CONTENTS

AIMS OF THIS TOOLKIT 3

BACKGROUND 3

RATIONALE AND POTENTIAL BENEFITS OF THE SBAR-STANDARDISED M&M FORMAT 5

EVIDENCE BASE FOR THE SBAR-STANDARDISED M&M FORMAT 6

GUIDANCE NOTES FOR IMPLEMENTING THE SBAR-STANDARDISED M&M FORMAT IN M&M PRESENTATIONS (BASIC IMPLEMENTATION) 7

SBAR M&M REFERENCES 10

REFERENCES CITED IN THIS TOOLKIT 10

APPENDIX 1
SBAR M&M PRESENTATION PROFORMA AND GUIDANCE NOTES 11

APPENDIX 2
STANDARDISED M&M SBAR FORMAT FLASHCARD 17

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M&M IMPROVEMENT PROJECT TEAM

The M&M improvement project, on which this toolkit is based, has been led by Erica Mitchell, Consultant Vascular Surgeon, of the Oregon Health and Science University (OHSU), USA.

<table>
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<tr>
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<tbody>
<tr>
<td>Erica L Mitchell MD (OHSU)</td>
<td>Erica L Mitchell MD (OHSU)</td>
<td>Phong D Dargon MD (OHSU)</td>
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<tr>
<td>Dae Y Lee MD (OHSU)</td>
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<td>Pat Kenney-Moore MS PA-C (OHSU)</td>
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FUNDING ACKNOWLEDGEMENT

Nick Sevdalis and Sonal Arora are affiliated with the Imperial Centre for Patient Safety and Service.
AIMS OF THIS TOOLKIT

This toolkit is tailored for use by anaesthetists of all grades who are presenting clinical cases for Morbidity and Mortality (M&M) review. The aim is to facilitate effective M&M presentations and to improve presentation quality and learning outcomes for junior and senior attendees.

These improvements are achieved using the ‘SBAR’ approach to standardising clinical communications (Situation, Background, Assessment and Analysis, Review of literature and Recommendations). The toolkit also provides an assessment approach/instrument to evaluate the effectiveness of M&M presentations.

A summary of the SBAR-structured presentation slides for use in M&Ms is available in Appendix 1. The template slides for the structure of M&M presentations can be downloaded freely from the RCoA and AAGBI websites (use search facility to find ‘SALG’).

BACKGROUND

M&M review meetings are a key component of workplace-based learning and continuing professional development.1 The goal of M&M is to provide doctors with the opportunity to discuss aspects of patient care where the outcome was not as intended or anticipated and to review errors and adverse events in an open and reflective manner.2

Recent review of the evidence-base on M&Ms by the ‘M&M Improvement Project Team’ (see page 2) concluded that ‘the lack of a consistent approach contributed to substantial variation in presentation quality and educational outcomes achieved’.3 Generally little evidence was found to support M&M review as an effective learning or care improvement tool and clinicians of all grades were apt to consider the process as a tick box exercise.4

Based on available evidence, the factors considered to be important for the success of M&M meetings are detailed in Table 1 (reproduced from Mitchell et al4).

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>FACTORS CONSIDERED IMPORTANT FOR AN EFFECTIVE MORBIDITY &amp; MORTALITY CASE REVIEW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory department members' attendance</td>
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<tr>
<td>Decreasing defensiveness and blame</td>
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<tr>
<td>Improving the efficacy of the case presentations</td>
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<tr>
<td>Use of slides</td>
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<tr>
<td>Use of radiographic images</td>
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<tr>
<td>Focused analysis of error</td>
<td></td>
</tr>
<tr>
<td>Integration of evidence-based literature into the Morbidity and Mortality discussion</td>
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</tr>
<tr>
<td>Providing educational points related to the complication</td>
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<tr>
<td>Audience participation in the process</td>
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<tr>
<td>Allowing for a consensus to be met with respect to analysis of the cases presented</td>
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<tr>
<td>Facilitation of the case review by a moderator</td>
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</tbody>
</table>
It is based upon these factors, using the standardised ‘SBAR’ communication format, that the M&M Improvement Project Team have produced a standardised presentation format and guidance that aims to maximise the learning value of the M&M meeting. The M&M presentation toolkit tailored to anaesthesia audiences is reproduced in Table 2.

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>SBAR-STANDARDISED FORMAT FOR M&amp;M PRESENTATIONS</th>
</tr>
</thead>
</table>
| **Situation** | Admitting diagnosis  
Statement of procedure or operation  
Statement of adverse outcome |
| **Background** | 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 physiological details related to outcome  
**Hospital course:**  
Present non-procedural events related to outcome  
**Recognition of the complication:**  
State how/when complication was recognised  
**Management of the complication:**  
Describe how the complication was managed |
| **Assessment and Analysis** | 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/organisation (e.g., poor supervision, low staffing, inadequate co-ordination 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.*
RATIONALE AND POTENTIAL BENEFITS OF THE SBAR-STANDARDISED M&M FORMAT

Based on available literature, M&M case presentations typically vary in structure, depth and quality. As a result, the educational value of M&M meetings is also variable.

The rationale for the proposed standardisation of the M&M case presentation using the well-utilised ‘SBAR’ communication format within healthcare was 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 analyse 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’.3

This rationale is schematically presented in Figure 1.

FIGURE 1
THE RATIONALE FOR STANDARDISING THE M&M CASE REVIEW4

- Intervention
  - Standardised format for M&M presentation
- Process
  - Improvement in quality of M&M presentations
- Outcome
  - Improvement in learning from case review for M&M attendees
EVIDENCE BASE FOR THE SBAR-STANDARDISED M&M FORMAT

The proposed SBAR-based structure for case presentation at M&M meetings was prospectively evaluated by the M&M Improvement Project Team over a period of 12 months within the M&M meetings of surgical services of a North American university teaching hospital (Oregon Health and Science University).4–6

This was a pre/post-intervention (SBAR-standardisation) intervention study. An instrument was developed to evaluate presentation quality; multiple choice questions (MCQs) were developed tailored to the content of each case review and completed by the M&M attendees following each case review. Presentation quality and the number of correct answers to the MCQs were compared pre- and post-SBAR format introduction.

The evaluation showed the following:

- Global quality of M&M case presentations by trainees as assessed by senior Faculty attending the M&Ms improved significantly from a median of 61% (range 48–69%) to a median of 68% (range 40–73%), P=0.002.
- The improvements were specifically obtained in the quality of Background provided by the trainees (P=0.03), Assessment and analysis carried out (P<0.03), and finally the provided Recommendation for future practice upon completion of the case presentation (P=0.003).
- These improvements were associated with more effective learning following the M&M: Meeting attendees scored better in the MCQs following the SBAR intervention compared to the baseline (pre-intervention: 60% correct answers (range 56–63%), post-intervention: 78% correct answers (range 74–82%), P=0.0002).
- The improvements in the learning from the M&M case review were evident in both junior attendees (junior trainees and medical students: 52→72% correct answers post-intervention, P=0.0002), and in senior attendees (senior trainees and consultants: 67→83% correct answers post-intervention, P=0.0002).
- Senior attendees (consultants) were able to reliably score the quality of trainees’ presentations via observation during the M&M.
GUIDANCE NOTES FOR IMPLEMENTING THE SBAR-STANDARDISED FORMAT IN M&M PRESENTATIONS (BASIC IMPLEMENTATION)

- For each presentation, one (or more) complication/s is/are selected by the M&M co-ordinator.
- Ideally, these ought to be complications judged to carry the highest learning value for M&M attendees.
- The complications are presented in a formal 15 minute case presentation using the SBAR-standardised format (Table 2).
- A set of ‘SBAR’ Microsoft PowerPoint presentation slides (templates) 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 the approach (Appendix 2).
- The case presentation is followed by a five minute (minimum, depending on case load to be discussed) discussion of the learning points and actions stemming from the case.

FURTHER GUIDANCE NOTES: IMPLEMENTATION AND FORMAL EVALUATION OF THE SBAR-STANDARDISED FORMAT IN M&M PRESENTATION (IMPLEMENTATION + EVALUATION)

If formal evaluation of how well the SBAR-standardised format works within a Departmental M&M is sought, the following steps should also be taken:

- A department member (consultant) is appointed ‘M&M Quality Lead’. Multiple department 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 Toolkit (Table 3). This assessment can then be provided to and discussed with the presenter/s as personalised feedback to allow subsequent improvement of presentation quality.
- An MCQ is uniquely prepared for each presentation and matched to a pre-determined key learning point related to the presented case (for an example, see Figure 2). All M&M attendees are asked to answer the MCQ following an M&M presentation; MCQs are collected and scored.
- Presentation quality and/or attendees’ knowledge can be monitored and audited periodically/longitudinally to ensure sustainability of effective M&M presentations.
### TABLE 3
M&M PRESENTATION QUALITY ASSESSMENT AND FEEDBACK TOOL

<table>
<thead>
<tr>
<th>Evaluation of M&amp;M Presentation</th>
<th>NEITHER CLEAR NOR CONCISE</th>
<th>CLEAR AND CONCISE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Situation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement of the problem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admitting diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement of procedure or operation</td>
<td></td>
<td></td>
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<tr>
<td>Statement of adverse outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical information pertinent to adverse outcome</td>
<td>LONG-WINDED AND IRRELEVANT</td>
<td>SUCCINCT AND RELEVANT</td>
</tr>
<tr>
<td><strong>Patient History:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presents pertinent HPI/PMH/PSH/Meds</td>
<td></td>
<td></td>
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<tr>
<td><strong>Indication for intervention:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describes reason for intervention</td>
<td></td>
<td></td>
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<tr>
<td><strong>Labs and Imaging Studies:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presents studies relevant to outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedural details:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describes technical or physiological details related to outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hospital course:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presents non-procedural events related to outcome</td>
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<td></td>
</tr>
<tr>
<td><strong>Recognition of the complication:</strong></td>
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<td></td>
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<tr>
<td>States how/when complication was recognised</td>
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<td></td>
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<tr>
<td><strong>Management of the complication:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describes how the complication was managed</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Assessment and Analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation of what happened and why it happened</td>
<td>ABSENT OR NOT WELL THOUGHT-OUT</td>
<td>INDEPENDENT AND ACCURATE ANALYSIS</td>
</tr>
<tr>
<td><strong>What happened? Error analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describes sequence of events leading to adverse outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Why did it occur? Root cause analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of fundamental causes of the adverse outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1 Human errors:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error in diagnosis, technique, judgment, communication</td>
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<td></td>
</tr>
<tr>
<td><strong>2 Systems errors:</strong></td>
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<td></td>
</tr>
<tr>
<td>Errors(s)/problems in care system/organisation (e.g. poor supervision, low staffing, inadequate co-ordination of care, etc)</td>
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<td></td>
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<tr>
<td><strong>3 Patient-related factors:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient disease or non-compliance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Review of literature
Evidence-based practice

Weak, irrelevant evidence

Strong, relevant evidence

Review of literature
Presents literature pertinent to the complication

Recommen.dations
Proposed actions to prevent future similar problem

Not independently provided

Independently provided based on current literature

Identifies learning points from case

Identifies how problem could have been prevented or better managed

Note: HPI, history of present illness; PMH, past medical history; PSH, past surgical history. All aspects of the presentation can be scored on the 5-point scales of the instrument above (a tick can be placed in the appropriate cell). These scores should subsequently be fed back and discussed with the presenter.

FIGURE 2
SAMPLE MULTIPLE-CHOICE QUESTION FOR M&M ATTENDEES TO EVALUATE LEARNING FROM CASE REVIEW

October 5, 2009 Circle: Consultant / ST 1 2 3 4 5 6 7+ / 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 thromboprophylaxis prior to operative repair?

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

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

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

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
SBAR M&M REFERENCES


REFERENCES CITED IN THIS TOOLKIT


## APPENDIX 1
SBAR M&M PRESENTATION PROFORMA AND GUIDANCE NOTES

<table>
<thead>
<tr>
<th>Surgical or Anaesthesia Service</th>
<th>Name of Presenter</th>
<th>Date</th>
</tr>
</thead>
</table>

**Situation**
Statement of the problem

- Admitting diagnosis:
- Procedure performed:
- Complication:
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 the complication

Assessment and Analysis
Error analysis and root cause analysis

- Error analysis
- Root cause analysis
  - Human error
  - Systems error
  - Patient related factors
Review of Literature
Evidence-based practice

Recommendations
Proposed actions to prevent future similar problems
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.

**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 physiological 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 recognised
- Management of complication: describe the steps taken to manage the complication

MAKE THIS PART SHORT AND SWEET!

*HPI, history of present illness; PMH, past medical history; PSH, past surgical history
Assessment and Analysis: 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 the sequence of events leading to adverse outcome.
- Why did it occur? (Root cause analysis):
  - Human error: error in diagnosis, technique, judgement, communication
  - Systems error: errors/problems in care system/organisation, e.g. poor supervision, low staffing, inadequate co-ordination of care, etc
  - Patient related factors: patient disease or non-compliance

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
Recommendations: this is another area where trainee presentations could be improved. Presenters 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
APPENDIX 2
STANDARDISED M&M SBAR FORMAT FLASHCARD

SBAR

Standardised M&M presentations

- Brief description of the case presented
- Succinct description of the events pertinent to the adverse event
- Focused error analysis and summary of factors contributing to the complication
- Identify learning point for the case with review of the literature pertinent to the complication
- Propose actions for prevention of future similar problem

Improving M&M presentations and learning outcomes

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