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Medicine Clerkship Implementation in a Hospitalist Group: Curricular Innovation and Review

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Background: In 2008, the Department of Hospital Medicine at Ochsner Clinic Foundation in New Orleans, LA, began training its own students for the first time as a result of the partnership between our institution and the University of Queensland (UQ) in Brisbane, Australia, that established a global medical school. The Department of Hospital Medicine is responsible for the Medicine clerkship for third-year medical students. We have 5 resident teams at the main hospital in the system, but the majority of our hospitalists work alone. Because of staffing issues, we have had to change our mentality from having teaching hospitalists and nonteaching hospitalists to viewing all hospitalists as potential educators.
Methods: The department has slowly increased the number of students in the Medicine clerkship each year with the goal of training 120 third-year students in the New Orleans area in 2016. The students in the Medicine clerkship will be divided into five 8-week rotations, allowing for 25 students to be trained at one time.
Results: The UQ curriculum is similar to that of most 4-year American schools, but some differences in methods, such as a heavy emphasis on bedside instruction and oral summative assessments, are novel to us. These differences have provided our department with new goals for professional and instructor development. For the actual instruction, we pair students one on one with hospitalists and also assign them to resident teams. Student placement has been a challenge, but we are making improvements as we gain experience and explore opportunities for placement at our community hospitals.
Conclusion: Our arrangement may be adapted to other institutions in the future as the number of students increases and the availability of resident teachers becomes more difficult nationwide.

Keywords: *Clinical clerkship, curriculum, education–medical–undergraduate, faculty–medical, hospitalists, schools–medical, students–medical*

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INTRODUCTION

The Department of Internal Medicine at Ochsner Clinic in New Orleans, LA, started training graduate physicians and visiting medical students in 1944. In 1995, the Department of Hospital Medicine assumed this role. Visiting medical students would typically join the hospital medicine resident teams but only attended ward rounds. They returned to their home school for their didactics and final examinations during the rotation. However, the situation changed in 2008 when Ochsner Clinic Foundation partnered with the University of Queensland (UQ) School of Medicine in Brisbane, Australia, to establish a unique global medical school.[1] The Department of Hospital Medicine now trains its own students who are members of the UQ-Ochsner Clinical School (OCS) cohort.

American students in the OCS cohort obtain their preclinical training in Brisbane during their first 2 years of medical school and then come to the New Orleans area for their core and specialty clinical clerkships during their last 2 years of training. Under this partnership, the Department of Hospital Medicine is responsible for the Medicine rotation for third-year students.

The hospitalists in the Department of Hospital Medicine at Ochsner are board certified in internal medicine and practice only in the hospital. Hospitalists assigned to 5 resident teams work at Ochsner Medical Center (the main campus hospital of Ochsner Health System), but the majority of Ochsner hospitalists work alone (uncovered). Thirteen hospitalists work uncovered, and 5 supervise resident teams at any given time. One senior resident and 2 interns form a resident team. Hospitalists do not share patient or educational responsibilities with any specialty services. Hospitalists at Ochsner Health System's 5 community hospitals cover the hospital's intensive care unit as well as their ward patients.

When working uncovered services, hospitalists work 7 days of 12-hour shifts followed by 7 days off. The uncovered hospitalists have an average census of 14 patients and

admit patients daily. Hospitalists on a resident team work 14 days followed by 7 days off. A resident team admits patients every 5 days and accepts night float admissions in between.

For the Medicine rotation, 3 students are first assigned to each of our 5 resident teams at Ochsner Medical Center. To keep the number of learners low on the resident teams, some students rotate off the resident team for 1 week at a time and are paired one on one with a non–resident team hospitalist who is working alone. One student per week is also assigned to the night hospitalist. At the end of the week, students who are with an uncovered hospitalist swap with the students on the resident team, so all students in the Medicine rotation have similar exposure to residents and uncovered hospitalists. We expect our students to integrate into the healthcare team and assist with patient care.

As at many other medical schools in the United States, student placement at OCS is challenging. According to the Association of American Medical Colleges, approximately 56% of survey-responding medical schools cited increasing student numbers as a primary problem.[2] The number of American medical students is increasing every year, while the number of residents remains stable, so finding novel placements for students may be necessary in the future.[3] At least at night, many American and Canadian medical schools already allow a hospitalist to directly supervise students.[4] Not much literature exists on the educational benefit of pairing a third-year student one on one with an attending physician. However, Quartarolo reports a study of fourth-year students placed on uncovered hospitalist teams, a practice that had educational benefits and was well perceived by the students.[5]

The Department of Hospital Medicine currently trains students at Ochsner Medical Center and at a community hospital in Slidell, LA, with plans to expand to at least 2 more community hospitals when the medical school enrollment is at capacity. Training at multiple sites is common at other US medical schools.[6] We do not use Ochsner clinics for student training because the clinics are used for the separate General Practice rotation.

The first class of OCS students graduated in 2013. The Department of Hospital Medicine has slowly increased the clerkship each year, with the goal of training 120 third-year students in the New Orleans area in 2016. The 120 students will be divided into five 8-week rotations, with 25 students being trained at one time. In 2015, our enrollment was at 80% of our goal.

INSTRUCTION AND FORMATIVE FEEDBACK

The Department of Hospital Medicine has adopted the UQ curriculum and has been accredited by the Australian Medical Council that approves all Australian medical schools. All hospitalists are eligible for academic appointments at UQ. The UQ curriculum is similar to that of most 4-year American medical schools but uses British terms and styles of instruction that are novel to Americans.

The formal teaching consists of case-based tutorials, mini-clinical evaluation exercise (mini-CEX) tutorials, and long case tutorials. We conduct our tutorials in small groups of 3-9 students with multiple sessions per week to ensure all students have many opportunities to present or examine their patients in front of their peers and a preceptor. To the tutorials, we added a workshop on note writing, an interprofessional tutorial, and formal mid-block face-to-face formative feedback. Similar to other American medical schools, we use conferences, ward rounds, case-based learning, and small-group discussion. Students' weekly activities during the rotation are shown in the Table.

We strongly encourage students to attend the daily resident conferences and resident report. We capture and track student feedback with an end-of-rotation feedback session and a clerkship survey, and we also request instructor feedback.

Case-Based Tutorial

The weekly case-based tutorial revolves around a specific patient and utilizes UQ's Key Learning Areas that are designed to help students master common inpatient illnesses; to learn clinical reasoning, pathophysiology, and management; and to use the literature. Two to 3 students on an assigned team are asked in advance to each find a patient whose case reflects a Key Learning Area. The student then leads the group and the attending preceptor in an in-depth discussion of the key problem of his/her patient, using literature to support the discussion. The case-based tutorial is not a long case or history and physical (H&P) presentation during which a little of all problems are discussed, but it is a focused talk on one key feature of the patient's illness at presentation. The students are instructed to keep their H&P to 1-2 minutes to allow more time for the discussion. The preceptor uses the prepared case final examination grading sheet that includes the components detailed above to assist with feedback and to help the student elaborate when necessary.

Mini-CEX

We use hospitalized patients for the mini-CEX tutorials; in contrast, most American medical schools use simulations and standardized patients.[7] During the mini-CEX, students are observed performing a focused physical examination on the hospitalized patient, followed by their interpretation of the findings. Weekly in a group session, a student on a team performs an observed problem-focused physical examination in front of his or her peers so that students can learn from each other. Students interpret what the clinical findings mean by discussing the differential diagnosis, etiologies, complications, severity, and pathophysiology of signs/symptoms of the problem with their team.

UQ began using the mini-CEX in 2015 to replace the traditional short case. The main difference between the mini-CEX and the short case is that with the mini-CEX, the student is allowed to ask the patient for some focused history and symptoms. The team's attending physician or resident mentors the mini-CEX tutorial. The mentor uses a mini-CEX examination sheet as a guide to provide immediate feedback on professionalism, technique, presentation, and interpretation.

To assist mentors with providing feedback, we present a tutorial for the residents and the attending physicians at the beginning of every rotation on the use of the One Minute Preceptor that works well with the mini-CEX and other ward activities.[8]

Long Case Tutorial

The long case tutorial is a great tool for providing feedback and instruction compared to the sometimes ill-prepared and hurried ward presentations. In the weekly long

case tutorial, all students on a resident team present a patient they have each seen to their peers in a small-group session with an attending preceptor. After presenting, the students receive immediate oral feedback on their presentation and clinical reasoning skills. We use the long case examination grading sheet to assist with providing feedback. The presentation is followed by a brief group discussion of any teaching points such as differential diagnosis, workup, management, and pathophysiology of symptoms or signs.

Note Writing Workshop

To assist with the students' written communication and clinical reasoning skills, we hold a note writing workshop for students and residents during the first week of the rotation that covers admission and progress notes. Students are required to complete progress notes on all their patients and to turn in 4 notes to their attending physician or resident for formal review. We have a feedback grade sheet to not only ensure the student correctly documented the patient's H&P but also demonstrated clinical reasoning and use of the literature. The clinical reasoning, pertinent information, and differential diagnosis are also evaluated by use of the second paragraph method.[9]

We conduct a workshop for residents so they can give good feedback, as having feedback workshops for residents along with tutorials for students has been shown to be more successful than student tutorials alone.[10]

Interprofessional Tutorial

The interprofessional tutorial helps students appreciate that taking care of patients requires multiple practitioners who use professionalism, understanding of roles, communication, and teamwork. Some schools have elaborate courses in interprofessional skills, but ours is simple in design. Students on day staff–only teams work weekly with their coprofessionals to learn about their roles and how we work together as a healthcare team. Currently, nurses, case managers, and nurse practitioners are participating. We hope to include dietary, rehabilitation therapy, and pharmacy practitioners soon.

In the interprofessional tutorial, students receive a list of questions developed by the Interprofessional Education Collaborative Expert Panel to assist with discussions.[11] Students are expected to help coprofessionals with their activities to better appreciate their roles. Making phone calls, asking questions of patients or families, getting food trays for patients, and physically helping patients with staff assistance are encouraged.

Using open-ended questions to gather feedback from both faculty and students about the interprofessional tutorial thus far has been favorable.

Formal Mid-Block Face-to-Face Formative Feedback

Unique to the Medicine rotation, an attending physician or resident evaluates each student during the fourth week, the mid-block, of the 8-week rotation. Using a modified feedback form based on the UQ Clinical Participation Assessment, the resident or attending physician chooses at least 1 of 5 overall categories (conduct in the professional environment, initiative and engagement, clinical skills, clinical reasoning, and communication with professional peers) in which the student has the greatest potential for improvement. Within each category, the attending physician or resident selects specific areas for focus and develops a plan of action for improvement. In addition, the attending physician or resident lists the student's strengths. The student and attending physician or resident review the feedback form during a face-to-face session.

SUMMATIVE ASSESSMENTS

The tutorials and ward experiences prepare the students for their summative assessments that include direct observation, oral long case, oral mini-CEX, and viva voce prepared case examinations. Direct observation is graded according to the 5 categories of the UQ Clinical Participation Assessment: professionalism, initiative and engagement, clinical skills, reasoning, and communication. The main differences between the tutorials conducted during the rotation and the summative assessments are that the students do not know their patient when the examinations begin, and the summative assessments are timed.

A good description of the historic British practice of live oral tutorials and examinations is available in the Association for Medical Education in Europe (AMEE) Guide No. 81.[12] Most schools in the United Kingdom use the newer Objective Structured Clinical Examination (OSCE) format instead of the older short and long case examinations. Most US schools also use the OSCE or standardized patients in addition to direct observation, multiple choice tests, and review of clinical documentation for their summative assessments. Real patients are seldom used in the United States.[13] UQ uses summative multiple choice tests only for the fourth-year medical students doing medical specialties, but starting in 2016, the Medicine clerkship will use a formative shelf examination as well.

According to the AMEE, the main disadvantage of the viva voce, long case, and short case summative assessments is the lack of standardization of the patients and questions used by the examiners. Furthermore, the questions asked are usually limited to the patients' illnesses. This limitation does not allow for good exploration or sampling of the students' breadth of knowledge and skills.

The benefit of conducting oral summative assessments on real-time patients is that the students' behaviors, skills, and attitudes can be assessed in addition to their knowledge, especially with the directly observed short case or mini-CEX. One study has also suggested that if properly implemented, the long case may be better than the OSCE.[14]

UQ has modified its summative assessments to try to address any critiques. The assessment was modified to standardize scoring by using a grade sheet that has multiple components ranked with descriptive milestones (1-4) in each component to assess knowledge, skills, and behaviors. The grade sheets are similar to the Accreditation Council for Graduate Medical Education milestone worksheet in format.[15] To help with patient selection and knowledge assessment, key learning cases and learning areas are given to the students and evaluators beforehand to help create a pass criterion. UQ also increased the number of oral examinations to 5 in 2015 in addition to the UQ Clinical Participation Assessment to better gauge the

Table. Student Weekly Activity Checklist

Week 1	**Rounds and Orientation**
	No tutorials except interprofessional
	☐ Begin UQ long case log book, H&P grade sheets, and progress notes
	☐ Begin online chest radiology and EKG modules
Weeks 2–3	**Rounds and Tutorials**
	☐ Mini-CEX formative (practice) 1 of 2 due
	☐ Progress note grade sheet 1 of 2 due
	☐ H&P grade sheet 1 of 2 due
	☐ Radiology module completed and screenshot due
Week 4	**Rounds and Tutorials**
	Turn in CPA comments and instructor feedback
	☐ Mid-block evaluation due
Week 5	**Rounds, Exams, and Tutorials**
	☐ Mini-CEX formative (practice) 2 of 2 due
	☐ Begin Mini-CEX summative (final)
Week 6	**Rounds, Exams, and Tutorials**
	☐ Mini-CEX summative (final) exam 1 due
Week 7	**Rounds and Exams**
	No tutorials except interprofessional
	☐ Interprofessional tutorial sheets due
	☐ Mini-CEX summative (final) exam 2 due
	☐ Progress note grade sheet 2 of 2 due
	☐ H&P grade sheet 2 of 2 due
	☐ 8 cases in the UQ long case log book due
	☐ 3 prepared discussion exams due
	Last chance to turn in CPA comments and instructor feedback
Week 8	**Final Assessment Week**
	No rounds or tutorials
	☐ Long case exam

CPA, Clinical Participation Assessment; EKG, electrocardiogram; H&P, history and physical; Mini-CEX, mini-clinical evaluation exercise; UQ, The University of Queensland.

students' spectrum of skills. The oral examinations consist of 1 long case, 2 mini-CEXs, and 2 prepared viva voce cases.

PROGRAM RESULTS AND FEEDBACK

We have reviewed our students' written comments concerning uncovered services. The most common positive comment was that students liked not competing with the other students and residents for teaching time with an attending physician. Uncovered services admit patients every day, providing plenty of chances to admit a new patient with limited workup and documentation from the emergency department. This arrangement is advantageous, as we expect our students to take the initiative in patient care and learning. Less competition and more patients give the student more opportunities to perform and get feedback from an attending physician.

Under this model, unexpectedly, interprofessional experience and continuity of care were enhanced. Because students are not attached to a large team, they can follow their patient to a procedure, test, or even critical care and interact with the specialists, nurses, or technicians to see how they care for the patient.

In their feedback, the students mentioned that the hospitalists appeared to struggle at times juggling direct patient care and time to teach. According to Robinson, the more relative value units and patient load a hospitalist has, the lower the student faculty evaluation scores.[16] Our evaluations do not ask direct questions about the difference between uncovered and resident team experiences; instead we ask about the overall experience at different campuses. Our community hospital that had all uncovered services during the last recorded clerkship block scored a 4.1 of 5 overall on a Likert scale. This score is lower than the score (4.6 of 5) from Ochsner Medical Center with its mix of uncovered services and resident teams from the same period, but it is still favorable.

Feedback from the uncovered hospitalists has been mixed. They like the presence of students because they are stimulating, especially when conducting tutorials. This positive view of students has been observed at other institutions[17] and has been used as a hospitalist recruiting tool by the Ochsner Hospital Medicine section head at the community hospital. In keeping with the students' observations, the biggest complaint from the uncovered hospitalists was the perceived lack of time to teach given patient demands. Few time and motion studies of uncovered hospitalists' time teaching students have been conducted, but in the primary care setting, approximately 1 hour per day is required for teaching.[18,19]

Overall, OCS seems to have challenges and successes similar to those of other medical schools. Our Medicine clerkship students scored slightly better than the UQ system average in 2014, with an average score of 5.4 of 7 compared to the UQ average of 5 of 7 using our scoring system. All our students have had a 96% United States Medical Licensing Examination Step 2 first-time pass rate, to which our department is a proud contributor.

NEXT STEPS

Student placement has been a challenge, but we are making improvements as we gain experience and talk to staff in our community hospitals. We are also improving our academic staffing and faculty development, as well as sorting out the logistics of the oral examinations. Plans for future research include a detailed evaluation and longitudinal study of the difference between resident-team and staff-only education and a time and motion study of staff-only teaching.

Our department takes teaching activities into account in our yearly bonus awards to reward those who teach more and better. In addition, we would like to implement a weekly Academic Attending with faculty development as has been done successfully in other departments at our school.[20] The Academic Attending or Bedside Coach Method has been shown to be beneficial to students, faculty, and residents.[21]

UQ annually provides faculty development to a member of our department via the Teaching Excellence Award. The winner of the award spends one week at UQ in Brisbane, Australia. Our department also provides faculty development, but it has been limited in scope. Our current department focus is teaching attending physicians and residents the skills they need to conduct the tutorials. We plan to expand faculty development by starting an Education Committee that would use student evaluations to identify new educational topics to cover. The residency department is also starting a resident-as-teacher course in which the Department of Hospital Medicine can participate.

The long case oral examination presents logistical challenges that we are improving. The criteria of our Key Learning Areas, the need for patients to be healthy enough to provide consent for the examination, patients having no schedule conflicts, and our hospital's efficient throughput are challenges we must take into consideration every examination week. An option in the future will be to include the community hospitals to create a larger selection of patients.

CONCLUSION

Our Department of Hospital Medicine has found that implementing a third-year Medicine clerkship using a novel curriculum that relies heavily on patient-centered techniques is possible. We need to continue faculty development of residents and attending physicians as well as dialogue with the hospital administration to continue our progress.

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