

# From Morbidity and Mortality to Quality Improvement: Effects of a Structured and Interactive Otolaryngology Conference

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## Abstract

**Objective.** Measure the effects of a structured morbidity and mortality conference format on the attitudes of resident and faculty participants.

**Study Design.** Prospective cohort study.

**Setting.** Otorhinolaryngology-head and neck surgery residency training program.

**Subjects and Methods.** Two changes were implemented to the structure of our morbidity and mortality conference: (1) we adopted a recently described presentation framework called situation-background-assessment-recommendation and (2) appointed a faculty moderator to lead the conference. Surveys were distributed to residents and faculty before and after these modifications were implemented to measure changes in attitude of conference attendees.

**Results.** After implementing the above changes to the morbidity and mortality conference, participant engagement increased from “moderately engaged” to “extremely engaged” ( $P < .01$ ). Among both faculty and residents, the perceived educational value of conference also improved from “moderately educational” to “extremely educational” ( $P < .01$ ). Finally in the attending cohort, the impact on future patient care increased from “no change” to “greatly enhanced” ( $P < .01$ ).

**Conclusion.** By implementing the situation-background-assessment-recommendation framework and appointing a faculty moderator to morbidity and mortality conference, participants reported significantly enhanced engagement during the conference, increased educational value of the session, and a positive impact on future patient care.

## Keywords

morbidity and mortality conference, quality improvement conference, situation-background-assessment-recommendation, SBAR

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The morbidity and mortality (M&M) conference is a widely accepted facet of quality improvement curricula, which allows physicians and trainees to learn from poor patient outcomes. The Accreditation Council for Graduate Medical Education (ACGME) mandates this conference to maintain accreditation as an otolaryngology residency-training program, yet little research exists within otolaryngology regarding how quality improvement design may affect physician practices and effect positive clinical outcomes.<sup>1</sup>

Many obstacles exist to improving the M&M conference; a recent survey of otolaryngology residency program directors indicated that 90% felt that a lack of time was the biggest constraint in establishing a quality improvement (QI) curriculum.<sup>2</sup> Historically, the traditional M&M format involved a resident presentation of a case with subsequent discussion among attending faculty regarding sources of error and recommendations for improvement.<sup>3</sup> Downsides of this model include minimal engagement of most audience members, a lack of active resident instruction, and no root cause analysis to prevent future errors. Training residents in such skills is a tenet of the ACGME and is now mandated by their Common Program Requirements.<sup>4</sup> As such, the M&M conference is uniquely suited to serve as the foundation of a QI curriculum in resident education.<sup>5</sup>

Based on a comprehensive review of the surgical education literature, we sought to optimize our M&M conference by implementing a change in format. We hypothesized that a structural change would improve both resident and

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**Table 1.** Situation-Background-Assessment-Recommendation (SBAR) Framework.<sup>a</sup>

Components of SBAR		Description
<b>S</b>	Situation	Brief description of the case presented
<b>B</b>	Background	Succinct description of the events pertinent to the adverse event
<b>A</b>	Assessment and analysis	Focused error analysis and summary of factors contributing to the complication
<b>R</b>	Review of literature	Identify learning point for the case with review of the literature pertinent to the complication
	Recommendations	Propose actions for prevention of future similar problems

<sup>a</sup>Description of the SBAR framework with adaptations made for medical quality assurance, as described by Mitchell et al.<sup>10</sup> Reprinted from the *American Journal of Surgery*, Vol 203 issue 1, Mitchell et al., SBAR M&M: a feasible, reliable, and valid tool to assess the quality of, surgical morbidity and mortality conference presentations, pages 26-31, Copyright (2012), with permission from Elsevier.

attending engagement and thus the overall educational value of conference while simultaneously teaching residents the tools to engage in lifelong QI.

## Methods

### Study Design

At Montefiore Medical Center, an urban, tertiary referral academic center, the Quality Improvement Conference, or M&M conference, in the Department of Otorhinolaryngology–Head and Neck Surgery is conducted once every 4 to 6 weeks. Albert Einstein College of Medicine institutional review board exemption to survey residents and faculty was obtained. Prior to any conference changes, all faculty and residents who had experienced at least 12 months of M&M were surveyed regarding their perception of the traditional conference format (see Appendix A). Three questions with Likert scale responses asked attendees about their engagement or involvement during the session, their perception of the educational value of the conference, and the extent to which they felt prepared to handle or prevent similar complications in the future. Two of these questions were derived from a study by Prince et al<sup>6</sup> to allow for comparison of these results with past and future studies.

Two major changes were made to the format of our M&M conference. First, a strict presentation structure, the situation-background-assessment-recommendation (SBAR) framework, was implemented (**Table 1**). This structure has previously been validated in surgical M&M conferences at both the University of California, Los Angeles and Oregon Health and Science University.<sup>7,8</sup>

The second alteration of the M&M conference was the appointment of a faculty moderator, whose task was to engage all attendees in the discussion of the case. After modification of the conference structure, attendees were resurveyed regarding their perception of the new format (Appendix B).

### Inclusion Criteria

Participation in this study was limited to otolaryngology residents and full-time faculty members who were present at 1 or more departmental M&M conferences before and after changes were implemented. All surveys were anonymous and participation was voluntary.

**Table 2.** Demographics.

Characteristic	Preintervention Survey	Postintervention Survey	P Value
Total No. of participants	27	24	
Role, No. (%)			
Residents	13 (48)	11 (46)	.869
Attendings	14 (52)	13 (54)	
Sex, No. (%)			
Male	19 (70)	17 (71)	.971
Female	8 (30)	7 (29)	
Experience, median, y			
Residents	4	4	.889
Attendings	5	12	.368
Department response rate, %	75	67	.437

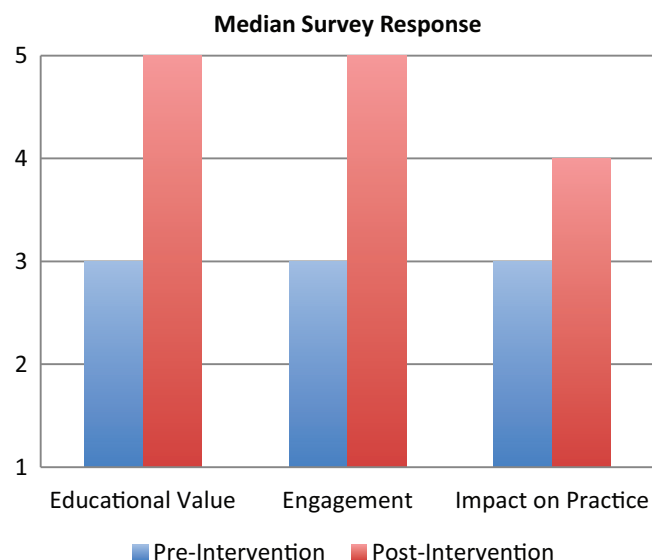
### Statistical Analysis

The data set of responses does not adhere to a normal distribution, as confirmed by the Shapiro-Wilk test. As such, nonparametric tests were used to compare median values. The categorical nature of Likert-style surveys makes such an analysis more powerful. The Mann-Whitney *U* test was used to compare medians of samples using a 2-tailed test with a significance level of .05. Data analysis was performed by the study authors using Microsoft Excel (version 14.3.8; Microsoft, Redmond, Washington).

## Results

Surveys were distributed to 16 residents and 20 attendings before and after the new structure was implemented. Twenty-seven of 36 potential responses (75%) were obtained for the initial preintervention survey and 24 of 36 potential responses (67%) were obtained for the postintervention survey. The group of responders was evenly split between residents and attendings. Additional demographic data can be found in **Table 2**.

The data reveal that both residents and attendings felt significantly more engaged during conferences following the implementation of the new format, as evidenced by the



**Figure 1.** Median participant response to survey questions regarding their morbidity and mortality (M&M) experience. Likert scale responses: 1 = *most negative response*; 5 = *most positive response*.

**Table 3.** Participant Engagement.<sup>a</sup>

Characteristic	Preintervention Survey, Median (IQR)	Postintervention Survey, Median (IQR)	P Value
All participants	3 (2-3)	5 (4-5)	<.01
Residents	2 (2-3)	4 (4-5)	<.01
Faculty	3 (3-4)	5 (4-5)	<.01

Abbreviation: IQR, interquartile range.

<sup>a</sup>Participants were asked how engaged or involved they felt during the morbidity and mortality conference (1 = *not at all engaged*, 3 = *moderately engaged*, 5 = *extremely engaged*).

change in median Likert scale response from 3 (*moderately engaged*) to 5 (*extremely engaged*) ( $P < .01$ ) (**Figure 1**). This held true among both resident and attending subgroups (**Table 3**).

Survey respondents also noted a statistically significant increase in perceived educational value of conference. The median response in both the resident and faculty cohorts changed from a perception that conference was 3 (*moderately educational*) to 5 (*extremely educational*) with the new structure (**Table 4**).

When asked about the effect of the M&M conference on participants' abilities to handle or prevent similar complications in the future, the initial median response was that attendees perceived 3 (*no change*) in their abilities. In the postintervention survey, the median response changed to a 4 (*enhanced*) perception of ability to handle or prevent a similar situation in the future. This effect was statistically significant in the faculty cohort ( $P < .01$ ) but not among resident physicians (**Table 5**).

**Table 4.** Educational Value.<sup>a</sup>

Characteristic	Preintervention Survey, Median (IQR)	Postintervention Survey, Median (IQR)	P Value
All participants	3 (3-3)	5 (4-5)	<.01
Residents	3 (3-3)	5 (4-5)	<.01
Faculty	3 (2-3)	5 (4-5)	<.01

Abbreviation: IQR, interquartile range.

<sup>a</sup>Participants were asked to rate the overall educational value of the morbidity and mortality conference (1 = *not at all educational*, 3 = *moderately educational*, 5 = *extremely educational*).

**Table 5.** Effect on Future Practice.<sup>a</sup>

Characteristic	Preintervention Survey	Postintervention Survey	P Value
All participants	3 (3-4)	4 (4-5)	<.01
Residents	4 (3-4)	4 (4-5)	.060
Faculty	3 (3-4)	5 (4-5)	<.01

Abbreviation: IQR, interquartile range.

<sup>a</sup>Participants were asked the extent to which the morbidity and mortality conference affected their ability to prevent or handle a similar complication in the future (1 = *feel ill-equipped*, 2 = *created confusion*, 3 = *no change*, 4 = *enhanced*, 5 = *greatly enhanced*).

Importantly, 100% of attendees who completed the post-intervention survey indicated that they believed the new conference structure to be more effective at achieving the goals of a QI conference.

## Discussion

In the Department of Otorhinolaryngology–Head and Neck Surgery at Montefiore Medical Center, the M&M conference has always held a central position in education. However, too often, the conference engaged only a single resident and select faculty in an academic and occasionally disjointed discussion without prepared take-home points for all attendees.

Although originally developed to improve communication in other high-risk industries, SBAR has recently been adapted to healthcare and QI initiatives.<sup>9,10</sup> This framework allows the details of a case to be summarized succinctly, permitting the presenter to focus on causes of any complications and communicate cogent take-home points. The crux and ultimate utility of the SBAR structure is the conclusion of each presentation with a review of the literature, including evidence-based recommendations to prevent similar outcomes in the future.

By establishing quality improvement and resident education as the focus of the M&M conference, we note subjective improvements perceived by all participants. The results

of this study are aligned with research throughout the general surgery literature, which consistently demonstrates improvements in the M&M conference when a rigid presentation format and a moderator are established.<sup>11,12</sup> The SBAR framework is particularly intuitive and easy to implement, but other studies describe alternative structured formats, leading to similarly positive results.<sup>7,8</sup> The observed improvements in participant engagement are likely secondary to the presence of a moderator, whose role was to pose relevant questions to audience members during the presentation. For example, the moderator often asked specific participants how they might handle a similar situation as the one being presented. Similarly, attending subspecialists were often asked to comment on cases that fell within their expertise.

This study contributes to the scant literature regarding QI education within the field of otolaryngology. A recent novel study by Laury et al<sup>13</sup> describes the development of an otolaryngology QI curriculum, using the SBAR format. Our results complement those findings and demonstrate that residents and faculty have a strong preference for this framework and perceive it to be more engaging

and educational with a high impact on their future practice.

A limitation of this and other M&M studies has been the investigation of a single institution contained to 1 resident-faculty cohort. It is also important to note potential confounders—most important, the subjectivity of self-reported data that is subject to biases. Multi-institutional studies with objective assessments, such as boards-style questions and monitoring of long-term complication rates, as opposed to self-reported data, would strengthen these findings and should be the focus of future research.

## Conclusion

This study evaluates the effects of a structured M&M conference format to improve residency training in QI. By surveying conference participants, we demonstrate that the implementation of the SBAR format into the M&M conference with appointment of a faculty moderator improves both resident and faculty engagement. Ultimately, this increases the educational benefit of the M&M conference and prospects for improved patient care.

## Appendix A

### Part I: Preimplementation Survey

*Instructions:* Please answer the following questions about your experience attending prior morbidity and mortality (M&M) conferences in this department. Your answers are anonymous and your participation is voluntary.

I. Rate the overall educational value of past M&M conferences that you have attended in this department.

1	2	3	4	5
<i>Not at all educational</i>		<i>Moderately educational</i>		<i>Extremely educational</i>

II. On average, how engaged or involved did you feel during past M&M conferences in this department?

1	2	3	4	5
<i>Not at all engaged</i>		<i>Moderately engaged</i>		<i>Extremely engaged</i>

III. To what extent have prior M&M conferences in this department affected your ability to prevent or handle similar complications to those that were presented?

1	2	3	4	5
<i>Made me feel ill-equipped</i>	<i>Created confusion</i>	<i>No change</i>	<i>Enhanced</i>	<i>Greatly enhanced</i>

## Appendix B

### Part II: Postimplementation Survey

*Instructions:* Please answer the following questions about this morbidity and mortality conference. Your answers are anonymous and your participation is voluntary.

I. Rate the overall educational value of this conference.

1	2	3	4	5
<i>Not at all educational</i>		<i>Moderately educational</i>		<i>Extremely educational</i>

II. How engaged or involved did you feel during this session?

1	2	3	4	5
<i>Not at all engaged</i>		<i>Moderately engaged</i>		<i>Extremely engaged</i>

III. Rate the effect of this conference on your ability to prevent or handle a similar complication.

1	2	3	4	5
<i>Now feel ill-equipped</i>	<i>Created confusion</i>	<i>No change</i>	<i>Enhanced</i>	<i>Greatly enhanced</i>
IV. In comparison with the original conference style, do you believe the new format is more effective at achieving the goal of a Quality Improvement Conference <sup>a</sup> ?				
Yes			No	

<sup>a</sup>The goal of a Quality Improvement Conference is to work as a team to review cases and learn from them to optimize the care that we provide to future patients. The goal is to provide quality care that is “safe, effective, reliable, patient-centered, timely, efficient, and equitable,” as defined by the Institute of Medicine and adopted by the American Academy of Otolaryngology—Head and Neck Surgery Foundation.

## Author Contributions

**Daniel B. Spielman**, study protocol development, data analysis, manuscript composition; **Wayne D. Hsueh**, study implementation, data acquisition, manuscript revisions, final editing; **Karen Y. Choi**, study implementation, data acquisition, manuscript revisions, final editing; **John P. Bent**, study design, protocol development, data acquisition, manuscript composition, final editing.

## Disclosures

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