Research Abstracts

1 A Novel Curriculum for Ophthalmology Training of Emergency Medicine Residents (COPTER)

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Background: Emergency Medicine (EM) physicians must effectively manage ophthalmologic emergencies, yet many EM residencies teach Ophthalmology via the traditional off-service rotation model. Training during medical school is limited and variable.

Objectives: Replacing an apprenticeship model of ophthalmology training with an innovative longitudinal curriculum may improve EM residents' competency in treating eye complaints.

Methods: The Curriculum for Ophthalmology Training of Emergency Medicine Residents (COPTER) is designed to cover all the Ophthalmology content in the Model of EM over 18 months. It consists of three, 4½-hour sessions employing didactics and hands-on training in diagnosis, equipment use, and procedures.

A knowledge test was administered to 16 PGY1 EM residents before and immediately after participation in COPTER session 1; the test was re-administered 8 months later (before session 2) to assess knowledge retention. These residents also completed a survey at the end of PGY1 to assess self-perceived competency in the diagnosis and management of select ophthalmologic complaints. The same survey was administered to 16 upper-class residents who had completed a 2-week ophthalmology rotation during their PGY1 year ("Pre-COPTER") and was re-administered after they completed one session of COPTER ("Mixed Curriculum.") Paired t-test and Wilcoxon Rank Sum test were used to analyze the data.

Results: Residents displayed improved knowledge immediately after a COPTER Session ($p=0.0012$ compared to pretest), and this improvement was sustained 8 months later ($p=0.0261$). There was a statistically significant increase in self-perceived competency in evaluating medical eye complaints ($p=0.0493$) and in acute glaucoma management ($p=0.0221$) between the Pre-COPTER and the Mixed Curriculum.

Conclusions: An innovative, multi-modal ophthalmology curriculum improved EM resident knowledge of the diagnosis and management of ophthalmologic emergencies. When compared to an apprenticeship/rotation model, this curriculum also enhanced self-reported competency in managing medical eye complaints. COPTER may improve the care of patients with ophthalmologic emergencies.

Table 1. Outline of a COPTER session. There are three unique sessions with one session scheduled every 6 months, covering the entire model of EM twice in a three-year residency program.

	PGY1 Track	PGY2 Track	PGY3+ Track
12:00pm – 1:00pm	Large-group Didactic COPTER Session 1: The Red Eye • COPTER Session 2: Eye Trauma • COPTER Session 3: Other Inflammatory Conditions & Infections		
1:00pm – 2:00pm	Small-group Breakout*	Small-group Breakout*	Small-group Breakout*
2:00pm – 2:15pm	Snack break, move to next session		
2:15pm – 3:15pm	Small-group Breakout*	Small-group Breakout*	Small-group Breakout*
3:15pm – 3:30pm	Snack break, move to next session		
3:30pm – 4:30pm	Small-group Breakout*	Small-group Breakout*	Small-group Breakout*

* Table 2 describes the content of each breakout session.
COPTER, Curriculum of Ophthamology Teaching of Emergency Medicine Residents; *EM*, emergency medicine; *PGY*, post-graduate year.

Table 2. COPTER breakout session menu.

Name	Content	Audience	Equipment needed
Vision Assessment & Eye History	How-to measure and document visual acuity[1], Must-ask historical questions	PGY1	Video: https://youtu.be/bFmv4XYRN58, Snellen chart, Pinhole occluder
General Eye Examination	Orbital anatomy, Pupil assessment – size, shape, direct & consensual reflex[1], Swinging light test, Outside-in systematic examination	PGY1	Video: https://youtu.be/bFmv4XYRN58, Flashlight
Direct Ophthalmoscopy	How-to use equipment, Visualizing disc and macula, Papilledema	PGY1	Direct ophthalmoscope, PanOptic™ ophthalmoscope, Ophthalmoscopy simulator
Intraocular Pressure Measurement	How-to measure[1], Normal range, Do not measure when perforation suspected	PGY2	Tono-Pen® with tip covers, iCare® Tonometer with probes, Cornea simulator
Slit Lamp	Knobology & focusing, Patient positioning, Corneal abrasion (blue light), Cells and flare	PGY1, PGY2, PGY3+	Slit lamp, Video: https://youtu.be/w9wMJ6job_0, Volunteer[2]
Ultrasound	Probe choice and machine settings, Normal anatomy, Examining patient with swollen-shut eye	PGY2	Ultrasound machine, Volunteer[2]
Advanced Ultrasound	Abnormal findings, Retinal detachment, Posterior vitreous hemorrhage, Optic nerve sheath diameter measurement	PGY3+	Ultrasound machine, Image bank, Volunteer[2]
Foreign Body Removal	When to suspect it, Eyelid eversion, How-to use equipment, Checking for globe perforation	PGY3+	Foreign body simulator, Slit lamp, Tuberculin syringe, Cotton-tip applicator, Burr drill, Video: https://youtu.be/DQZn8WRGBeQ
Lateral Canthotomy	Indications, How-to perform	PGY3+	Cadaver, Video: https://youtu.be/tgQaKVGynFA, Video: https://youtu.be/cLsLBU4L1Ko

*Residents are asked to document these on every patient with an eye complaint.

2 A Simulated Standardized Video Interview: Alleviating Student Concerns while Effectively Simulating Content

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Background: The standardized video interview (SVI) was introduced as a new requirement for Emergency Medicine (EM)

applicants in the 2017-2018 cycle. As with all new requirements, there is a paucity of available materials to assist students in preparation, understandably causing an increase in applicant anxiety associated with the new requirement.

Objectives: This study aimed to evaluate whether participation in a simulated SVI would improve student comfort and whether the simulated format effectively mirrored the actual exercise, with a hypothesis that the simulated SVI would be effective in improving comfort and mirror the format of the actual SVI.

Methods: Medical students applying to EM at 2 allopathic schools were given the opportunity to complete the simulated SVI via a private YouTube channel. The simulated SVI contained 6 questions on professionalism and interpersonal communication (Figure 1). Videos were reviewed by two faculty members and detailed feedback was provided in written format (Figure 2). Students completed a survey prior to participation in the simulated SVI and a follow-up survey after completing the actual SVI. Pre-SVI questions were focused on preparation and attitudes related to the SVI, while post-SVI questions focused on effectiveness and accuracy of the simulated SVI.

Interpersonal and Communication Skills:

1. Think about a "difficult" patient that you have recently cared for.

What is your standard approach to dealing with a "difficult" patient? What specific verbal and non-verbal techniques do you find most helpful in these situations?

2. Give an example of a time where you cared for an ill pediatric patient and had to communicate a critical message to the parent/guardian.

What is the specific example of the message that you delivered? How was the message received? What techniques do you think made your message received in the way it was?

3. Imagine that you are the newly appointed resident leader of a hospital committee with a mission to decrease the time from ED arrival to OR arrival for patients seen in your Emergency Department with small bowel obstruction requiring emergent surgery. Your committee members are a combination of surgery residents and emergency medicine residents, the majority of them senior to you in experience. The surgery residents are blaming the ED for lag time in diagnosis and the EM residents are blaming the surgery residents for delay in calling back their consults.

How would you most effectively entertain the opinions and suggestions of all committee members to effectively carry out the committee's mission?

Knowledge of Professional Behavior

1. As a medical student on your EM rotation, you notice that the senior resident assigned as your teaching resident for the shift smells of alcohol but is not acting overtly intoxicated.

Think about how you would handle this situation. Would you report the suspicion that the resident is under the influence of a substance at work? If you would report, who would you report it to and how would you most effectively convey your concern?

2. Tell us about an incident where you witnessed or were directly involved in a medical error. Respecting patient confidentiality, briefly describe the incident you most clearly recall. What role did you play in dealing with the error at hand? What was the outcome of the error reporting process?

3. You are caring for a patient that was tested for HIV in your Emergency Department via a standing protocol. The *screening* HIV test shows a positive result. There is an established pathway for a research assistant to follow-up on patient results the next day, which means that the provider ordering the test is not required to report the results to the patient. As the ordering provider, would you chose to report the positive result to your patient? If you would report the positive result, understanding that some of the screening tests are falsely positive and must be confirmed by additional testing, how would you reveal this sensitive information to your patient?

Figure 1. Simulated SVI Questions Related to the Competencies of Interpersonal and Communication Skills and Professionalism.

Communication Style:

We liked your communication style, very natural and conversational; very direct and thoughtful in your answers; no awkward pauses or "ums"—which is awesome! Don't rock, make sure you can look relaxed yet remain still.

Quality of Answers:

1. Difficult patient encounter

IVDU with CHF, didn't like to talk to large groups. Explaining your patience with the patient and how it helped you to get to your ultimate end goal was well received—establishing rapport is of utmost importance in EM and we think you established that point very well!

2. Pediatric patient encounter

Discussed end of life care and cessation of aggressive medical intervention based on the wishes of the patient that the mom found difficult to hear

3. Committee interactions

Allowing each person to be heard and feel respected are really great points, taking away "blame" and making everyone feel that they are on an equal playing field is a good general "ground rule" for success.

4. Reporting an impaired colleague

Acknowledged the difficulty of the situation of addressing substance abuse, particularly as a student dealing with a resident. Recognizing that you have the responsibility for patient care and safety no matter what level of training you are at is very noble. Don't be afraid to stand a hard line on this subject—it's NEVER acceptable to be at work under the influence of any substance and you will never be wrong in saying so directly.

5. Medical error

Acknowledging that you were not directly involved, but still recognized that communication is key to preventing medical error and being open and honest is of utmost importance in revealing medical errors.

6. Screening test results

We like how you related this question to the importance of rapport development with your patient and the fact that this is really important in Emergency Medicine

explaining confirmatory and screening processes is important and you did this well.

Taking time to sit down and talk and confirm this rapport is really important and well stated.

Professionalism:

Overall appears professional

Answers are direct and well thought out

Appearance:

Professional appearing, no major distractions

Video and Sound Quality:

Background is white, which is good, but design on the background is a bit distracting?

Perhaps finding a solid white background would be best to avoid any unintended distractions

Figure 2. Example of detailed written feedback provided to participating students.

Results: Sixteen students completed the simulated SVI, with 16 (100%) completing the pre-survey and 14 (88%) completing the post-survey. A majority of students (14) felt that the SVI process increased anxiety associated with the application process, and reported that they felt a need to prepare for the SVI. Upon completion of the actual SVI, 9 (64%) reported the simulation decreased anxiety, and 11 (79%) felt the questions accurately simulated those in the actual SVI. Twelve (86%) students felt the simulation exercise alleviated their primary concerns regarding the SVI.

Conclusions: A simulated SVI with focused feedback appears to largely alleviate anxiety related to the new requirement for EM bound students. Despite a lack of specific information regarding the content of the SVI and details of the scoring rubric, our simulated SVI mirrored the questions in the actual SVI. Potential limitations of this study include the small sample size, and a lack of information on the question format in the actual SVI prior to creating our simulation.

3 A Wellness Assessment of Residents' Significant Others

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Background: Resident physicians have high rates of burnout and mood disorders. The effect of residency on residents' significant others (SO's) has not been previously explored.

Objectives: To assess the overall well-being and stress levels of residents' SO's, as well as potential factors that detract from SO's wellness.

Methods: An anonymous electronic survey was sent to residents with requests that they forward it to their SO for completion. SO was defined as a spouse, domestic partner, romantic partner, or close family/friend who serves as their primary source of personal support. The survey assessed the effect of residents' work hours and scheduling, personal and professional sacrifices of SO's to accommodate their resident's career, and the effects of residents' stressors at work on their personal lives. SO's were also asked to provide specific ideas to the residency program that could improve their wellness. Responses were primarily reported on a 5-point Likert scale, while others were open-ended.

Results: The survey was sent to 61 emergency medicine residents, and we received 12 responses from SO's. All who responded reported being in a romantic relationship with the resident for an average of 6.6±3.3 years, and 59% were married. 42% of SO's reported that they also work in healthcare, and 42% reported making professional sacrifices to enable their SO's current residency position. A majority (83%) reported that their relationship was under more stress in residency, and 67% reported seeing increased depression, anxiety or neuroticism in their resident. SO's rated the lack of scheduling flexibility (4.5±0.9 out of 5) and night shifts (3.9±1.2) as the biggest sources of stress. Residents' stresses from work (i.e. bad outcomes, difficult patient or colleague interactions) were not a major source of stress at home (2.2±1.6). SO's suggestions for improving wellness primarily focused on improving flexibility and advanced notice of schedules, providing more consistent work hours, and improving note-writing efficiency to decrease the post-shift administrative burden.

Conclusions: Significant others' wellness is strongly affected by their residents' professional responsibilities. Efforts to improve SO wellness could focus on resident efficiency and improved scheduling parameters.

4 An Interprofessional Paging Training Program for a Fourth Year Internship Readiness Course

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Background: Effective responses to pages from nurses regarding acute inpatient concerns is an essential skill for a medical intern. However, few senior medical students receive adequate training. Previous studies have shown mock paging to be a valid and reproducible method for improving paging performance. Studies have not evaluated the feasibility for these programs to be used between a nursing student and medical student.

Objectives: The purpose of this pilot study was to determine 1) feasibility of developing a mock paging program between master's level nursing students and 4th year medical students during a 4th year internship readiness course; 2) if this program increased medical student performance over time with post-paging feedback from the nursing student; and 3) if the program improved the medical students' self-reported preparation to answer pages.

Methods: This was an observational prospective design in an academic center, using a within subjects method with repeated measures. Six cases and checklists surrounding common inpatient scenarios were developed and refined by faculty physician and were administered by phone to 40 fourth year medical students by master's level nursing students. A Friedman 2-Way Non-Parametric ANOVA was used to determine if there were differences in performance across cases. Students were surveyed about their level of preparedness before and after the paging program, and 3 months into residency. Interrater reliability of checklists was determined by a Fleiss' Kappa statistic, with 10 master's level nursing students listening to 4 prerecorded cases.

Results: Data from a total of 216 phone calls were analyzed for 36 students. A statistically significant increase ($p<.001$) in student-reported preparedness for responding to nursing pages was seen comparing pre-course survey to post survey, as well as pre-course survey to final survey. However, no statistically significant improvement of checklist scores was observed over the curriculum. Interrater reliability for 4 of the 6 cases was greater than .6 for each case.

Conclusions: A pilot mock paging program instituted between 4th year medical students and master's level nursing students shows an improvement in self-reported preparedness to answer pages, but it does not show improvement over time in