Internal Medicine Residents' Perceptions of Morning Report: a Multicenter Survey

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BACKGROUND: Residents rate morning report (MR) as an essential educational activity. Little contemporary evidence exists to guide medical educators on the optimal content or most effective delivery strategies, particularly in the era of resident duty-hour limitations and shifts towards learner-centric pedagogy in graduate medical education.

OBJECTIVE: Assess resident views about MR content and teaching strategies.

DESIGN: Anonymous, online survey.

PARTICIPANTS: Internal medicine residents from 10 VA-affiliated residency programs.

MAIN MEASURES: The 20-item survey included questions on demographics; frequency and reason for attending; opinions on who should attend, who should teach, and how to prioritize the teaching; and respondents' comfort level with participating in MR. The survey included a combination of Likert-style and multiple-choice questions with the option for multiple responses.

KEY RESULTS: A total of 497 residents (46%) completed the survey, with a balanced sample of R1s (33%), R2s (35%), and R3s (31%). Self-reported MR attendance was high (31% always attend; 39% attend > 50% of the time), with clinical duties being the primary barrier to attendance (85%). Most respondents felt that medical students (89%), R1 (96%), and R2/R3s (96%) should attend MR; there was less consensus regarding including attendings (61%) or fellows (34%). Top-rated educational topics included demonstration of clinical reasoning (82%), evidence-based medicine (77%), and disease pathophysiology (53%). Respondents valued time spent on diagnostic work-up (94%), management (93%), and differential building (90%). Overall, 82% endorsed feeling comfortable speaking; fewer R1s reported comfort (76%) compared with R2s (87%) or R3s (83%, $p = 0.018$). Most (81%) endorsed that MR was an inclusive learning environment (81%), with no differences by level of training.

CONCLUSIONS: MR remains a highly regarded, well-attended educational conference. Residents value high-quality cases that emphasize clinical reasoning, diagnosis, and management. A supportive, engaging learning environment with expert input and concise, evidence-based teaching is desired.

KEY WORDS: graduate medical education; internal medicine residency; morning report; survey.

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INTRODUCTION

Morning report (MR) is a conference with deep roots in internal medicine (IM) training and is rated by residents as one of the most important educational activities.[1–6] Yet surprisingly little contemporary evidence exists to guide medical educators on the optimal content or most effective delivery strategies. Two decades have elapsed since residents' goals and objectives for MR have been examined.[4,7] Important interval changes include the institution of resident duty-hour limitations,[8,9] which have limited the available time for and attendance at educational conferences,[10] and the gradual incorporation of adult learning theory through learner-centric pedagogy in graduate medical education.[11,12] Many aspects of MR have concurrently evolved, most

notably an increased variety of participating learners and faculty and a greater amount of prepared teaching by chief residents.[13] In light of these adaptations, we surveyed a national sample of academically affiliated internal medicine residency programs in order to obtain an updated assessment of IM residents' perceptions of MR.

METHODS

Participants

We identified 10 geographically varied internal medicine residency programs of variable size (average 115 trainees, range 30 to 180) through the national Veterans Affairs Hospital Medicine Academic Collaborative and obtained permission from each residency Program Director to survey their trainees. All interns (R1), second-year (R2), and third-year (R3) residents were eligible to participate in the study. Participation was voluntary, and no compensation was provided. Each program's institutional review board either approved the study or deemed it to be exempt as a common educational practice or non-sensitive survey.

Data Collection

We created a web-based survey that was distributed via email. At each site, a member of our research group distributed the survey to residents via institutional email. Email reminders were sent at 2 and 4 weeks after the initial survey had been delivered. Data were collected between March and June 2019.

The anonymous, self-administered, 20-item survey (Supplement 1) was developed for this study by four of the authors (TJA, JR, HS, PBC), with questions based on prior studies of MR[3,5] and input obtained from each of the other authors on the structure and content of the survey. The survey was pilot tested with three medicine chief residents to test questions for clarity and answerability, and to solicit further input on survey content. Survey modifications were made based on feedback. The survey contained questions about demographic information (level of training, self-identified gender, underrepresented minority status (URM, as defined by the AAMC[14]), and institutional affiliation); attendance rates and reasons for attending or not; opinions on who should attend, who should teach, and how best to prioritize time during the conference; and comfort level and participation during the conference. We also collected program level data to account for differences in size and routine practice with respect to who facilitated morning report (chief residents and/or attending physicians), and whether case presentations were "scripted" (when a facilitator or discussant is familiar with the case and presents information with prepared teaching points) or "unscripted" (when a facilitator or discussant is unfamiliar with the case, also known as a "cold" case).

The survey included a combination of Likert-style and multiple-choice questions with the option for multiple responses. Respondents rated the value of different aspects of a case presentation (e.g., history, physical examination, differential diagnosis, management) on a 5-point scale (1: not at all to 5: extremely valuable). We also included free-text fields to obtain qualitative data describing what residents perceive to constitute the "best morning report," as well as specific areas for improvement.

Statistical Analysis

All items were summarized by computing the percentage of respondents who endorsed the different responses. For descriptive analyses, we used chi-square tests to examine differences in response patterns by level of training (R1, R2, R3), gender, URM status, program size, and region of the country (East, Southeast, Midwest, West), with significance set at values < 0.05. We used logistic regression to examine what factors were associated with comfort speaking up, controlling for potential confounders including self-identified gender, URM status, region, program size, level of training, and self-report of an inclusive learning environment and personal learning style (e.g., introvert vs extrovert, comfort with being wrong). All analyses were done using STATA version 15.1.

Free-text responses were systematically analyzed through inductive iterative review by four coders (TJA, JR, JB, MK). We created codes after independently reviewing the responses and coming to consensus about the code assignment. We tabulated the frequency of comments by code using Excel and then synthesized the comments into generalizable themes (e.g., barriers to trainee participation and how MR can be improved). A fifth reviewer (PBC) independently examined the uncoded data and reviewed the themes and categories derived by the other four coders as a final check. All coders developed consensus regarding the categorization and generalization of the data.[15]

RESULTS

A total of 497 residents completed the survey, representing a 46% response rate; 3 were excluded from analysis because they did not provide their level of training. Table 1 reports the demographic characteristics by resident group. Respondents from each year of training (R1, R2, R3) were equally represented in the sample. Overall, 51% identified as female and 12% identified as URMs. Most respondents (83%) were from large programs (> 100 residents) and over half were from institutions in the West (55%). Chief residents were the sole MR facilitators for 76% of programs; the other 24% were facilitated by a combination of chief residents and attendings (Table 2). Most programs (70%) used a mix of scripted and unscripted cases, while the remaining 30% used only scripted cases. There were no significant differences between level of training with regard to gender identity, URM status, program location, program size, MR facilitator, or institution case presentation style.

Self-reported MR attendance was high, with 31% reporting always attending and an additional 39% reporting attending

Table 1 Respondent Characteristics

Training year, *N* (%)	Total 494 (100%)	R1 170 (33%)	R2 173 (35%)	R3 151 (31%)	*p* value
Gender					0.862
Female	254 (51%)	87 (51%)	89 (51%)	78 (52%)	
Male	237 (48%)	82 (48%)	82 (47%)	73 (48%)	
Transgender	1 (< 1%)	0 (0%)	1 (< 1%)	0 (0%)	
Missing	2 (< 1%)	1 (< 1%)	1 (< 1%)	0 (0%)	
URM status, yes	61 (12%)	23 (14%)	17 (10%)	21 (14%)	0.582
Program location					0.908
East	74 (15%)	24 (14%)	23 (13%)	27 (18%)	
Southeast	116 (23%)	41 (24%)	42 (24%)	33 (22%)	
Midwest	34 (7%)	11 (6%)	14 (8%)	9 (6%)	
West	270 (55%)	94 (55%)	94 (54%)	82 (54%)	
Program size					0.443
Small (< 50)	14 (3%)	6 (4%)	3 (2%)	5 (3%)	
Medium (50–99)	68 (14%)	18 (11%)	29 (17%)	21 (14%)	
Large (> 100)	412 (83%)	146 (86%)	141 (82%)	125 (83%)	
Usual MR facilitator					0.976
Chief resident	374 (76%)	129 (76%)	130 (75%)	115 (76%)	
Chief resident + attending	120 (24%)	41 (24%)	43 (25%)	36 (24%)	
Institution case presentation style					0.885
Scripted + unscripted	348 (70%)	122 (72%)	120 (69%)	106 (70%)	
Scripted only	146 (30%)	48 (28%)	53 (31%)	45 (30%)	

R1, interns; R2, second-year residents; R3, third-year residents; URM, underrepresented minority

more than half of the time. The main reason respondents cited for not attending was being too busy with clinical duties (85%); many free-text comments specified that the location of MR was a barrier to attendance while on clinical service. Reasons for participation included clinical education (85%), camaraderie (62%), and reviewing evidence-based medicine (EBM, 49%). Only 16% reported that MR was not a good use of time.

Most respondents, regardless of year of training, thought that medical students (mean 89%), interns (mean 96%), and residents (R2s and R3s, mean 96%) should attend MR; comparatively fewer favored attendance by fellows (mean 34%) or attendings (mean 61%; Fig. 1).

Respondents preferred chief residents (60%) to be the primary facilitators at MR, followed by senior residents (18%), internal medicine (15%), and subspecialist attendings (8%). Additionally, most respondents (76%) preferred a scripted presentation style, with preferences generally corresponding to respondents' home institution practices (Table 2). A greater proportion of residents who are routinely exposed to both chief resident and attending facilitators preferred more attending facilitation (33%) as compared to residents in programs where only chief residents facilitate MR (9%). Likewise, more residents who are exposed to both scripted and unscripted cases had a greater preference for the latter (24%) as compared to residents who are exposed to scripted cases alone (13%).

When asked about the learning value of specific aspects of case presentations, over 90% of respondents rated building a differential diagnosis, diagnostic work-up, and management as being very or extremely useful to their learning (Fig. 2).

Respondents were also asked to prioritize educational topics in addition to case presentations for MR. The top-rated topics were demonstration of clinical reasoning (81%) and EBM (77%), followed by disease pathophysiology (53%) and image interpretation (49%). Other topics were endorsed by a third or less of the residents (Fig. 3).

Additional survey questions explored the educational climate of MR, including respondents' comfort level with participating and speaking during the conference. The majority (82%) endorsed feeling comfortable and that MR is an inclusive learning environment (81%). In the bivariate analyses, the characteristics that were significantly associated with lower reports of feeling comfortable were being an R1 (76% vs. R2, 87% vs R3 83%, $p = 0.018$) or a URM (67% vs non-URM 84%, $p = 0.005$). There were no significant differences between self-identified gender and program size. In logistic regression, R1s remain less comfortable compared to R2s and R3s (OR 0.43, CI 0.25–.076) but URM status was no longer significant. Other factors were far stronger predictors of comfort level: personal style (learn by talking through a problem) (OR 9.6, CI 3.9–24.0); not afraid to be wrong (OR 7.4, CI 2.5–21.9); and perceiving a welcoming/inclusive environment (OR 5.8, CI 3.2–10.7); all significantly increased the odds of speaking up ($p < 0.001$). Clarifying free-text comments from respondents included feeling "more comfortable speaking when no attendings are present," and a concern that "speaking up leads to follow-up questions that I'm not prepared for." These comments support residents' reasons for feeling uncomfortable including a fear of being wrong (51%), feeling judged if/when wrong (42%), and feeling as if others are more knowledgeable (38%).

At the end of the survey, residents were asked in a free-text field to describe the qualities of the best MR they had attended within the last year (Table 3). One-third of the respondents ($n = 165$, 33%) wrote comments, with many addressing more than one theme, for a total of 283 unique comments. The most frequent responses described having a safe learning environment and an engaged audience with discussion across all levels of training. Other important factors included the selection of a compelling case (regardless of whether the case was a common or uncommon diagnosis), having high yield teaching with clinical pearls, an emphasis on clinical or diagnostic

Table 2 Preferred Facilitator and Case Style by Home Institution Practice

2A. Preferred facilitator	Usual MR facilitator Total *n* (%)		Chief resident		Chief resident+ faculty		*p* value
Resident(s)	87	(18%)	65	(17%)	22	(18%)	< 0.001
Chief	295	(60%)	246	(66%)	49	(41%)	
IM attending	73	(15%)	33	(9%)	40	(33%)	
Subspecialist	38	(8%)	29	(8%)	9	(8%)	
Total (% of total)	493	(100%)	373	(76%)	120	(24%)	
2B. Preferred case type	**Usual case presentation style Total**		**Scripted**		**Scripted + unscripted**		***p* value**
Scripted	391	(79%)	127	(87%)	264	(76%)	0.005
Unscripted	103	(21%)	19	(13%)	84	(24%)	
Total (% of total)	494	(100%)	146	(30%)	348	(70%)	

reasoning, and having a skilled facilitator. Additional comments included creative and novel teaching approaches that departed from traditional formats, and the presentation of concise reviews with connections to evidence-based medicine.

A total of 184 (37%) respondents also provided feedback about how best to improve MR (Table 4). Major themes included removing barriers to attend and participate (protecting time away from clinical duties, engaging the audience, and facilitating discussions across all levels of training) and improving the organization and content of MR (more focus on differential diagnosis and management, presenting an interesting case but not always a "zebra"). Other opportunities for improvement included having coffee and food, an enthusiastic facilitator with prepared teaching points, short contributions from faculty, and reviewing take home points at the end of the conference.

DISCUSSION

This multicenter study provides renewed insight into internal medicine residents' perceptions of MR in the era of current ACGME resident duty-hour policies and the widespread adoption of adult learning theory in medical education.[11] Reassuringly, our study suggests that MR remains a highly regarded conference, with residents attending more often than not for the purposes of clinical education and camaraderie with their colleagues. Residents consistently value the following attributes: compelling cases including both common and uncommon diagnoses; an emphasis on clinical reasoning, diagnosis, and management, with expert input when possible; clear teaching points and concise evidence-based medicine; and an engaged group discussion in a supportive learning environment. We believe that facilitators of morning report should view these as foundational tenets to assist in planning and structuring MR.

Importantly, most residents perceive MR as a good use of their time and feel comfortable participating in the conference, which they largely attribute to chief residents creating an inclusive learning environment that encourages discussions across all levels of training. Fewer interns and self-identified URMs felt comfortable, which speaks to the need for intentionally creating a safe learning space for potentially vulnerable or marginalized trainees. Interestingly, the strongest predictors of comfort level and participation during MR were personal learning styles (learn by talking through a problem, not afraid to be wrong) and the perception of a welcoming/inclusive learning environment. Respondents' free-text

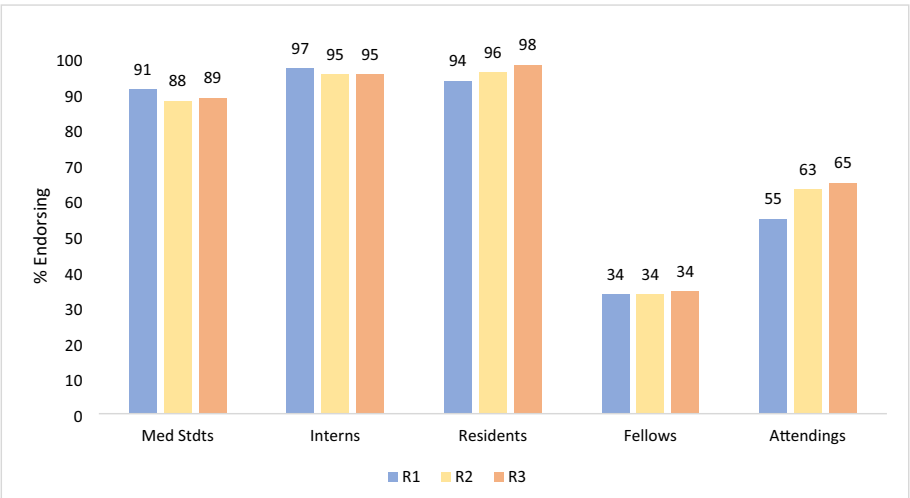

Figure 1 Who should attend morning report by respondents' year of training.

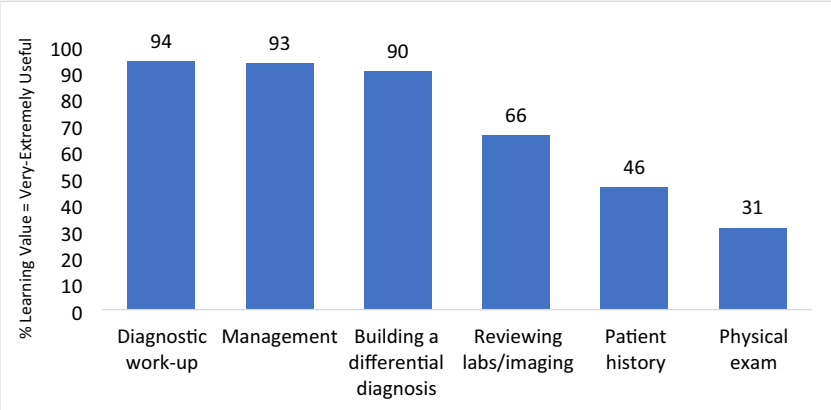

Figure 2 Value of time spent on aspects of case presentations.

comments provide some insights into this, e.g., "[feeling] more comfortable speaking when no attendings are present," and a concern that "speaking up leads to follow-up questions that I'm not prepared for." These comments support residents' survey responses about feeling uncomfortable including a fear of being wrong (51%), feeling judged if/when wrong (42%), and feeling as if others are more knowledgeable (38%).

In the present era, residents almost uniformly support medical student (90%) and intern (96%) attendance at morning report. This represents a significant evolution over the last 20 years, as a prior study revealed senior residents had substantially lower support for these learners at MR (56% and 69%, respectively).[7] Additionally, our results show that there is less uniform preference for attendance by attending physicians (62%) and fellows (34%). This could represent the perception by some residents of a hierarchical divide that detracts from an optimal learning environment, epitomized by the prior practice of residency and hospital leadership evaluating house-staff performance during MR, much to the dismay of the trainees.[7]

Our survey results also reveal that one-half of residents are afraid of being wrong and 42% continue to feel judged at MR. Although this may represent the residents' discomfort with questions targeting a higher level of learning and complexity, comments from free-text responses suggest that faculty who are in supervisory positions (e.g., hospital or residency program leadership) exacerbate the discomfort for learners at the conference. This may stifle the transition from a fixed to a growth mindset, impeding learners' receptiveness to feedback and ultimately inhibiting the development of mastery.[16–19] Nearly two-thirds of respondents wanted an attending presence at MR, but the perception, reality, or institutional memory of performance evaluation at MR may explain why the other one-third of residents prefer that attendings do not participate.

Our results also support recommendations to integrate the use of adult learning theory in graduate medical education.[20,21] Most respondents preferred that "near peers" (chief and co-residents) do the bulk of the teaching (78%) as opposed to internal medicine or subspecialty attendings (22%).

While this generally corresponded to the respondents' home institution practices, it nonetheless represents another significant shift from 20 years prior, when 42% of residents preferred that attendings direct MR and only 48% preferred chief

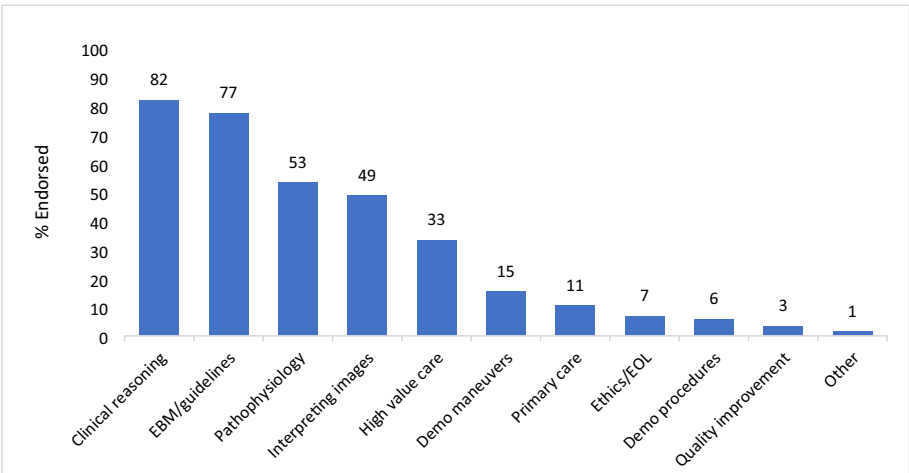

Figure 3 Priority topics for morning report. EBM, evidence-based medicine; EOL, end-of-life.

Table 3 Free-Text Responses to: "Think About the Best Morning Report That You Attended in the Last Year. What Made It So Good?"

	N = 283 (%)
Learning environment/engaged audience	72 (25%)
Compelling case	50 (18%)
Clinical pearls/high-yield teaching	48 (17%)
Clinical/diagnostic reasoning	44 (15%)
Expert facilitation	43 (15%)
Creative format	16 (6%)
Evidence-based medicine/best practices	10 (4%)

residents.[7] Qualitative comments from our study suggest that this preference derives from the inclusive learning environment that near peers create, leading to an engaged audience and open discussions across all levels of trainees, pertaining to the self-directed, experiential, and motivational aspects of adult learning theory.[11] This represents an opportunity for medical educators to change their roles and adopt a view of themselves as both educators and learners, who "co-produce" educational outcomes *and* better clinical care.[11]

Our findings thus represent a call to attending physicians to recognize that our presence may alter the learning environment. However, rather than discouraging faculty attendance at MR, our results suggest a model of attending involvement that balances self-directed resident learning with support for the facilitator in the form of salient teaching points or perspectives borne from clinical experience. Residents' survey responses and comments indicate that they desire a space in which learners across training levels are engaged in problem solving and discussion; are respected and supported to take intellectual risks; and in which both the facilitator and knowledgeable faculty add clarity and distill complex clinical information and evidence into insights not easily found elsewhere. Further study is needed to elucidate the ideal quality and quantity of attending contributions to morning report education.

There are also important lessons to be learned about the need for variation in the format and content of MR for trainees with different learning styles. Regarding the case presentation, respondents clearly preferred spending more time building a differential diagnosis and discussing the diagnostic work-up and management of a case as opposed to focusing on the history of present illness or review of systems. A more intentional and nuanced approach to MR may optimize the educational experience for trainees without neglecting the educational value of the clinical presentation. For example, as the academic year progresses, it may be justified to accelerate aspects of the history, physical examination, imaging, and laboratory data to devote more time to creating a differential diagnosis and discussing diagnostics and management. Another novel approach may be to push the boundaries of medical education for an ever-changing group of learners through "co-learning," a method of teaching wherein both faculty and trainees learn together.[22]

Residents also conveyed a desire for more focused teaching on clinical reasoning and evidence-based medicine during MR. While residents described a strong preference for scripted cases, again corresponding to the respondents' home institution practices, this does not mandate prioritizing these cases during MR. Unscripted cases can be a powerful educational tool that elucidates real-time modeling of clinical reasoning from facilitators and participants, with both groups engaging in mutual inquiry.[23–25] Qualitative comments from our study suggest that residents associate scripted formats with high-quality teaching points. However, learner bias towards scripted cases could result from their discomfort with demonstrating clinical reasoning, a lack of exposure given the low frequency at which unscripted presentations are conducted (15%),[13] a lack of formal facilitator instruction and their associated discomfort leading unscripted cases,[23] or the difficulty of following up on evolving diagnostic and therapeutic outcomes.[23] Further studies involving formal facilitator training could elucidate how to best integrate unscripted cases into MR. In contrast, scripted cases offer the opportunity for a prepared facilitator to delve into a specific evidence base or practice guideline pertinent to the case. Interestingly, there was a discordance on the perceived value of EBM during MR: residents rated EBM as the second highest priority topic for the conference; however, less than half perceived reviewing EBM as a good use of their time. This discrepancy may signify a need to study the delivery of EBM during MR. Ultimately, we believe that scripted and unscripted case presentations are best viewed as complementary strategies for resident education.

While acknowledging the ever-present tension that exists between direct patient care and structured educational activities during residency training, respondents identified some easily modifiable factors that may improve both the attendance and educational milieu at MR. Suggestions included ensuring MR take place at a convenient location, that amenities such as coffee, tea, and snacks be provided, and that residency programs "protect" the educational time. Ideally, MR would be a space where learners across the spectrum of experience engage in high-value discussions around case presentations that amplify the educational opportunities of direct patient care. Protecting that time and space is imperative and should be a priority for internal medicine residency programs and hospital leadership alike.

This study has several limitations. There is variable implementation of morning report at different institutions (such as

Table 4 Free-Text Responses to: "What Is One Thing We Could Do to Make Morning Report Better for You?"

	N = 184 (%)
Make it easier to attend	38 (21%)
Focus less on HPI, ROS, more on DDx, management	35 (19%)
Improved learning environment	26 (14%)
Change number or emphasis of cases (unscripted vs scripted, "horses" vs "zebras")	23 (13%)
Better amenities (coffee/food)	22 (12%)

HPI, history of present illness; ROS, review of systems; DDx, differential diagnosis

attendance, availability, and format), which likely contribute to trainee comfort and expectations; thus, it is difficult to generalize our results despite this being a multicenter study. Although we surveyed residents from academically affiliated programs in ten different states across the USA, the West was overrepresented in both the number of programs and overall response rate. Over one-half of our respondents identified as female (52%) and 12% identified as URMs, both of which are higher than the national average for internal medicine residents (40% and 9%, respectively[26]). This selection bias may affect our results if residents' perceptions and expectations of MR vary geographically or by self-identified gender identity or ethnicity. Our results also may not be applicable to smaller academic or community-based programs given the resources of the larger programs surveyed compared to smaller programs. We had a large number of residents complete the survey with an overall response rate of 46%; however, non-response bias is possible (i.e., potential differences between respondents' and non-respondents' perceptions and expectations of MR). Finally, because we surveyed residents towards the end of the academic year, they may have been biased to teaching on more advanced topics such as evidence-based diagnostics and management.

In conclusion, MR remains a well-attended, highly valued educational conference. It is a central component of internal medicine residency education, situated in a complex learning environment characterized by varying learner needs, preferences and perceptions of value, and evolving attendance and audience engagement. Based on residents' input, multiple opportunities exist to improve this core conference through the continued practice of adult learning theory, with attention to ideas of co-learning and co-production. We believe that it is important for attendings to actively and intentionally assist chief residents in creating a safe, inclusive learning environment while having self-awareness of their impact on the learning climate. Future studies should explore the relative value of scripted versus unscripted case presentations, the utility of formal facilitator training and feedback, and the relative merits and application of adult learning theory in MR.

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Compliance with Ethical Standards:

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

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