The Morning Report iBook™ – A Novel Approach to the Internal Medicine Morning Report

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About the Authors
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Abstract

Background: Morning Report is an integral element of residency education, however, changes in training have limited its effectiveness. To improve the effectiveness and accessibility of Morning Report, we developed an innovative electronic teaching resource.

Program Description: Using best practice guidelines for e-learning, we created virtual cases based on patients previously presented at Morning Report. Each case includes a summary of the patient’s clinical presentation, and interactive features which examine the patient’s history, physical examination and investigations. Practice exercises challenge learners throughout. Cases finish with an expert summary of the patient’s clinical outcome at discharge.

Results: Residents felt that the tool was easy to use, had high learning value and was an excellent adjunct but not replacement to traditional Morning Report sessions. Specifically, 45% of residents responded that the tool improved their learning in traditional sessions.

Discussion: Our teaching tool supports trainees as an easy-to-use, high fidelity electronic resource that actively involves learners of all levels.

Résumé

Contexte: Le rapport du matin fait partie intégrante de la formation des résidents. Toutefois, des changements en matière de formation limitent son efficacité. Pour améliorer l’efficacité du rapport du matin et son accessibilité, nous avons élaboré une ressource d’enseignement électronique novatrice.

Résultats: Les résidents estiment que l’outil proposé est facile d’utilisation et de grande valeur didactique, en plus de constituer un excellent complément d’apprentissage. Mais il ne remplace toutefois pas les traditionnelles séances portant sur le rapport matinal. Plus particulièrement, 45 % des résidents ont spécifié que l’outil proposé les aidait à mieux tirer profit des séances traditionnelles.

Discussion: Notre outil pédagogique est d’un bon soutien pour les apprenants en tant que ressource électronique facile d’utilisation et de haute fidélité. Il permet aux apprenants de tous les niveaux de prendre une part active dans leur formation.

Introduction
Morning Report is a longstanding and highly valued component of graduate medical education. While highly variable in organization, at its core, it is a case-based conference in which the facilitator (typically a chief resident or faculty member) challenges residents on the assessment and management of cases from the department’s clinical teaching services. At our institution, a senior faculty leads Morning Report and each session deals with an approach to a clinical case of a patient admitted to the clinical teaching service. The session is approximately 45 minutes and occurs 3-5 times per week. All medical learners (clinical clerks and residents) rotating through General Internal Medicine or a medical subspecialty are expected to attend.

Changes in residency training have begun to erode the traditional implementation and impact of Morning Report. Expansion of medical training programs, duty hour restrictions, and distributed medical education all present challenges to resident participation in Morning Report. Review of the training schedules at our institution revealed that learners are only available to attend 50% of sessions due to these challenges. This is a concerning finding that has emerged in our struggle to balance education with clinical service needs.

A major positive change in medical education over the past decade has been the adoption of online and electronic teaching tools, either blended with or replacing traditional teaching methods. Use of education technology resources can help create innovative solutions for the teaching challenges described above. Through our academic roles in the Department of Internal Medicine at Queen’s University (chief residents and faculty leads for Morning Report) we recognized a strong need within our own institution to increase participation in Morning Report. We looked to available education technology resources to design an alternate approach. Incorporating available education technology and using best practice guidelines for e-learning, we developed an innovative electronic teaching resource to present Morning Report in a more engaging and learner-centered format.

Program Description
Here, we would like to describe how we developed and distributed our Morning Report teaching tool with an emphasis on creating a framework for high value case based electronic teaching.

Case Recruitment and Selection
In total, 10 cases that had been presented at Morning Report teaching sessions were selected for inclusion. Appropriate consent was obtained for all patients.

Medical education literature shows that the criteria used in case selection for Morning Report conference vary widely from program to program. In the absence of published guidelines, we targeted cases to create a resource that had the following features:

1) Novel presentations of common disorders.
2) Uncommon disorders important to consider with common presentations.
3) Reinforcement of high-value care.
4) Rich use of relevant multimedia (e.g., videos, imaging, pathology, etc).
5) Review of core resident competencies across multiple disciplines of internal medicine.
6) Diversity across multiple disciplines within internal medicine.

Case Development
The electronic cases and chapters were developed using iBook Author, which is available as a free download in the Apple App Store. Reviewing the needs of our trainees as well as best practice principles for electronic learning resources our teaching resource focused on the following elements.

1) Step-wise approach
Elements of the case are provided in a sequential manner to simulate the way information is collected and analyzed during real patient encounters. Internal medicine residents...
have previously reported this as the preferred method of case analysis. All case presentations include the reason for referral, the history of presenting illness, past medical history, medications, physical exam, laboratory values, other relevant studies, and treatment plans. The reader is challenged to develop diagnostic considerations and management plans early on in the case, and then revise them as new information becomes available (Figure 1).

2) Interactivity & Feedback
Interactivity is an important quality for effective learning and has been listed as a key component in both case based and online teaching. Furthermore, this was identified as a learner priority through focus group sessions at our institution with senior medical students (unpublished study). In these focus groups, students frequently described decreased participation due to fear of getting questions wrong and being embarrassed. By maximizing the interactivity of our learning tool we hoped junior learners would gain, confidence experience and skills in a supportive virtual environment. Our goal is that more confident junior learners will engage actively in traditional Morning Report teaching sessions.

We established a platform for interactive participation through multiple methods. First to simulate a real patient encounter and engage learners we incorporated a variety of high fidelity multi-media elements. This included, videos and images of physical exam features, radiology and electrocardiograms (Figure 2).

Additionally, the iBook™ includes practice questions throughout each case, challenging learners as they work through them. These questions serve as an essential educational element to promote learner engagement within the resource. To ensure engagement was complemented with feedback, a detailed description of why items were right or wrong was included for every question.

Figure 1. Students are able to practice their interpretation of ECG (1a) and radiological imaging (1b). Students can receive direct feedback regarding their interpretation by clicking over specific findings. By clicking on the bottom they can read a description of the pathophysiology and clinical significance behind the abnormal findings.

Figure 2. The inclusion of video, in this case physical examination features (JVP assessment – 2a) and diagnostic testing (echocardiogram – 2b), allows for a more realistic simulated patient experience and increased learner engagement. Furthermore, these demonstrate how multiple tiers of learners can learn from a single case. For example, using figure 2a as an example, junior learners can learn how to visualize the JVP while more experienced learners can focus on the significance of different JVP waveforms. Overall, the inclusion of high fidelity videos and level appropriate learning material contribute to improved learner engagement.
Previous work shows that senior residents often feel that their educational experience is diluted by inclusion of junior learners in Morning Report sessions.\textsuperscript{1,2} The electronic format of our teaching resource allowed us to meet the needs of trainees at all levels by including questions with varying difficulty levels. Tiered questions encouraged active participation and guarded against students becoming disengaged with questions that were too simple or difficult. Questions were further designed to reinforce learning points through repetition and practice. We used a variety of questions types including multiple choice and open-ended questions.

3) Patient Follow up
The recent implementation of residency duty hour restrictions make it more difficult for learners to clinically follow patients they admit throughout their patients hospitalization.\textsuperscript{10} Similarly, traditional approaches to Morning Report often present patients soon after admission and are unable to provide learners with the outcomes of clinical decisions that were made. To address this, our resource included the full clinical course and final diagnosis for each case, sometimes following patients for months after their admission. This provided high quality outcome-oriented feedback and established a structured format for learners to bring their care experience through to conclusion.

4) Expert Opinion
Attending physicians and senior residents provided short reviews for the diagnosis at the end of each case. These summaries were written to reinforce the clinical teaching points of the case and provided links to online guidelines and journals. This further anchored the teaching points in evidenced-based medicine and encouraged learners to pursue independent study.

Program Evaluation
Following the online release of our teaching tool we asked all internal medicine residents at our institution to participate in a survey to assess the usability and educational effectiveness of the teaching tool.

The anonymous survey was conducted online using Survey Monkey. The questionnaire consisted of both open-ended, multiple choice and rating scale questions. There were 6 multiple choice questions to gather demographic information and baseline use of both traditional Morning Report and the electronic Morning Report. There were two rating scale questions. One assessed the relationship between our electronic resource, traditional Morning Report and clinical practice. The second rating scale question asked respondents to rate the educational impact of individual teaching components of the electronic Morning Report book. The open-ended questions described below prompted respondents to further expand on these themes.

1. How would you best describe the relationship between the Morning Report iBook and traditional in person Morning Report at Queen’s? (i.e If they are interchangeable, the Morning Report is a good adjunct etc.)

2. How has the Morning Report iBook impacted clinical care? Please use specific examples.

In total, 17% of residents responded (11/64) to the survey. Of respondents 45% were in their third year of residency, 27% were in the second year and 27% were in their first year. All respondents described attending Morning Report regularly when possible and 91% had spent significant time using the electronic Morning Report tool. The majority of residents (82%) reported using the teaching tool on an iPad\textsuperscript{TM} platform. In addition to using it as a virtual, case-based learning tool, 55% of residents also used it as a medical reference when encountering difficult cases. Residents felt that the tool was very easy to navigate and all teaching components were evaluated as having moderate to high educational value.

Almost half of respondents (45%) felt that the electronic Morning Report would lead to improved learning in traditional Morning Report sessions and 36% believed it would specifically increase their participation in these sessions. Lastly, most respondents felt that an electronic Morning Report was an excellent adjunct but not replacement to traditional Morning Report sessions.

Discussion
The changing landscape of medical education presents both multiple challenges to effective teaching as well as the possibility for innovative solutions. In particular, traditional educational methods that rely on small group discussions such as Morning Report are at risk of being squeezed out. Our teaching resource capitalizes on the accessibility of electronic-based teaching to successfully provide an educational adjunct to traditional Morning Report sessions. Our teaching resource incorporates expert opinion and is grounded in best practice principles of case based and electronic learning. Furthermore,
the incorporation of our electronic teaching resource compliments other online approaches such as a Morning Report blog, which has previously been shown to be effective in improving learning outcomes. Overall, The Queen’s Electronic Morning Report supports our trainees as an accessible, high fidelity resource that actively involves learners of all levels and complements traditional teaching methods.

Limitations of this work currently include a limited amount of data for program evaluation and the single-center experience currently. Moving forward we hope to obtain objective learner outcomes to further assess the impact of this innovation.

The Morning Report e-resource can be accessed on iTunes: “Queen’s Morning Report”, or through the QR below.

References:

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