent to adverse outcome	**Long-winded and not relevant**				**Succinct and relevant**
Patient History: Presents pertinent HPI/PMH/PSH/Meds	1	2	3	4	5
Indication for intervention: Describes reason for intervention	1	2	3	4	5
Labs and imaging studies: Presents studies relevant to outcome	1	2	3	4	5
Procedural details: Describes technical or physiologic details related to outcome	1	2	3	4	5
Hospital course: Presents non-procedural events related to outcome	1	2	3	4	5
Recognition of the complication: States how/when complication was recognized	1	2	3	4	5
Management of the complication: Describes how the complication was managed	1	2	3	4	5
Assessment & Analysis Evaluation of what happened and why it happened	**Analysis not well thought out or not discusses**				**Independent & accurate analysis**
What happened? Error analysis. Describes sequence of events leading to adverse outcome.	1	2	3	4	5
Why did it occur? Root cause analysis. Description of fundamental causes of the adverse outcome. 1. **Human errors:** Error in diagnosis, technique, judgment, communication 2. **Systems errors:** Errors(s) / problems in care system / organization (e.g. poor supervision, low staffing, inadequate coordination of care, etc.) 3. **Patient-related factors:** Patient disease or non-compliance	1	2	3	4	5
Review of literature Evidence-based practice	**Weak evidence, not relevant to learning point**				**Provides strong evidence relevant to learning point**
Presents literature pertinent to the complication	1	2	3	4	5
Recommendations Proposed actions to prevent future similar problem	**Does not independently provide recommendations**				**Independently provides strong recommendations based on current literature**
Identifies learning points from case	1	2	3	4	5
Identifies how problem could have been prevented or better managed	1	2	3	4	5

Note: HPI, history of present illness; PMH, past medical history; PSH, past surgical history

October 5, 2009 Circle: Faculty / PGY 1 2 3 4 5 6 7 8+ / Medical student

Trauma Surgery Question:

A 35-year-old man is admitted to the trauma service after a motorcycle accident. His injuries include a right frontal lobe subarachnoid hematoma and left femur fracture. He is scheduled for open reduction and internal fixation (ORIF) of the femur fracture the following day. Which of the following is the most appropriate choice for thomboprophylaxis prior to operative repair?

A. Start low-molecular-weight heparin the evening before surgical intervention.
B. Initiate bilateral intermittent pneumatic compression stockings.
C. Placement of an inferior vena cava filter.
D. Schedule duplex ultrasound screening.
E. Initiate low-dose unfractionated heparin.

Did you know the answer prior to M&M conference? **Yes** **No**

This M&M presentation provided information necessary to answering this question?

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Figure 3: Sample attendee multiple choice question (knowledge evaluation)

Guidance notes for implementing the SBAR-standardized format in M&M presentations

- For each week's presentation, one (or more) complication/s is/are selected by each one of the available surgical or anaesthetic services.
- Ideally, these ought to be complications judged to carry the highest learning value for M&M attendees.
- A senior trainee presents the complication in a formal 15 minute case presentation using the SBAR-standardized format (Table 2).
- A set of SBAR Microsoft PowerPoint presentation slides are available to allow easy structuring of the presentation (Appendix 1). A brief card that can fit into a scrub pocket can also be distributed to act as a reminder and reinforce (Appendix 2).
- The case presentation is followed by a 5 minute (minimum, depending on case load to be discussed) Faculty and trainee discussion.

IF FORMAL EVALUATION OF M&M QUALITY IS SOUGHT, THE FOLLOWING ADDITIONAL ELEMENTS OUGHT TO BE IMPLEMENTED:

- A Faculty member (Consultant) is appointed 'M&M Quality Lead'. Multiple Faculty members can hold this appointment simultaneously to reduce work load.
- The M&M Quality Lead assesses the quality of the presentation using the validated assessment form provided in this Manual (Table 3). This assessment can then be provided to and discussed with the presenter/s as personalised feedback to allow improvement of presentation quality.
- An MCQ is uniquely prepared for each presentation and matched to a pre-determined learning point (Figure 3). All M&M attendees are asked to answer MCQs related to M&M presentations.
- Presentation quality and/or attendees' knowledge can be monitored and audited periodically/longitudinally to ensure sustainable high-quality in M&Ms.

SBAR M&M References

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APPENDIX – 1: SBAR M&M PRESENTATION PROFORMA & GUIDANCE NOTES

Surgical or Anaesthetic Service

Name of Presenter

Date

1

Situation

Statement of the Problem

- Admitting Diagnosis:
- Procedure Performed:
- Complication:

2

Background

Clinical Information Pertinent to Adverse Outcome

- Patient History
- Indication for Intervention
- Labs and Imaging Studies
- Procedural Details
- Hospital Course
- Recognition of the Complication
- Management of Complication

3

Assessment and Analysis

Error Analysis and Root Cause Analysis

- Error analysis
- Root Cause analysis
  - Human Error
  - Systems Error
  - Patient related factors

4

Review of Literature

Evidence-based practice

5

Recommendations

Proposed Actions to Prevent Future Similar problems

6

Guidance notes to presenters

- **Situation** is the statement of the problem. It allows the audience to focus their attention to the pertinent points in the case related to the complications.

7

Background: here you provide clinical information pertinent to adverse outcome:

- Patient History : Pertinent HPI / PMH / PSH / meds)
- Indication for Intervention: Important to know thought process into performing an operation
- Labs and Imaging Studies: Only show pertinent labs and images
- Procedural Details: Describe technical or physiologic details related to outcome
- Hospital Course: Present non-procedural events related to outcome (Be brief, i.e., no need to list when patient passed flatus)
- Recognition of the Complication: State how/when complication was recognized
- Management of Complication: Describe the steps taken to manage the complication

MAKE THIS PART SHORT & SWEET!

8

- **Assessment & Analysis:** trainee presenters often neglect or are weak at error analysis. Be prepared to identify and discuss the possible cause(s) of the complication:

- What happened? (Error analysis): Describe sequence of events leading to adverse outcome
- Why did it occur? (Root Cause analysis):
  - Human Error: Error in diagnosis, technique, judgment, communication
  - Systems Error: Errors/problems in care system/organization (e.g., poor supervision, low staffing, inadequate coordination of care, etc.)
  - Patient related factors: Patient disease or non-compliance

9

Review of literature: here you present appropriate literature pertinent to the complication.

This may relate to:

- Identification of complication
- Management of complication
- Prevention of complication

10

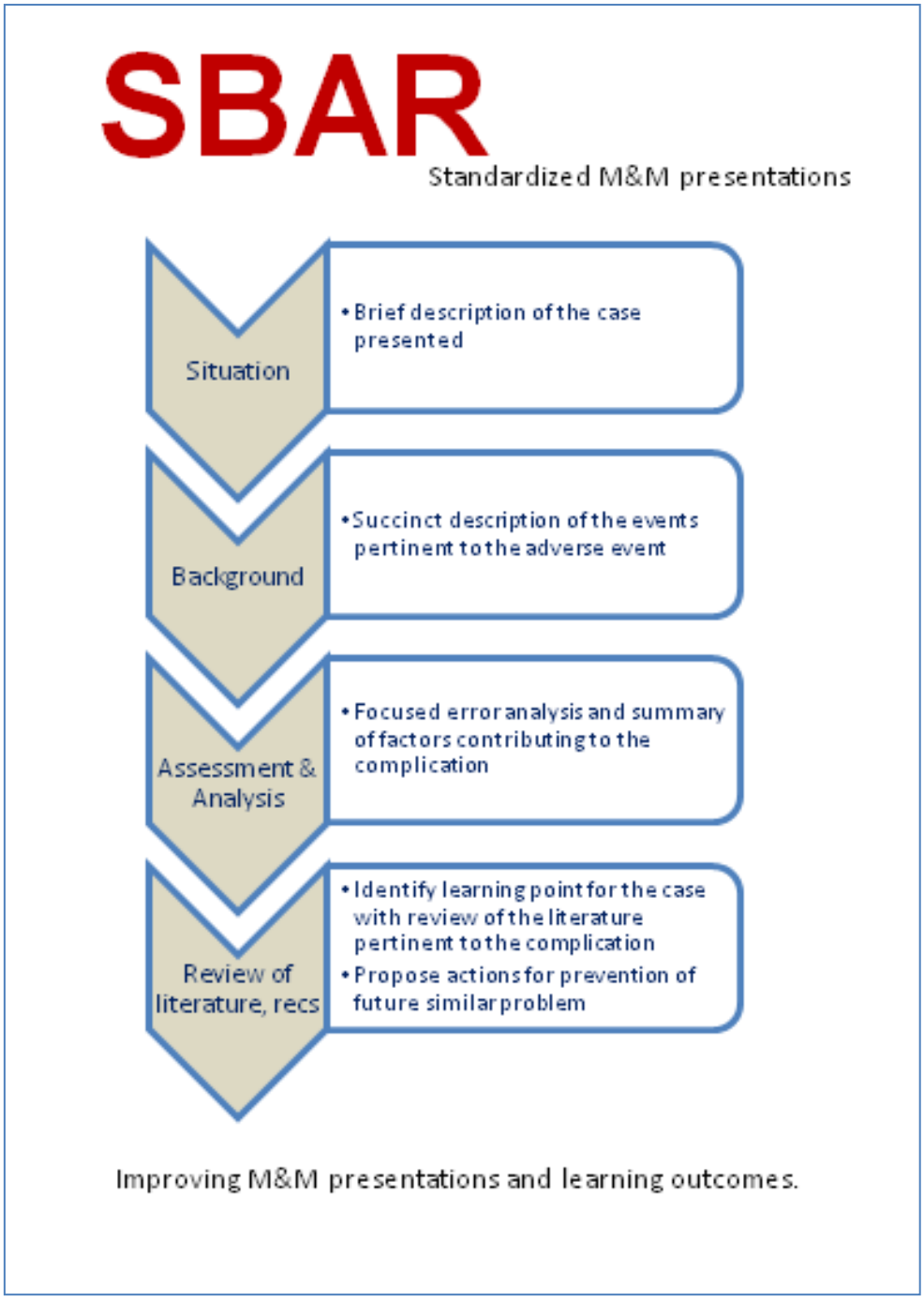
Recommendations: This is another area where trainee presentations could be improved.

Trainees are often good at discussing the complication but do not list recommendations for the audience that can help prevent these complications.

- You should:
  - Identify how the problem could have been prevented or better managed
  - Identify the learning points from the case

11

APPENDIX – 2: Standardized M&M SBAR Format Flashcard



Please note: Hard copies of this card can be made available in laminated form, sized to fit into a scrub pocket.

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