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Short Communication

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Morning report innovation: Case Oriented Report and Exam Skills

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Abstract: Morning report is a valuable educational conference but is often a stand-alone classroom-based discussion which misses the opportunity for bedside education. In this report, we describe an innovative morning report structure – the Case Oriented Report and Exam Skills (CORES) – that addresses this pitfall of the traditional case conference format and brings learners to the bedside. The key components of CORES include highlighting concepts of clinical reasoning, emphasizing evidence-based and hypothesis-driven physical exam (HDPE), and integrating emerging bedside technologies such as point-of-care ultrasound (POCUS).

Keywords: clinical reasoning; medical education; morning report; physical exam; point-of-care ultrasound.

Introduction

Morning report is one of the most valuable educational conferences in graduate medical education. Although residents consistently rate morning report as a valuable educational activity, it lacks a universally accepted definition, format, and purpose [1, 2]. Morning report conferences are usually case-based discussions, but it is rare for the patient to be physically involved in the conference. This is a missed opportunity for teaching bedside skills and integrating these skills with clinical reasoning.

The recent Individualized Comparative Effectiveness of Models Optimizing Patient Safety and Resident

Education (iCOMPARE) study of residency duty hours showed that medical interns are spending only 12% of their time at the bedside [3]. A major limitation of the conventional classroom-based morning report is its separation from the clinical encounter and physical examination skills. In addition, the audience understandably assumes that the described physical exam is accurate. This assumption, however, is sometimes wrong as suggested by studies documenting declining physical exam skills [1, 4].

To address these limitations in the traditional morning report format, we established the Case Oriented Report and Exam Skills (CORES) conference with the following three goals: teach core tenets of clinical reasoning; link the clinical reasoning discussion to physical examination skills; and demonstrate emerging technologies such as point-of-care ultrasound (POCUS) which enhance both clinical reasoning and physical exam skills.

Conference structure

All interns on night-admitting and ambulatory rotations participate in CORES for 1 h and 15 min; we dedicate 45 min to the case discussion in a classroom and 30 min to clinical exam teaching at the bedside of the patient that was discussed, incorporating point-of-care technology where applicable. Workflow is not impacted as all interns on night-admitting and ambulatory rotations are free of any clinical responsibilities from 8:00 AM to 9:15 AM. Their only responsibility is to attend CORES during that 75-min block; CORES is integrated into work-hour calculations. Before the conference begins, the overnight interns transfer patient-care responsibilities to a separate clinical team, the members of which usually do not attend the conference.

Each of the interns doing overnight admissions identifies cases they found challenging in some way, either diagnostically or therapeutically. The chief resident selects one of those cases to discuss during CORES to highlight high-yield concepts and ensure topic variety across sessions. The admitting intern presents the chosen case at the conference. Patient permission for the bedside visit is a prerequisite for case selection.

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The CORES audience includes interns and faculty; post-graduate year (PGY)-2 and PGY-3 residents are invited, but not expected, to attend. The inpatient ward teams do not attend the CORES conference. One of four chief residents facilitates the case discussion and identifies teaching points.

To make each case discussion accessible to housestaff who are unable to attend, we use OneNote (Microsoft Corporation; Redmond, WA, USA) to summarize the case and the associated discussion [2]. The case information and discussion points are documented and projected on a screen in real time during the conference. A chief resident later adds several teaching points to each case's online page along with multimedia resources (audio recordings, articles, and websites) that can be referenced later (Figure 1A).

Following morning report in the classroom, the housestaff go to the patient's bedside for instruction by a clinician skilled in the physical exam pertinent to that case (Figure 1B). Three core faculty leaders each supervise the three core components of CORES: clinical reasoning, physical exam, and POCUS, respectively. They each attend most CORES sessions to guide teaching.

Specialists are occasionally invited for specific cases (e.g. an ophthalmologist for a case of orbital cellulitis and a neurologist for a case of ataxia).

CORES – the bedside clinical exam

The CORES approach integrates contemporary approaches to bedside skills. For example, the "head-to-toe" approach to the physical exam is replaced by an emphasis on the hypothesis-driven physical exam (HDPE), which is tailored to deliberately elicit data relevant to the differential diagnosis of a particular case [5]. CORES promotes the HDPE and provides direct feedback to the trainee on their reported exam findings. An emphasis on the evidence base for different physical exam maneuvers promotes analytic clinical reasoning at the bedside [4, 6, 7]. The educator helps the group use data gathered from the exam to re-evaluate the likelihoods of diseases on the differential diagnosis constructed during the classroom discussion. We reference a textbook of evidence-based



Figure 1: Morning report in the classroom followed by a hypothesis-driven physical exam at the bedside.

This is morning report with a case-based discussion occurring in a classroom (A). Instead of the usual whiteboard, a scribe is taking notes on a laptop. The notes are projected in front of the room in real time and are available online to all housestaff. Following the classroom discussion, the learners go to the discussed patient's bedside to perform a hypothesis-driven physical exam guided by an experienced clinician (B). In this image, a digital stethoscope with multiple headphones is used so multiple learners can simultaneously hear the cardiac auscultation while the educator comments on notable findings.

physical exam to ensure consistency across different teachers in the highlighted exam maneuvers and their diagnostic likelihood ratios [7]. Chief residents join these sessions in order to teach the physical exam skills to housestaff unable to attend CORES.

The value of incorporating the bedside exam as part of the clinical reasoning process is highlighted when the HDPE changes the group's formulation of the case. As an example, while discussing a case of dyspnea, the presenting intern described a "normal" jugular venous pressure (JVP), leading the group to lower heart failure on the list of possible diagnoses. However, during the physical exam guided by an experienced clinician, the JVP was noted to be so elevated that the patient needed to sit upright to identify the pulsations. This discovery helped reformulate the case, re-prioritizing decompensated heart failure as a more likely diagnosis. Another example was a patient with thyrotoxicosis. The described exam neglected to include the patient's goiter and thyroid bruit. These findings were exciting for learners and important to the patient. We discussed the high positive predictive value of a thyroid bruit for Grave's disease.

Inadequate or inaccurate physical exams can lead to avoidable diagnostic misadventures and result in preventable adverse events [6, 8]. Performing the HDPE as a group to reframe the case avoids such an outcome. We estimate that 10% of cases are reformulated based on the faculty-led bedside exam. Furthermore, reflecting on any incongruities between the resident's report of the exam and the findings during the bedside evaluation provides feedback to the presenting intern. This invaluable teachable moment is impossible in a classroom-based report format. We convey such revelations to the primary team, who are usually unable to attend CORES. In this way, this teaching exercise may also have a meaningful impact on patient care.

CORES – using point-of-care ultrasound

The CORES approach employs POCUS to augment the physical exam to improve bedside diagnostic capabilities and expedite management. In contrast with many other technologies, POCUS brings the clinician closer to the bedside [9]. Competency in POCUS is increasingly expected of medical trainees. However, such competency requires a basic understanding of ultrasonography, skills in image acquisition and interpretation, and the ability to integrate sonographic data within the clinical context to

affect management [10]. In our program, we have monthly noon conferences to teach POCUS physics, views, and image interpretation.

POCUS is integrated within CORES in one of two ways: (1) hands-on practice modules using simulation center technology, standardized healthy patients, and real patients once weekly in lieu of a bedside visit after the classroom morning report (Figure 2); and (2) as part of the CORES bedside exam. In one case, an intern described a patient with a fever and murmur. In addition to verifying the patient's murmur by auscultation, POCUS was used to demonstrate a vegetation on the tricuspid valve. In another CORES session, the patient clearly had heart failure based on history and exam. The interns were taught how to use an ultrasound to obtain views of the heart, which revealed a severely reduced ejection fraction.

Challenges and future directions

This pilot program has not been formally evaluated either with regard to improving resident skills or its role in clinician-educator career pathways (for residents or faculty). We have received positive feedback about CORES from the interns. Many of them have expressed that CORES is their favorite educational session of the day and have self-assessed improvement in their clinical reasoning, physical exam, and POCUS skills. A major ingredient of CORES's success has been integrating the conference within the intern schedule outside of any clinical responsibility.

A major challenge is making CORES available to more learners, especially junior and senior residents, who are often unable to attend due to service responsibilities. We are motivated to improve attendance among second- and third-year residents in the future because such a multiplelearner-level format would enhance the quality of case discussions [1]. Another challenge includes funding the time of core faculty with skills in clinical reasoning, physical exam, and POCUS. The program leadership and educational grants allow our core faculty to attend the majority of CORES sessions via salary support. On average, our CORES sessions have seven to 10 learners, but it is challenging to accommodate more than seven learners at the bedside due to space restrictions and the ability to devote enough time to observe each learner. One way we address this challenge is by using technology such as the ultrasound and a digital stethoscope with multiple headphones to highlight pertinent exam findings simultaneously to multiple learners.

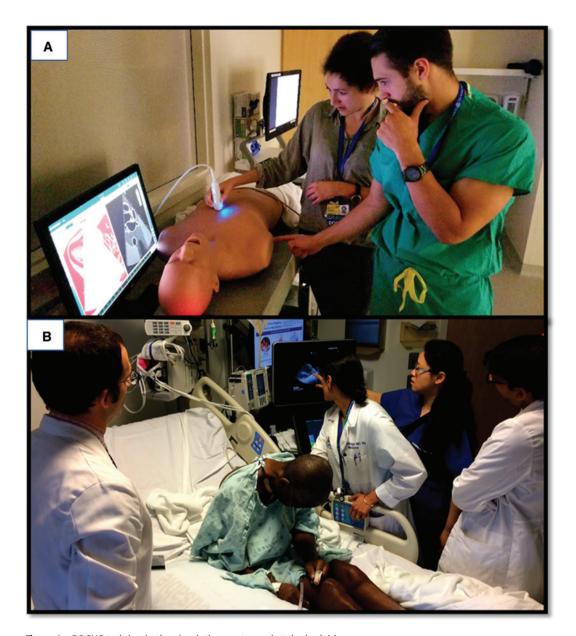


Figure 2: POCUS training in the simulation center and at the bedside.

Two interns learn the cardiac POCUS in the simulation center (A). Expert clinicians guide teaching POCUS at the bedside for clinical integration (B). The small groups allow for adequate hands-on practice for each trainee. The patient in Figure 2B gave consent for the publication of this image.

CORES – conclusions

In this paper, we describe an innovative modification to our traditional morning report with an emphasis on evidence-based physical exam and HDPE and the integration of emerging bedside technologies. The CORES curriculum uniquely synthesizes clinical reasoning, physical exam, and POCUS to cultivate a powerful forum for medical education that can be implemented in other graduate medical programs.

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