

Morning Report: Can an Established Medical Education Tradition Be Validated?

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Abstract

Background Morning report is accepted as an essential component of residency education throughout different parts of the world.

Objective To review the evidence of the educational value, purpose, methods, and outcomes of morning report.

Methods A literature search of PubMed, Ovid, and the Cochrane Library for English-language studies published between January 1, 1966, and October 31, 2011, was performed. We searched for keywords and Medical Subject Heading terms related to medical education, methods, attitudes, and outcomes in regard to “morning report.” Title and abstract review, followed by a full-text review by 3 authors, was performed to identify all pertinent articles.

Results We identified 71 citations; 40 articles were original studies and 31 were commentaries, editorials, or

review articles; 56 studies (79%) originated from internal medicine residency programs; 6 studies (8%) focused on ambulatory morning report; and 63 (89%) originated from the United States. Identified studies varied in objectives, methods, and outcome measures, and were not suitable for meta-analysis. Main outcome measures were resident satisfaction, faculty satisfaction, preparation for professional examinations, use of evidence-based medicine, clinical effects on patient care, adverse event detection, and utilization of a curriculum in case selection.

Conclusions Morning report has heterogeneous purposes, methods, and settings. As an educational tool, morning report is challenging to define, its outcome is difficult to measure, and this precludes firm conclusions about its contribution to resident education or patient care. Residency programs should tailor morning report to meet their own unique educational objectives and needs.

Introduction

Morning report may be the most visible educational feature of residents’ teaching. Although residents consistently rank it as the most important educational activity,¹⁻⁴ its value is unclear. In this era of cost management and work hour

restrictions, no facet of resident education should escape critical assessment. Does morning report have an evidenced-based impact on residents’ learning or is it a ritual that could be abandoned? The objective of this narrative review is to examine the evidence for the value and effectiveness of morning report in graduate medical education.

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Literature Search Strategy and Findings

We searched PubMed, Ovid, and the Cochrane Library for studies published in the English language between January 1, 1966, and October 31, 2011. Three authors independently performed the search (I.A.M., S.K.A., M.M.) under the direction of the librarian in Brooke Army Medical Center. We searched for key words and Medical Subject Heading terms related to medical education, methods, attitudes, and outcomes in regard to morning report. Search terms included *morning report*, *teaching rounds*, *graduate medical education*, *academic medicine*, and *clinical competence*. We limited our review to English-language articles. All journals and types of articles, including original articles, surveys, opinions, reviews, brief reports, editorials, and letters to the editor, were included.

The References section of each article was reviewed and articles not previously identified were included for review.

After screening abstracts, pertinent articles underwent a full-text review by 3 of the authors to identify the study method, purpose of study, type of training program from which the study originated, interventions performed, outcomes measured, quality of the study, and risk of bias.⁵ Disagreements were resolved through discussion among all authors.

We identified 1921 articles. Only 90 articles were found to be related to our topic; of these, 19 were duplicates. Therefore, 71 articles were finally included in this report. Of the identified articles, 63 (89%) originated from the United States, 56 (79%) originated from internal medicine residency programs, and 6 (8%) focused on ambulatory morning report. Forty articles were original studies, and 31 articles provided no original data (reviews, brief reports, editorials, or letters to the editor). These latter articles often provided anecdotal reports and are included to complement the research articles.

TABLES 1 and 2 summarize design, methodology, and results of original studies that originated from the United States and Canada.

The identified studies were heterogeneous in objectives, methods, and outcome measures. Most of the reports are unique; typically, each with a different goal and a different intervention to attain the goal. Therefore, they are not suitable for meta-analysis. Main outcome measures were resident satisfaction, faculty satisfaction, preparation for American Board of Internal Medicine examination, implementation of a curriculum by case selection, use of evidence-based medicine, effect on patient care outcomes, and adverse event detection.

How Is Morning Report Described in the Literature?

The Structure and Format of Morning Report

Morning report traditionally describes a case-based conference where learners and teachers interact and discuss patient care, allowing learners to develop their professional identities.⁶ Our review revealed a lack of a formal definition of morning report, the most effective formats, or the optimal approach to assess its educational or clinical value. This may be explained by the fact that morning report did not begin as an educational initiative for residents. It was instituted as a meeting to monitor daily patient care and evaluate medical students and residents.^{1,7} Over time, this became a traditional way to monitor patients in teaching hospitals.⁸

The structure of morning report may be classified into 3 components: (1) a prelude, which reviews outcomes of patients previously presented, answers research questions

from previous sessions, or reviews admissions within the last 24 hours; (2) a detailed case discussion, usually focusing on 1 patient in internal medicine^{2,9,10} and multiple patients in pediatrics and surgical residencies¹¹⁻¹³; and (3) a conclusion that may include a recap of “teaching moments” and formulation of questions for further research.^{2,9,10,14,15} Individual residency programs may add their own “flavor” to this core structure or use innovative approaches to attract new residents.¹⁶ For example, an internal medicine residency program may invite a pathologist to discuss a postmortem examination,¹⁰ or a librarian to provide in-depth literature review.^{17,18} Internal medicine programs may start morning report with a review of the Medical Knowledge Self-Assessment Program questions^{14,17,18} or use a quiz and mini-lecture format or describe “pearls” to optimize learning.¹⁹ Other programs may present a mini-journal club, in which articles of significance,²⁰ and/or teachable moments regarding research design and statistical analysis are discussed,¹⁷ or they may discuss cost effectiveness and discharge planning.¹⁵ Some internal medicine programs reinforced learning points by distributing e-mails to attendees with a summary of the case presented or evidence-based answers to related questions.^{18,21} Formats of morning report range from a formal approach that divides the session into timed components and incorporates adult learning theory to a nonformal approach. Since 1997, morning report models have tried to incorporate evidence-based medicine and modern adult learning theories by stimulating residents’ self-directed learning, conducting an interactive group discussion in the “search mode,” defining questions suitable for evidence-based searches, and identifying clinical uncertainties whose exploration benefit patient care and hence foster more deliberate learning principles.²² Others incorporated the PICO method (patient, intervention, comparison, outcome) in answering clinical questions.¹⁷ Some internal medicine programs offered formal training (resident-as-teacher educational intervention) for senior residents to be more effective presenters.²³

There is no standard frequency of morning report. In the past, sessions were held daily, including weekends.^{24,25} Recent reports indicate a decrease in frequency to 3 to 5 times weekly.^{2,11,12} There also is no standard length of the sessions. Traditionally, morning report lasted for an hour,^{2,8,9,12,22,26} although surgical and pediatrics residency programs limited the session to 30 minutes.^{4,7,11,16} A 30-minute resident-led morning report in a surgical program was perceived to increase medical knowledge and address issues relevant to patient care.²⁷ In 1 study, the most frequent suggestion for improving morning report in a

TABLE 1 SUMMARY OF ARTICLES ORIGINATING FROM INTERNAL MEDICINE RESIDENCY PROGRAMS IN THE UNITED STATES AND CANADA^a

Source, y	Study Method	Study Objectives	Results	Study Evaluation, Potential Bias, and Comments
McGaghie et al, ⁴⁵ 1985	Observational study (during a 4-month period) that characterized MR at 2 different institutions.	Identified areas of the educational process that needed to improve.	The authors contrasted patterns of MR and differences in practice patterns at a university hospital and an affiliated community center. They also noted that MR was emotionally laden and described residents' reactions to the discussion.	Bias possible. Subjective assessment about MR occurring at 2 different institutions. No data presented.
Pupa and Carpenter, ⁴⁶ 1985	Observational study reviewing content of cases presented during a 10-month period of MR sessions at a single institution.	Assessed the subject content of MR presented in 2 different formats.	MR covered 86% of topics from 3 standard textbook references and the self-assessment program of the American College of Physicians.	Contents were judged subjectively. No validation of approach or reporting of interobserver variability. The approach to MR presentations changed during the academic year.
Parrino and Villanueva, ²⁴ 1986	Observational review of results from a national survey of 124 departments of medicine (94% response rate).	Determined how MR is used and described its functional relationship to educational goals.	MR was perceived as important for teaching, for evaluation of residents' performance, and for case management. The authors identified potential problems when it is used for peer review or resident performance evaluation.	One of the few studies that included a national sample. The value and the limitation of MR were fairly characterized. No bias recognized.
Malone and Jackson, ⁴⁷ 1993	Observational review of contents of ambulatory and in-patient MR. Information from 95 MR sessions (35 ambulatory and 60 traditional inpatient MR) at 1 center.	Compared content and educational characteristics of ambulatory MR to inpatient MR.	Ambulatory MR had a more diverse conference format with more learner-centered discussions and topics. It was more likely to cover general internal medicine topics, including the medical interview and social issues. Residents rated both types of MR equally high.	Single-center study with small sample size. Bias cannot be excluded. The survey questions were not published or validated.
Wenger and Shpiner, ²⁶ 1993	Observational prospective study. Cases from 294 MR sessions from 1 center.	Compared initial diagnoses of cases presented in MR to the final diagnoses.	Among cases where a firm final diagnosis was reached during MR, the initial MR diagnosis differed for 17%. The authors remind the reader that unexpected diagnostic lessons allow for learning opportunities.	Bias cannot be excluded since researchers were not blinded to groups. There was no validation or adjudications for what constitutes a difference in diagnosis.
Ways et al, ³² 1995	Observational retrospective assessment of resident attitudes of MR. Study group included 74 residents at 5 sites from the University of Washington program.	Investigated residents' attitudes toward MR by questionnaire.	Residents ranked MR as the most valuable educational activity. Most preferred a clinically based, open-ended discussion led by the chief resident. Case presentations should be 20 minutes and 2 to 3 cases should be discussed. MR should be interactive and include relevant journal articles. The discussion leaders should be the best teachers.	A single-center study. Potential bias may exist from system-wide practices or traditions (ie, this is the only information that the residents knew).
Schiffman, ⁴⁸ 1996	Observational study describing questionnaire results from 412 IM residency programs (70% response rate).	Described approaches to MR at different centers and suggested changes.	The author reported on time, frequency, leadership, presentations, goals, and unique aspects of MR, as well as suggestions to improve MR.	No bias recognized. Following presentation of questionnaire results, a philosophic discussion of medical education ensued.
Sivaram et al, ⁴⁹ 1996	Observational study in a single center. Daily inquiry into ADR for >22,000 hospital discharges during 6 years of monitoring.	Evaluated effect of adding an ADR detection component to MR.	ADR reporting by the IM service increased by more than 40-fold compared to training programs that did not hold an MR.	Single center with a small size program. Used self-reporting with potential of response bias and selective reporting.
Welsh et al, ⁵⁰ 1996	Prospective trial. Number of self-reported adverse events reported by 21 residents at 1 institute during a 15-month period.	Measured effects of intensive prompting, modest prompting, or no prompting of medical residents on adverse events reporting.	Prompting to report adverse events during MR was additive to usual hospital surveillance.	A small residency program in a single center. The overall number of adverse events was small and prompting took place at different periods.

TABLE 1 CONTINUED

Source, y	Study Method	Study Objectives	Results	Study Evaluation, Potential Bias, and Comments
Potyk et al, ¹⁹ 1997	Observational study with a 17-item examination on the content of an MR session administered to 21 residents in a single center.	Compared 2 methods of presentation: a quiz with immediate feedback versus a mini-lecture.	Both methods promoted learning, but the quiz format resulted in better retention of information.	Single-center study with a small sample size. Potential bias associated with question formats and contents.
Ramratnam et al, ² 1997	Observational prospective survey (questionnaire) of 10 residents in 1 program.	Intent was to determine rationale for why certain cases were selected for MR.	Residents presented cases that were more often unique, disagreed with the attending physician's assessment, were managed well, or had remarkable imaging studies, compared to nonpresented cases. The authors expressed concern that presenting cases with only unusual features may narrow the scope of MR.	Single-center study with small sample size. There were no stated definitions for the questionnaire items such as "rare case," "managed well," "notable radiologic findings..."
Sulmasy and Marx, ⁵¹ 1997	Residents assessed with a pretest and posttest, which included a 21-item knowledge test, a 6-item confidence scale, and an 8-item survey of attitudes; 39 of 47 residents responded in 1992, and 30 of 39 of the same group responded in 1994.	Measured the effect of incorporating a medical ethics curriculum in MR rather than in a series of separate lectures.	Incorporating medical ethics curriculum in MR was well received and associated with improved knowledge and confidence in dealing with ethics issues.	Small residency program at a single center. Used a validated questionnaire. Overall, the improvement was modest.
Gross et al, ³¹ 1999	Observational report reporting questionnaire data; 356 residents (63% response rate) from 13 programs in 7 states completed the survey.	Examined residents' attitudes on purpose, methods, and content of MR.	Residents identified the main purpose of MR to be educational. Approximately half expected journal articles to be distributed. Approximately half thought MR was best led by the chief resident. Most preferred to discuss a few challenging patients in a step-wise manner rather than all patients admitted.	Included several residency programs. The study used a convenience sample, which may cause bias. Of interest are the similar expectations from diverse training programs in different locations.
Westman, ⁹ 1999	Prospective observational review of subject content in MR cases presented at 2 sites during 1 year; 227 MRs in 1 program at 2 sites.	Chief resident reviewed MR cases by subspecialty and determined whether the focus of discussion was diagnostic, disease-oriented, or therapeutic.	MR clinical content of a university hospital and affiliated VA were similar and the discussion was in-patient oriented in 89% of cases. Outpatient subspecialties in general medicine were underrepresented.	This brief report does not allow for objectively evaluating the study's methods, results, and conclusions. Only 1 option available to determine the focus of discussion, yet often several issues are considered.
Spickard et al, ²⁹ 2000	Observational study of 2 components: a national survey and a questionnaire to local residents. Survey of 404 programs (92% response rate) and 77 residents at 1 center (83% response rate).	Determined the national prevalence of outpatient MR and collected residents' perspectives of outpatients' MR.	24% of programs have outpatient MR. At 1 center, residents have a positive perception of the educational value of ambulatory MR and the presence of medical students participating in MR.	A single-center survey. The survey questions were not validated or published. No description of how the educational value of ambulatory MR was determined.
Demopoulos et al, ³⁰ 2001	Prospective observational study of teaching methods with pretest and posttest of validity of the educational approach; 82 residents at a single center.	Compared the efficacy of 2 teaching models in MR: a lecture-based conference versus an interactive approach.	94% of residents found that the MR interactive model is a better learning approach than a lecture-based model. Residents scored higher on posttest when taught in an interactive versus didactic manner.	A single-center study. The survey questions and the pretest and posttest questions were not published or validated. Bias cannot be excluded.
Reisman and Gross, ⁵² 2002	Observational study using questionnaire for 356 residents in 13 programs in 7 states.	Identified residents' and programs' characteristics associated with the ability of a resident to identify a mentor at MR.	Residents interested in specialty careers were more likely to find a mentor. Female IM residents found more difficulty in identifying mentors than male residents.	The survey questions were not validated or published. There was no description of gender makeup of faculty members, also no definition of mentor and/or difficulty in identifying mentor.

TABLE 1 **CONTINUED**

Source, y	Study Method	Study Objectives	Results	Study Evaluation, Potential Bias, and Comments
Wenderorth et al, ²⁸ 2002	Observational review of the medical content of cases presented at ambulatory MR; 406 ambulatory MR presentations in 1 program.	Assessed whether the topics covered in ambulatory MR reflected the content of the ABIM examination.	Ambulatory MR covered all major categories represented by the ABIM examination. The senior residents kept a log book to prevent redundancy of presented cases and overselection of esoteric cases.	The brief report categorized the curriculum into 16 categories. We are unable to discern the factual basis for this study's methods, results, and conclusions.
Durning et al, ¹⁶ 2003	Observational review of cases presented at MR during past 3 years; 583 MR presentations in a single program.	Determined whether MR contents meet the recommendations of FCIM Curriculum Task Force.	The content of MR closely paralleled FCIM guidelines, except for topics in general internal medicine, which were underrepresented.	A single-center study. Bias cannot be excluded; investigators were not blinded to outcome. Assessment method for MR content was not validated, nor was interobserver variability considered.
Apker and Egly, ⁶ 2004	Analysis of transcripts from 20 MR sessions at 1 institute.	Showed how teachers help residents change from the traditional nonphysician role by the voice of medicine and help them develop a professional physician identity "in a biomedical mold" during the social interactions of MR.	The authors drew conclusions regarding identity formation of young physicians and the socialization practices of medical education during the very public presentation of MR.	The authors comment that they interpret physician interactions in their role as experts in communication. As such, they visualize these interactions in a different manner than nonexperts. In addition, the experts did not report a series of presentations reflecting the professional development of residents over time.
James et al, ²³ 2006	Multifaceted educational interventions, with pre-intervention and postintervention questionnaire; 64 residents and teaching faculty.	Measured the impact of an educational workshop to improve teaching by residents in small and large groups.	Although residents reported higher satisfaction with the intervention, faculty members reported greater difficulty in engaging the audience and less confidence in their medical knowledge.	A single-center study with a small sample size. The survey questions were not published or validated. No bias recognized. It is unclear if the statistical difference in questionnaire scores is practically meaningful.
West et al, ²⁵ 2006	Questionnaire administered to 490 students, residents, and faculty members at a single center.	Compared learner evaluations of a traditional MR open to residents versus a resident-led interactive format open to students, interns, and residents.	Only 60% responded; more than 80% of these rated content, discussion quality, and usefulness of interactive MR as good or very good, yet only one-fourth of the senior residents preferred the interactive model. Data reflect difficulties in developing a format preferred by all.	A single-center survey. The survey questions were not validated or published. Response and nonresponse bias cannot be excluded.
Banks et al, ⁸ 2007	Case-control study; 55 cases discussed in MR and 136 controls.	Measured the impact of MR on length of stay, cost, and readmission rate.	Utilization of EBM with librarian assistance in MR shortened duration of hospitalization in the MR cases' group.	Single-center study, small sample size; 50 of 105 MR cases were unable to be matched with controls.

Abbreviations: ABIM, American Board of Internal Medicine; ADR, adverse drug reaction; EBM, evidence-based medicine; FCIM, Federate Council for Internal Medicine; IM, internal medicine; MR, morning report; VA, Veterans Health Administration.

³ Studies are arranged chronologically.

pediatrics residency program was to shorten it from 1 hour to 30 or 45 minutes, and to eliminate it on weekends.⁸

Although case presentations with an ensuing discussion are the foundation of morning report, this element has become a point of criticism and debate. Since case presentations depend on residents' presentations and clinical skills, diagnoses discussed frequently differ from the

final diagnosis, and several reports have suggested that this is a major limitation.^{2,4,11,16} In a study, 73% of cases presented at a pediatric morning report had a final diagnosis that differed from the initial diagnosis.¹¹ Some studies found that morning report covered most of the internal medicine curriculum^{16,28}; others commented on narrow coverage of clinical topics²⁶ or criticized it for

TABLE 2 SUMMARY OF ORIGINAL ARTICLES ORIGINATING FROM NON-INTERNAL MEDICINE RESIDENCY PROGRAMS IN THE UNITED STATES AND CANADA^a

Source, y (Specialty)	Study Method	Study Objectives	Results	Study Evaluation, Potential Bias, and Comments
Barbour and Young, ⁵³ 1986 (multiple specialties)	Residents survey at a single center (76% response rate). Number of residents responding and content of the survey were not reported.	Evaluated the effect of adding a medical librarian to MR on residents' satisfaction and library utilization.	Adding a clinical librarian to MR was well received by residents and resulted in 2-fold increase in library resources utilization.	Single-center study. The number of residents surveyed and content of the survey was not reported.
Barton et al, ¹¹ 1997 (pediatrics)	Data collected by chief residents of a pediatrics program. Program cited had 167 MR episodes at 2 sites.	Assessed the correctness of diagnosis made during MR at 22 sites within the same program.	Significant discrepancy exists between MR diagnosis and final diagnosis. Initial MR diagnoses may be incorrect, and MR should not be used as free consultation. Revisiting cases to determine final diagnosis is a way to maximize the educational value of MR.	Bias cannot be excluded since researchers were not blinded to groups. There was no definition or validation as to what constitutes a difference in diagnosis. Differences in rate of undiagnosed cases may reflect patient population and referral patterns.
D'Alessandro, ⁵⁵ 1997 (pediatrics)	Prospective observational study in a single rural center including 146 MRs (579 cases).	Evaluated the educational contents and value of radiologic studies discussed in MR.	The authors reported on the contents, importance, and caveats in interpretations of radiologic studies for pediatrics residents.	Single rural center study. No bias recognized. This report is very close in nature to the study mentioned above.
D'Alessandro and D'Alessandro, ⁵⁴ 1997 (pediatrics)	Prospective observational study of 388 MR cases (559 radiologic studies) at a single center.	Evaluated the educational content of radiologic studies discussed in a pediatric MR.	The authors reported on the contents, importance, and caveats in interpretations of radiologic studies for pediatrics residents.	Single rural center study. No bias recognized. It is unclear how these results may apply to other centers.
Gerard et al, ¹² 1997 (pediatrics)	Prospective observational study. Chart review of 444 cases presented during MR in 1 program.	Determined the types of patients selected by residents for MR discussion and compared MR diagnosis with discharge diagnosis.	Residents were more likely to select cases in which the diagnosis changed before discharge. Pattern of diagnoses of resident-selected cases were different from randomly selected patients or specialist-selected cases.	This is a single-center study. There is no description on what constituted a change in diagnosis. No validated protocol for the study.
Hill et al, ⁸ 1997 (pediatrics)	Observation of the MR process and format with 34 interviews of participants during 3-month observation period of MR at 1 center.	Studied the structure, process, and subjective meaning of MR on a pediatrics service.	MR seemed perfunctory and inconsistent with learner-centered model. Most frequent recommendations were to shorten MR and have the chief resident lead the discussion. The persistence of MR, despite these liabilities, attests to its significance as a cultural event.	A small sample size over a brief time period in a single center. Bias cannot be excluded, as only 2 faculty members were chosen as interviewers. Uncertainty regarding whether the narrative responses were assessed objectively.
D'Alessandro and Qian, ¹³ 1999 (pediatrics)	Prospective observational study with questionnaire; 287 episodes of MR (included 1034 case presentations) and 77 participants in a single program.	Determined whether a formal or informal approach to MR affects the educational content.	No significant changes in educational content noted between formal and informal approach.	Single-center study. Change in MR format was associated with local hospital changes. Recollection bias possible. Questionnaire administered 1 year after the last informal presentation.
Ozuah et al, ⁵⁶ 2002 (pediatrics)	Observational study comparing EBM- and non-EBM-based questions posed at MR; 445 questions asked of 12 residents at a single center, using standardized format.	Used ambulatory clinic MR as a venue to teach EBM.	The proportion of EBM questions significantly increased with time.	This is a single-center study. The single-page article did not describe how questions were categorized into EBM or not.
Elliot and Ellis, ⁵⁷ 2004 (pediatrics)	Two surveys of residents and faculty, 1 year apart in 1 residency program; 38 residents (82% responded) and 60 faculty (43% responded).	Assessed pediatrics residents' dissatisfaction with MR and the effect of 2 interventions to improve satisfaction.	The investigators failed to identify the source of residents' dissatisfaction and found difficulty in changing MR. They also noted the differences between residents' and faculty members' perspectives regarding MR.	A single-center study with a relatively low response rate. The survey questions were not published or validated. No bias noted, although reporting of results was not clear.

TABLE 2		CONTINUED		
Source, y (Specialty)	Study Method	Study Objectives	Results	Study Evaluation, Potential Bias, and Comments
Bandiera and Morrison, ⁵⁸ 2005 (emergency medicine)	Observational study describing questionnaire results; 74% of 65 emergency medicine faculty responded.	Determined factors influencing emergency medicine faculty attendance to an academic half-day.	The authors noted the infrequent attendance of faculty members at MR. They reported faculty perceptions toward MR as well as the reasons for their poor attendance.	A single-center study with a relatively low response rate. The survey questions were not published or validated.
Kersten et al, ⁵⁹ 2005 (pediatrics)	Observational study describing questionnaire responses; 192 pediatrics residency programs (80% responded).	Examined incorporation of EBM in residency education.	EBM was used in 61% of MRs. Few chief residents felt competent in their program's ability to teach EBM.	The study did not define what constituted EBM-content or EBM-curriculum.
Moreno and Shaffer, ⁶⁰ 2006 (pediatrics)	Observational review of presented cases, using video recording and resident interviews, during a 6-month period of twice-weekly resident-led sessions at a single pediatrics residency program (18 residents, 134 MR cases).	Assessed the adequacy of an unstructured, resident-led MR.	An unstructured, nonhierarchical, resident-led MR successfully met aims and content for breadth of cases and resident participation.	A small residency program at a single center with a relatively small number of MR cases. No bias recognized, however not 1 negative comment of the approach taken was recorded by the authors.
Stiles et al, ²⁷ 2006 (surgery)	Observational review of surgical cases presented in MR; 25 residents in a single center.	Measured the impact of a new, short-format MR on resident education.	Using a questionnaire, the residents determined that this approach was helpful in achieving excellence in ACGME competencies and improving patient care.	A single-center survey with small sample size. The survey questions were not validated or published. Bias cannot be excluded.
Drifmeyer and Oh, ⁴ 2008 (family practice)	National survey of military family medicine program directors; 12 of 17 program directors responded.	Reported the program directors' view of MR.	Although the educational value of MR was ranked high, 75% reported having neither written goals nor objectives, and 77% did not track educational outcomes.	No bias recognized although small sample size and program directors, not residents, were sampled. Perhaps residents have a different perspective regarding educational value of MR.

Abbreviations: ACGME, Accreditation Council for Graduate Medical Education; EBM, evidence-based medicine; MR, morning report.

^a Studies are arranged chronologically.

considering cases with unusual diagnoses at the expense of common illnesses.² In 1 study, internal medicine residents did not present cases involving 4 of the 7 most common diagnoses, which may limit the educational benefits of discussing common diagnoses.² Another study found that 14% of cases discussed were cardiovascular related, in contrast to only 5% for general internal medicine.¹⁶ In contrast, ambulatory morning report in internal medicine offered more diversity in the resident educational experience.²⁹ It was well received by the residents²⁹ and had valuable and unique contents.^{28,29} It also allowed some programs to discontinue lecture-based conferences held before the afternoon clinic.³⁰

A survey of family medicine program directors found that 77% of respondents had written goals for morning report, yet only 33% gave verbal or written feedback to residents.⁴

Residents' Perspectives on Morning Report

Residents' perception of morning report has varied across the years. In a cross-sectional survey of internal medicine

residents, respondents ranked the diagnosis and pathophysiology of diseases as the most important aspects of morning report, while medical ethics, cost, and research methods were considered less important.³¹ Surprisingly, some studies reported that bedside teaching as a part of internal medicine morning report was not favorably looked upon.^{24,32} Additionally, residents indicated that morning report should mainly be educational and not a venue for knowledge evaluation or faculty judgment.³¹ Cases selected by residents for discussion in morning report were more likely to be diagnostically difficult or rare.¹ In 2 studies from internal medicine and pediatrics programs, residents preferred cases that were associated with remarkable imaging studies or cases in which residents disagreed with their attending physicians.^{2,11} Residents were less likely to select patients with chronic disease with a known diagnosis or cases in which the diagnosis was uncertain.^{2,12}

Most internal medicine residency programs preferred an equal mix of general internists and subspecialists as guest staff during morning report.³² In 1 survey of internal medicine residents, respondents agreed that morning report

TABLE 3 POTENTIAL PURPOSES AND UTILIZATION OF MORNING REPORT BASED ON AVAILABLE LITERATURE

Intervention	Desired Outcomes
Interaction and discussion between learners and educators in clinical context ^{32,33}	• Act as educational tool, including minimally judgmental discussion ³¹
	• Act as a tool to foster self-directed scholarly inquiry ²²
	• Construct medical ideology and physician professional identity of young learners ⁶
	• A forum for learning through deliberate practice (improving performance through immediate informative feedback and knowledge of results) ^{23,44}
	• Recap of teaching moments and formulation of questions for further research ^{2,9,10,14,15,25}
	• Improve residents' teaching skills and confidence ^{4,7,15,18,22,36}
	• Learn perspectives of other disciplines of medicine on clinical problems (eg, pathologist or radiologist in an internal medicine residency) ¹⁰
	• Use of expertise to enhance learning, such as medical librarian, a statistician, and others
Presenting evidence-based medicine	• Teach and apply principles of evidence-based medicine in clinical context ¹⁷
	• Provide an opportunity for a thorough review of the literature in relation to a pertinent clinical problem ^{7,18}
	• Improve patient care ²⁴
Discuss adverse event ⁴⁹	• Improve patient safety
	• Increase reporting of adverse events to enable recognition of patient's error, provider's error, or system-based errors ⁴⁹
Establish a curriculum for MR and introduce new elements	• Build a curriculum for MR to provide an opportunity for systematic learning and minimize presentation of dramatic or unusual diagnosis at the expense of common illnesses ²
	• Discuss MKSAP-based questions in clinical context to increase test scores ¹⁴
	• Discuss ambulatory-based MR to extend the spectrum of clinical care and knowledge to include ambulatory care and more prevalent medical challenges ^{28,29}
Review of discharged patients instead of admitted patients ¹⁵	• Decrease hospital length of stay
	• Improve diagnostic accuracy ¹¹
	• Discuss cost effectiveness and discharge planning ¹⁵
Incorporate sign-out in MR	• Mitigate the unintended consequences of resident work hour limitations and emphasize continuity of care ²⁷
	• Educate the night float residents who traditionally would have limited interaction with faculty members ²⁷

Abbreviations: MKSAP, Medical Knowledge Self-Assessment Program; MR, morning report.

should be held at protected times and attended solely by second- and third-year residents, possibly owing to the time constraints on interns.³² Residents preferred attending physicians with a generous fund of general medicine knowledge and clinical wisdom, extensive interpretation skills, and an ability to ask stimulating questions to lead the discussion. Residents also identified attending physicians' limited knowledge and narrow focus as the most significant obstacles to effective teaching.³² Residents considered an interactive session with a question-and-answer format as the best format, followed by discussion of cases primarily by residents and lectures by attending physicians with little resident input. Most residents and faculty members preferred cases to be discussed after the history and physical examination had been presented, following the disclosure of all investigations.^{32,33} The optimal interactive balance was thought to be two-thirds Socratic discussion

(moderator asks, residents answer) and one-third didactic discussion (moderator speaks, residents listen).³² Another report compared internal medicine residents' evaluations of 2 models for morning report; the first entailed separate sessions for interns and residents, and in the second model interns, residents, and students all attended the same morning report. Senior medical residents were responsible for selecting cases, faculty was present to share teaching pearls, and the chief residents acted as facilitators.²⁵ Residents rated the second model of morning report as "good" or "very good" when asked about content, discussion, quality, and usefulness.

Residents are commonly responsible for organizing and delivering morning report, yet they typically receive no formal instruction on making effective presentations. A study that tested the effect of training internal medicine residents to deliver morning report entailed (1) a workshop

where residents were counseled on how to improve teaching; (2) a 3-hour workshop on how to deliver morning report; and (3) reinforcing interventions where residents received informal short feedback, producing a modest increase in residents' favorable opinion of morning report.²³ At the same time, senior residents who received the mentoring intervention reported greater difficulty in engaging the audience and were less confident.²³

Faculty Perspectives on Morning Report

Older reports from faculty likened morning report to "a rapid-fire exchange of information,"³⁴ and criticized its educational value by placing learners in a "sponge mode" that did not encourage inquiry or foster research.³⁴ In 1983, a survey of internal medicine residency programs found that morning report was used as a tool to evaluate medical care, yet also indicated changes in the culture with fewer presented cases with less rigorous discussion, and an increase in presentation of didactic information.²⁴ In 1997, another report indicated that most pediatrics faculty members voiced negative views on the educational value of morning report and its impact on patient care.⁸ In a more recent survey of family medicine program directors, top-ranked purposes of morning report included resident education (100% of respondents), resident evaluation (75% of respondents), and evaluation of quality of patient care (33% of respondents).⁴ Respondents did not list reporting adverse events, discussing ethical issues, or socializing as purposes of morning report.

Faculty members, particularly subspecialty faculty, feel that morning report can be embarrassing when they miss diagnoses or know little about the subject being discussed.^{33,35} One study offered an analytic approach to minimize stress for faculty, including identifying the 10 findings that best summarize the case and use of a matrix to place different aspects of a case in a visible format.³⁵

New Approaches to Morning Report

Several new approaches to morning report have been described, including the use of morning report as a sign-out meeting after implementation of a night float system in a surgery residency.²⁷ The intervention mitigated 2 of the unintended consequences of resident work hour limitations—the fear of disrupted continuity of care and the concern that the night float residents would have substantially limited interaction with faculty members.²⁷

In another innovative approach, cases presented used blinded, scripted presentations taken from published medical journals.³⁶ Residents competed for the diagnosis, with bits of information given at specific times to allow for discussion, and the first group who answered correctly

won. The new format resulted in a 30% to 40% increased attendance with this method.³⁶

Some internal medicine residency programs held morning report at noon (oral communication with program directors). Users of this approach report that a "noon report" allows for uninterrupted early morning rounds, which ensures timely patient care and earlier discharge times.

One study has evaluated the impact of incorporating evidence-based medicine in morning report on clinical outcome of patients.¹⁸ It compared the clinical outcome of 55 internal medicine cases that were presented at morning report to 136 matched controls. Discussion of cases was augmented by a literature search (aided by a librarian) to address questions of care and this information was immediately disseminated to the clinicians, resulting in a reduced length of stay and lower median hospital charges for cases discussed during morning report.¹⁸

The Culture of Morning Report

There has been a gradual shift in the format of morning report to de-emphasize the authority figures of the department chairs and program directors^{3,8} in favor of a focus on learner-centered approaches and the principles of reflective learning.^{1,7,8,15} Other changes in the culture of morning report include moving away from scrutinizing residents^{3,37} to resident education, nurturing, and encouraging participation.^{1,7,36} In the past, morning report was used to monitor clinical services and performances^{3,8,20,24}; more recently, the emphasis has been on condensing learning into take-home points.¹⁴ The third shift has been a change from a focus on the short-term care of newly hospitalized patients²⁴ to the general principles of patient care, critical thinking, evidence-based decision making, as well as improvement of residents' skills and confidence.^{4,7,15,18,22,36}

In 2000, a report noted deficiencies in our knowledge about morning report in 3 areas: types and characteristics of learning and teaching, factors affecting participant satisfaction, and effects on residents' knowledge; it also commented on a need for multi-institutional research on the effectiveness of new strategies for morning report.¹ Since then, little has been added to our knowledge. A summary of the challenges associated with critically evaluating morning report commented on the impossibility of designing randomized blinded trials and the challenges of standardizing testing and scoring.⁷ This summary also commented on confounders, such as the personal attributes of residents and faculty, and on the difficulty of isolating the effect of an intervention from previous knowledge or educational offerings such as noon conference.⁷ Such difficulties were summarized in a recent editorial.³⁸

The lack of studies to document the effectiveness of morning report does not denote a lack of effectiveness. Morning report is conducted in other countries,^{33,39-42} using a format similar to that in the United States, and incorporating a learner-centered evidence-based approach.^{39,42} The continued existence and use of morning report for several decades in different nations and health care settings indicates that it remains a valuable tool.

By interacting with peers and role models, residents and students learn the culture of medicine and develop their professional identities.⁶ This is shown by a study that explored how medical ideology and physician professional identity are socially constructed by analyzing transcripts from 20 internal medicine morning reports.⁶ The investigators noted that “although medical residents deviate from traditional ideology by articulating the voice of the life world, faculty physicians counter these moves by asserting the voice of medicine.”⁶ Recent theories of the acquisition of professional skills also have focused on the importance of deliberate practice.^{43,44} Deliberate practice is defined as activities that are designed to improve the level of performance, with immediate informative feedback and knowledge of results of the performance.⁴³

If morning report is to remain a relevant component in resident education, it should be viewed as an educational tool to foster self-directed scholarly inquiry.²² It should de-emphasize passive learning and encourage a learner-centered approach to medicine, and should also serve to improve patient care while emphasizing real-life costs and efficiencies. Finally, morning report should serve as a forum for residents to practice skills in teaching and leadership, with faculty as supporters of resident teaching and inquiry (TABLE 3).

The lack of a standardized format for morning report allows residency programs to tailor it to their own unique needs and challenges. For example, under limits on resident work hours, morning report may be used as an effective way for ensuring continuity of patient care. A program that wishes to increase its residents' board certification pass rate may incorporate relevant questions into morning report, and a center that lacks patients with complex medical problems may use cases derived from published case reports. With this understanding, morning report can be a powerful educational tool to be used by program directors to remedy the weaknesses of their program.

Conclusion

Despite the lack of a clear definition in the literature, morning report represents a scientific formal meeting in which residents and faculty educators interact and exchange case-based clinically oriented information. In a time that calls for innovation and attention to time and financial

costs, programs should tailor morning report to their specific needs. Frequent scrutiny is necessary to ensure that it meets the academic and nonacademic goals of our new generation of residents.

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