National Multispecialty Survey Results: Comparing Morbidity and Mortality Conference Practices within and outside Otolaryngology

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Abstract

Objective. The objective is to describe variations in the otolaryngology morbidity and mortality (M&M) conference and to compare with other specialties.


Setting. The setting included otolaryngology departments across the United States and nonotolaryngology medical and surgical departments at 4 academic medical centers.

Subjects and Methods. Participants were members of a national otolaryngology quality/safety network and nonotolaryngology quality leaders at 4 large academic hospitals. Surveys were administered January 2017. Respondents described M&M conference practices, goals, and educational role.

Results. Twenty-eight of 39 individuals representing 28 institutions completed the otolaryngology survey (72% response rate). Of 197 individuals, 60 (30% response rate) representing 11 surgical and 20 nonsurgical specialties completed the comparison survey. Twenty-seven of 28 otolaryngologists (46 of 60 nonotolaryngologists) worked in academic settings. All otolaryngology programs conducted an M&M conference: 54% discussed all adverse events and errors; 32% used standard case selection processes; 70% used structured discussion, usually root cause analysis (64%); and 32% classified harm level. In comparison with other specialties, otolaryngology programs were more likely to discuss all adverse events and errors (P = .01). Most conferences led to quality projects and intrainstitutional communication: 22% communicated to patients and families; 73% of respondents thought that M&M conferences should be standardized or use “best practices.” In both surveys, improving patient care was rated the conference’s most important function, followed by trainee education and culture change. Patients care and practice-based learning were rated the most relevant Accreditation Council for Graduate Medical Education Core Competencies in both surveys.

Conclusions. Academic otolaryngology M&M practices generally align with other specialties, but specifics vary widely, making collaborative quality improvement challenging. Educational and administrative priorities cross specialties. Most respondents thought that standardization and best practices are worthwhile. Nonacademic practice data are needed.

Keywords

quality improvement, morbidity and mortality, benchmarking, survey, standardization

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The morbidity and mortality (M&M) conference has been a key component of patient safety and quality improvement (PSQI) in many medical and surgical specialties for nearly a century. The M&M conference has traditionally comprised review of “mistakes,” errors, and undesirable events or outcomes. M&M conferences in surgical and nonsurgical fields have evolved, paralleling error analysis in general and moving away from focus on the individual and toward identifying cognitive, system-, and process-level issues that might contribute to errors and adverse outcomes. With this shift, many specialties have
altered M&M practices to optimize formal quality improvement (QI) tie-ins, whether through structured approaches or specific analytic strategies. This approach has led to the incorporation of structured approaches to identify events and cases for discussion, analyze events, make improvements, and track follow-up, all of which have been recognized as key components of QI. Studies of these approaches have demonstrated increased perceived and actual effectiveness of the M&M conference, with the process building on itself to improve over time through cultural change. Furthermore, the M&M conference is seen by many as a critical component of resident and fellow education and may be a strategy to promote PSQI principles in trainees.

Despite this growing body of evidence, wide variations still exist in M&M practices across medical and surgical specialties. While few efforts have been proposed or implemented in these directions in otolaryngology, we suspected that similar heterogeneity existed within otolaryngology, given that the majority of efforts to improve the formal PSQI role of surgical M&M have occurred in general surgery. Through a national survey, we aimed to describe current otolaryngology M&M practices across the United States as compared with other medical and surgical specialties. The ultimate goal was to provide information that might prove useful in improving M&M conferences. Due to M&M’s significant role in resident and fellow education and as a potential vehicle for the Accreditation Council for Graduate Medical Education Core Competencies, we elected to focus this first pass on academic otolaryngology programs.

Methods

We identified 39 nontrainee otolaryngologist members of a newly developed national QI network led by 1 of the authors (C.S.). The network was established by sending an email request to all US otolaryngology program directors, asking them to identify a faculty member responsible for quality and safety or to designate someone to participate in the network. The response rate to this invitation was 34%. The purpose of the network is to share best practices regarding quality and safety issues. Participants are all involved in otolaryngology QI activities as quality directors in their department or institution and/or through the American Academy of Otolaryngology–Head and Neck Surgery Patient Safety and Quality Improvement Committee. For the comparison survey, we identified 197 individuals in nonotolaryngology specialties at our 4 respective academic institutions with similar quality leadership roles, with 1 person representing each department/program. Sample sizes included all possible participants whom we could identify; we did not perform power calculations, owing to the lack of clarity on the appropriate effect size and the variable that would be the most important measure. All potential participants were invited via email to participate in a SurveyMonkey.com survey on their M&M practices. No compensation was offered apart from our willingness to share the results once the study was complete.

One author (K.B.) initially drafted the survey, which was edited by the 3 senior authors. The survey was not validated; no validated instrument exists to assess M&M practices. However, questions were based on current literature regarding M&M as a PSQI activity. The 3 senior authors also completed the survey prior to inviting other participants, to ensure that the questions were comprehensible.

Descriptive statistics were performed with tools on SurveyMonkey.com and Microsoft Excel (2010). Z tests comparing proportions between otolaryngology and nonotolaryngology (“comparison”) respondents were performed with Microsoft Excel. We restricted statistical testing to specific comparisons of interest to minimize type 1 error due to multiple testing. The Holm-Bonferroni correction was used to determine a threshold for all statistical comparisons conducted. This correction rendered all comparisons statistically insignificant; given the lack of clarity about the risk of a type 1 error without correction versus a type 2 error with correction, we report uncorrected P values but encourage their interpretation with caution. Multivariable analysis was not performed, because of the simple descriptive nature of this study. This project was exempted by the Mayo Clinic Institutional Review Board.

Results

Respondents

Twenty-eight of 39 respondents representing 28 institutions completed the otolaryngology survey (72% response rate). Of 197 participants, 60 (30% response rate) representing 11 surgical and 20 nonsurgical specialties completed the comparison survey. Of these 60, 25 were from the Mayo Clinic (any geographic location), 18 from Washington University in St Louis, 12 from the University of Pittsburgh, and 5 from Baylor University/Texas Children’s Hospital.

Twenty-seven of 28 otolaryngologists worked in academic settings, as did 46 of 60 nonotolaryngologists. Of the 14 nonotolaryngologists not in academic practice, 7 each were from the Mayo Clinic and University of Pittsburgh health systems. Of the 28 otolaryngologists, 23 were formally designated department quality or patient safety officers or directors, and 7 were residency program directors or associate directors. Four were members of the American Academy of Otolaryngology–Head and Neck Surgery Patient Safety and Quality Improvement Committee. Comparison respondents showed a similar breakdown, with 43 formally designated quality or patient safety officers and 3 residency or fellowship directors. Both groups were distributed over all census regions of the United States, with the greatest representation being from the Midwest in both surveys (32%, otolaryngology; 58%, comparison).

Participants in M&M Conferences

Ninety-six percent of otolaryngology M&M was conducted at the specialty level (rather than subspecialty within otolaryngology or the broader level of a department of surgery). Although 14% also had M&M activity at the subspecialty level, 86% was conducted at the specialty level.
level, only 4% had institution-level M&M activity. Comparison surveys showed 58% subspecialty level, 57% specialty level, and 18% institution-wide; 8% did not conduct an M&M conference. The subspecialty and specialty levels were separated in the survey to allow for administrative variations, such as otolaryngology being a division versus a department, and for variation in the size of subspecialty divisions within otolaryngology. Eighty-nine percent of otolaryngology programs held an M&M conference monthly, and all programs had M&M conferences at least quarterly; the distribution was broader for comparison programs (8% weekly, 40% monthly, 33% quarterly, 6% semiannually).

Participants in M&M conferences in both surveys included attending physicians and trainees within the department (100% of otolaryngology programs; comparison programs, 92% attending physicians and 86% trainees); compared with other specialties, a significantly greater proportion of otolaryngology programs reported regular trainee participation (P = .04). Different rates were seen between otolaryngology (50%) and comparison (71%) programs for involvement of nonphysician clinical staff (nurses, advance practice nurses, physician assistants; 78%, comparison). Most programs on both surveys conducted M&M as a live conference with in-person attendance (96% vs 94%); some offered remote audio/video participation (21% vs 14%). No program reported using electronic case review without real-time interaction.

Selection of Cases to Be Discussed at M&M Conferences

Event Capture. Otolaryngology respondents most commonly used faculty reporting (96%), resident reporting (100%), and manual entry into a case list (64%) to identify and log M&M discussion cases; comparison respondents used the same 3 most common methods (71%, 62%, and 40%, respectively). Only 11% of otolaryngology and 7% of comparison respondents used automated flags from an electronic health record, while institutional and departmental databases were used by <30% in both surveys. In systems using automatic flags, 37% of otolaryngology respondents indicated that their system would flag a return to the operating room, 37% for readmission, and 30% for specific complications on a preset list; this compares with 32%, 25%, and 36%, respectively, for comparison programs. “Preset list” examples mentioned in the survey were hematoma, wound infection, pulmonary embolism, death, and complications listed in the American College of Surgeons National Surgical Quality Improvement Program database.

Otolaryngology respondents indicated that, most often, each attending physician selected discussion cases from their own patients (41%), with the second-most common approach (37%) being case selection for the entire department by a specific person (eg, departmental QI director). In contrast, comparison respondents most often (31%) had a specific person within each division or subspecialty perform the selection, with 22% indicating that each attending physician selected from his or her own patients and 22% reporting that a specific person selected cases for the entire department.

Case Selection. Case selection for M&M discussion showed some differences (Table 1). Most otolaryngology respondents (54%) indicated that they discussed all adverse events and errors, while 43% discussed selected cases without a standard selection process and 32% discussed selected cases via a standard selection process. In contrast, only 26% of comparison respondents discussed all events (P = .01 vs otolaryngologists); 60% discussed selected cases without a standard selection process; and 32% discussed selected cases via a standard selection process. Cases were selected for discussion in a variety of ways in both groups: 36% of otolaryngology respondents used a predetermined list of events (vs 26% comparison); 79% considered educational value (vs 70%); and 50% considered a case’s value in generating QI projects (vs 38%). Seventy-five percent of otolaryngology respondents included near-miss events, and 89% included mortalities, as opposed to 53% and 70% of comparison respondents, respectively (P = .06 for inclusion of near-miss events).

Logistics of M&M Conference Case Discussion

Most otolaryngology respondents (70%) indicated that M&M combined cases from multiple clinical sites, while only 24% of comparison respondents selected this response. However, 47% of comparison respondents stated that this question was not applicable, presumably because their program did not have >1 clinical site. Fifty-six percent of otolaryngology respondents did not set a time limit for each case’s discussion, with another 30% keeping discussion to 5 to 10 minutes; 49% of comparison programs similarly set no time limit, while 42% allowed 10 to 30 minutes per case. Ninety-two percent of otolaryngology programs had trainees present cases, compared with 58% of comparison programs, among whom 37% had the attending physician present. Discussions were usually facilitated by the case presenter (otolaryngology, 54%; comparison, 49%), although 27% and 29% of each group, respectively, had facilitation by neutral or uninvolved parties with specialty or subspecialty expertise.

Table 2 presents key findings for how otolaryngology and comparison programs discussed cases. Case discussions were described as structured by 70% of otolaryngologists and 51% of comparison respondents (P = .11). For those using specific rubrics to direct discussion, otolaryngology and comparison programs most commonly used root cause analysis (64% and 64%) and “situation, background, assessment, and recommendation” (36% and 21%, respectively). Other approaches used by respondents included the “5 whys” and fishbone diagrams. For those using structured
discussion formats, the most common discussion template components in both groups were patient demographics, clinical history/background, event description, final outcome/resolution, and relevant imaging or laboratory data. Thirty-two percent of otolaryngologists and 48% of comparison respondents included harm level in their discussion, while 26% and 30%, respectively, included duration of harm. For those who graded harm level, otolaryngology programs used a variety of scales (17%, Clavien-Dindo; 17%, Agency for Healthcare Research and Quality Common Formats; several other less defined systems), while 50% of comparison respondents used Clavien-Dindo and 25% used Agency for Healthcare Research and Quality Common Formats (see Table 3).

Table 1. Otolaryngology and Comparison Programs: Components of M&M Case Selection.

<table>
<thead>
<tr>
<th>Respondents, %</th>
<th>Otolaryngology</th>
<th>Comparison</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which cases are discussed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All adverse events/errors</td>
<td>54</td>
<td>26</td>
<td>.01</td>
</tr>
<tr>
<td>Standard case selection process</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Near miss</td>
<td>75</td>
<td>53</td>
<td>.06</td>
</tr>
<tr>
<td>Mortality</td>
<td>89</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Criteria for case selection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predetermined list of events</td>
<td>36</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Educational value</td>
<td>79</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Value in generating QI projects</td>
<td>50</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Method of case selection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty reporting</td>
<td>96</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Resident reporting</td>
<td>100</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Manual entry</td>
<td>64</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Automated flags from EHR</td>
<td>11</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Person responsible for case selection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Each attending physician</td>
<td>41</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Single designated individual for entire department</td>
<td>37</td>
<td>22</td>
<td></td>
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</tbody>
</table>

Table 2. Otolaryngology and Comparison Programs: Components of M&M Case Discussion and Documentation.

<table>
<thead>
<tr>
<th>Respondents, %</th>
<th>Otolaryngology</th>
<th>Comparison</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured discussion (any type)</td>
<td>70</td>
<td>51</td>
<td>.11</td>
</tr>
<tr>
<td>Root cause analysis</td>
<td>64</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>SBAR</td>
<td>64</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Harm level discussed (any scale)</td>
<td>32</td>
<td>48</td>
<td>.30</td>
</tr>
<tr>
<td>Clavien-Dindo Scale</td>
<td>17</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>AHRQ common formats</td>
<td>17</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Recording of discussion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local database entry</td>
<td>57</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>No documentation</td>
<td>34</td>
<td>53</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Abbreviations: AHRQ, Agency for Healthcare Research and Quality; M&M, morbidity and mortality; QI, quality improvement.

Recording and Follow-up from M&M Discussion

No program in either survey entered data into patients’ medical records. Otolaryngology respondents either entered information into departmental databases (57%) or did not formally document discussions (34%), while most comparison respondents did not document (53%), with an additional 21% each indicating entry into departmental and institutional databases (Table 2).

With regard to purposeful use of M&M as a PSQI activity, 61% of otolaryngology respondents indicated that M&M was designed to lead to formal QI projects, as compared with 38% of comparison respondents ($P = .08$). More than 50% of respondents in each survey indicated that M&M was designed to lead to informal QI projects, tracking or trending of specific adverse events, communication to other departments involved in a given patient’s care (when appropriate), and communication to institutional leadership. Twenty-two percent of otolaryngology programs communicated to the patient and/or family after M&M discussion versus 15% for comparison ($P = .49$). The majority of otolaryngology (73%) and comparison (71%) participants thought that M&M should be standardized or conform to a set of “best practices.” We did not inquire whether participants’ own M&M conferences met this expectation.

M&M as an Educational Tool

Respondents in both groups ranked improvement of patient care as the most important function of M&M. Otolaryngologists ranked resident and fellow education as the second-most important function and changing department or institutional culture third; these were reversed on the comparison survey. Academic productivity, regulatory compliance, and monitoring metrics for financial incentives were ranked the 3 lowest functions of M&M on both surveys. Otolaryngologists ranked patient care and procedural skills first and practice-based learning and improvement second as the Accreditation Council for Graduate Medical Education Core Competencies to which M&M contributed most; comparison respondents reversed this order. Note that on both surveys, only small differences separated the ranking of each competency from the next.

Discussion

The M&M conference is commonly accepted as a critical component of QI. Meanwhile, a recent survey of otolaryngology
Harm level | Harm level | Duration
---|---|---
I. No harm | A. Death | A. Permanent
II. Medication | B. Severe harm | B. Temporary
III. Surgery | C. Moderate | C. Unknown
IV. Life-threatening/ ICU care | D. Mild harm | 
V. Death | E. No harm | F. Unknown

**Table 3. Clavien-Dindo and AHRQ Common Formats: Harm Rating Scales.**

Abbreviations: AHRQ, Agency for Healthcare Research and Quality; ICU, intensive care unit.
*Note that ascending numbers indicate increasing harm in Clavien-Dindo and decreasing harm in AHRQ Common Formats.*

residency program directors found that 90% thought that QI education was important or very important to “a resident’s future success in the field of otolaryngology,” and all indicated that M&M was an important component of this education. Our survey results indicate that many academic otolaryngology programs and nonotolaryngology programs have adopted approaches to the M&M conference that reflect these beliefs. Our comparison survey, reflecting a variety of medical and surgical specialties, reveals that, for the most part, academic otolaryngology programs in the United States are keeping up with colleagues from other fields. Views on standardization and structure of the M&M conference, its key functions, and its educational role were very similar. The specifics of M&M and case analysis were also similar, including specific tools and rubrics used, conference participants, and details of conference scheduling and logistics.

Meanwhile, in some cases, otolaryngology programs may be ahead of the pack. For example, more otolaryngology respondents than comparison respondents indicated that residents and fellows participate regularly in the M&M conference. Similarly, more otolaryngology respondents indicated that they discuss all events and near-miss events; previous studies indicated that discussing “minor” events at M&M may be beneficial for trainee and faculty education. Similarly, the proportion of otolaryngology M&M conferences designed to produce formal QI projects was greater than that of comparison programs.

However, we may have areas for improvement. Greater proportions of comparison programs than otolaryngology programs used well-recognized harm rating scales. Otolaryngology and comparison respondents both indicated that most programs still identify and log cases through local databases, and the prevalence of automated triggers remains low. A large fraction of both groups also indicated that they do not document M&M discussions at all, potentially making follow-up and evaluation of resulting QI projects and other spinoff activities more challenging.

This study has several strengths. It is the first multi-institutional description of M&M practices in any field. It facilitates awareness of various approaches to M&M that might be adapted to fit one’s institution, and it demonstrates specific aspects of M&M that are common across academic otolaryngology programs and many other specialties. The use of an independent comparison survey with surgical and nonsurgical specialties allows us to compare our field with many others at once, revealing new areas for improvement. Response rates to both surveys were reasonable, with the otolaryngology response rate being excellent.

Several limitations should also be recognized. We used a nonvalidated survey because no validated instrument exists to meet our need; de novo validation of such an instrument would overshadow the purpose of this study. Our samples may have been biased because participants in both surveys were identified as quality leaders and may have had a role in promoting certain M&M practices in their own programs and departments. Furthermore, the otolaryngologists surveyed may represent a very QI-focused group, reflected by their participation in the QI network. Similarly, comparison participants were restricted to 4 major academic institutions and their affiliated practice networks, again possibly introducing bias toward more QI activities. A more universal survey might reveal different findings if it included more programs without strong QI leadership or culture. Some comparison specialties included consultative services (most notably infectious diseases, with 2 participants) to which M&M was a less familiar approach to QI. Furthermore, our study is vulnerable to the possibility that not all of the specialties or departments represented here may be as progressive as they could be in their M&M and PSQI activities. In other words, the use of a relative benchmark from other specialties does not mean that any of the specialties surveyed are doing as well as they could. The difference in response rates (72% vs 30%) may be due to this issue as well as selection bias in the inclusion of otolaryngologists identified as being interested in QI. The exclusion of nonacademic programs is an obvious issue that might best be addressed in a separate survey more tailored to that range of practice environments. Finally, correction for multiple testing rendered all statistical comparisons nonsignificant, suggesting that a similar study with a larger sample size might be worthwhile in the future. We report uncorrected P values here but suggest interpreting them with caution.

Considering the purpose of this study, though, we believe that the statistical comparisons are less important than the general themes identified in our findings.

Despite these limitations, this study provides an encouraging overview of the current state of academic otolaryngology M&M conferences, as compared with other specialties. Our specialty has incorporated many “modern” components of M&M as a targeted QI and educational activity that are supported by the medical literature, despite a dearth of M&M-related studies within otolaryngology. Our findings do identify specific areas for possible improvement. **Table 4** elaborates on these areas. We hope that our findings encourage consideration of these areas in one’s institution.
Table 4. Key Areas for Improvement in the QI Focus of the Otolaryngology M&M Conference as Identified by This Study.

<table>
<thead>
<tr>
<th>Key Opportunities for Improvement</th>
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<tbody>
<tr>
<td>1. The use of established harm rating scales can be expanded and standardized.</td>
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<tr>
<td>2. Documentation of M&amp;M discussions is far from universal. A medicolegally “safe” method to record or document these discussions would be valuable, both for follow-up of resulting QI activities and for future reference should similar cases or events occur.</td>
</tr>
<tr>
<td>3. As electronic health records expand in adoption and capability, opportunities may arise to automate or partially automate the identification and logging of possible cases for M&amp;M discussion, ensuring that cases are not missed and that attending surgeons’ biases do not affect the selection of cases for discussion. For example, one recently published example demonstrated feasibility for posttonsillectomy hemorrhage. Automation might also promote more egalitarian “just cultures,” with all clinicians feeling equally comfortable having their cases discussed.</td>
</tr>
<tr>
<td>4. Less than two-thirds of otolaryngology respondents indicated that their M&amp;M conference was designed to lead to formal QI projects or was connected to tracking and trending adverse events. This is certainly an area in which many specialties can improve. While it may take initial time, effort, and infrastructure, the shift to a “longitudinal” view of M&amp;M is essential to maximize impact on actual patient outcomes and quality of care.</td>
</tr>
<tr>
<td>5. Differences exist between M&amp;M practices in otolaryngology and other medical and surgical fields. Most participants in both surveys supported some degree of standardization of the M&amp;M conference. Standardization may facilitate cross-specialty and multidisciplinary QI activities. These activities may become important as multidisciplinary care increases, particularly for complex cases and diseases.</td>
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</table>

Abbreviations: M&M, morbidity and mortality; QI, quality improvement.

and that these data serve as a baseline for future formal benchmarking efforts.

**Conclusion**

Academic otolaryngology M&M practices generally align with other specialties, with otolaryngology programs being leaders in some areas but demonstrating other possible areas for improvement. Educational and administrative priorities cross specialties. Future work could target potential areas of improvement, standardization across programs and specialties, and evaluation of nonacademic practice settings.

**Author Contributions**

Karthik Balakrishnan, conception, design, data acquisition, analysis, interpretation, drafting, revising, final approval; Ellis M. Arjmand, design, data acquisition, interpretation, revising, final approval; Brian Nussenbaum, design, data acquisition, interpretation, revising, final approval; Carl Snyderman, design, data acquisition, interpretation, revising, final approval.

**Disclosures**

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**References**


