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Creation and Implementation of a Novel Asynchronous ECG Curriculum for PGY1 Emergency Medicine Residents

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The scenario and debrief were videotaped and analyzed by two faculty to assess if the supervising resident gauged the junior resident's knowledge of the procedure, ensured that critical actions were followed, and could manage the complication. The time elapsed before the complication was identified was recorded. Evaluation also included anonymous surveys before and after the SIM to obtain resident perceptions of their ability to supervise.

**Impact:** The SIM effectively assessed if the supervising resident evaluated the junior's procedural knowledge, if they provided appropriate education, and if they ensured critical actions were performed. However, we could not assess if the senior recognized the complication as other team members often spoke out first. Team-based SIM is likely not an effective tool to thoroughly evaluate an individual resident. The time it took for each team to identify the pneumothorax ranged from 12 seconds to 185 seconds. Debriefing this delay in diagnosis provided education to expedite recognition of this complication in the future, illustrating the educational benefit of the SIM. Resident surveys also support this value as 69% of the residents felt that after this SIM they felt more prepared to supervise.

## 10 Code SIM: Cardiac Arrest Simulations for Graduating Medical Students

*Carrie Foster, Casey Morrone, Nicholas Hartman*

**Introduction/ Background:** There are clinical scenarios graduating medical students encounter early in residency for which they feel unprepared, such as cardiac arrest management. While many students observe resuscitations, few will actively participate in leading one. Lack of familiarity with the Advanced Cardiac Life Support (ACLS) algorithm and the team dynamics required to run a code may lead to delayed care and inadequate resource utilization. There is a need to minimize this knowledge gap via experiential learning in order to improve preparedness.

**Educational Objectives:** Our innovative curriculum focused on preparing graduating medical students to simultaneously assign roles to team members, communicate clearly and effectively, use the ACLS algorithm, and develop a differential diagnosis during a critical patient care scenario. We placed a heavy emphasis on team dynamics and communication skills.

**Curricular Design:** We developed a one-hour simulation course to augment the Transition to Residency course offered to graduating medical students. Our course included two novel cases centered on cardiac arrest management. To maximize experiential learning, we utilized high-fidelity SIM to mimic an in-situ code as realistically as possible. Prior to beginning the cases, students were split into groups and a team leader was selected. Leaders were required to recognize the patient

in cardiac arrest, assign roles, follow the ACLS algorithm, and prepare a differential diagnosis for the cardiac arrest. After each case critical actions, key differential diagnoses, and areas for improvement were reviewed. Students were surveyed after completion of the session.

**Impact/Effectiveness:** Of the 64 students who participated in the course, 57 (89%) completed the survey; 100% of students agreed or strongly agreed that the session achieved its objectives and enhanced their preparation for internship. Also, students preferred the resident-led nature of the session and wished it were longer.

## 11 Creation and Implementation of a Novel Asynchronous ECG Curriculum for PGY1 Emergency Medicine Residents

*Spenser Lang, Jessica Baez*

**Introduction/ Background:** Electrocardiogram (ECG) interpretation remains a fundamental and essential skill for Emergency Medicine (EM) physicians. In our institution, ECG interpretation teaching occurred mainly during clinical shifts, or indirectly through other established curricula. We recognized an opportunity for a more standardized curriculum within our residency program while avoiding increased mandatory in-person activities or removing another aspect of resident education. In addition, we wanted to maintain an adult learner-centric focus that residents can complete on their own schedule, but with the ability to interact with a faculty member for improved quality. With that in mind, we created a curriculum designed for asynchronous delivery over the Slack platform, with faculty member moderation.

**Objectives:** Standardize ECG interpretation for PGY1 residents, with focus on identification/management of 4 clinical categories: ischemia, tachydysrhythmias, bradydysrhythmias, & syncope.

**Curricular Design:** All resident learners were enrolled on Slack, and divided into groups, each with a separate faculty instructor. The curriculum spans 1 academic year, with a weekly recurring segment. Each week, the instructor sends a clinical prompt, vitals, and an ECG via Slack to the group. Residents review the ECG within the next 4 days, form an interpretation, then send their answer back to the instructor via private message. After ~5 days, the instructor reveals the correct interpretation via group chat, and opens the conversation within the group for questions and discussion of clinical management.

**Impact:** The resident learners provided generally positive feedback. Weekly participation was overall quite high, with some small decrease near the end of the academic year. To assess effectiveness, we used a pre-post intervention survey to measure resident learners' self-reported comfort with the various categories of ECG interpretation and management (see Figure 1).

<b>Figure 1</b>		<b>Control Arm</b>	<b>Intervention Arm</b>
<b>Age</b>	<b>Mean (SD)</b>	<b>28.54 (2.15)</b>	<b>28.77 (3.54)</b>
<b>Gender</b>	<b>Male</b>	<b>5 (38.4%)</b>	<b>5 (38.4%)</b>
	<b>Female</b>	<b>8 (61.5%)</b>	<b>8 (61.5%)</b>
<b>How prepared do you feel to interpret ECG's on your own?</b>	<b>Very Unprepared</b>	<b>0</b>	<b>0</b>
	<b>Somewhat Unprepared</b>	<b>3 (23.1%)</b>	<b>1 (7.7%)</b>
	<b>Neutral</b>	<b>2 (15.4%)</b>	<b>1 (7.7%)</b>
	<b>Somewhat Prepared</b>	<b>8 (61.5%)</b>	<b>8 (61.5%)</b>
	<b>Very Prepared</b>	<b>0</b>	<b>3 (23.1%)</b>
<b>How prepared do you feel to manage patients with abnormal ECG's?</b>	<b>Very Unprepared</b>	<b>0</b>	<b>1 (7.7%)</b>
	<b>Somewhat Unprepared</b>	<b>2 (15.4%)</b>	<b>0</b>
	<b>Neutral</b>	<b>2 (15.4%)</b>	<b>1 (7.7%)</b>
	<b>Somewhat Prepared</b>	<b>9 (69.2%)</b>	<b>10 (76.9%)</b>
	<b>Very Prepared</b>	<b>0</b>	<b>1 (7.7%)</b>
<b>How comfortable are you with identification of ischemia on ECG's?</b>	<b>Very Uncomfortable</b>	<b>0</b>	<b>0</b>
	<b>Somewhat Uncomfortable</b>	<b>2 (15.4%)</b>	<b>0</b>
	<b>Neutral</b>	<b>2 (15.4%)</b>	<b>0</b>
	<b>Somewhat Comfortable</b>	<b>9 (69.2%)</b>	<b>8 (61.5%)</b>
	<b>Very Comfortable</b>	<b>0</b>	<b>5 (38.4%)</b>

and there is no documentation of longitudinal initiatives with residents as specialty-specific advisors to students throughout the four years of medical school.

**Educational objectives:** The goals of creating the RSEC were to strengthen the connection between students and EM residents, expand and improve the student educational experiences in EM, and foster resident career development through sustainable leadership and teaching opportunities.

**Curricular design:** Three divisions were created: (1) Preclinical Division aimed to increase student exposure to EM through didactics, skill sessions, simulation, and shadowing. (2) Clinical Division held teaching roles in simulation and skill sessions for rotating students and administrative roles to refine scheduling, create face sheets, and host socials. (3) Mentoring Division focused on advising students applying into EM through an informal series and 1-on-1 resident mentorship.

**Impact/effectiveness:** We successfully implemented sustained resident involvement into all four years of medical school. In the last year, there were 113 shadowing opportunities. Those that were rated were all 4-5 on a 5-point Likert scale. Didactics improved students' confidence in history and physical exam. 36 sub-internship students and 18 clerkship students participated in monthly ultrasound workshops, simulations, and socials. Nearly 30 students, both home and visiting, were assigned resident mentors and participated in 6 advising events. Looking ahead we hope to expand preclinical cases, build upon didactic and ultrasound sessions for clinical students and augment mentorship to include preclinical students.

## 13 Effective Implementation of Virtual Team-Based Learning

*Navdeep Sekhon, Adedoyin Adesina, Kathryn Fisher, Daniela Ortiz, Sarah Bezek*

**Introduction/ Background:** Team-based learning (TBL) is an active-learning didactic method. Multiple studies have shown that it helps learners retain medical knowledge and develop higher order decision-making. TBL has been shown to help students improve their teamwork and leadership skills. COVID-19 has shifted the educational climate to where students are more comfortable participating in learning activities virtually.

**Educational Objectives:** The objective of this innovation is to assess whether virtual TBL can be effectively implemented on the Emergency Medicine clerkship.

**Curricular Design:** A TBL session is composed of four components: the Individual Readiness Assurance Test (IRAT), the Team Readiness Assurance Test (TRAT), a group discussion of the IRAT and TRAT, and the clinical problem-solving activity. Using video-conferencing software, this was delivered virtually. The IRAT was a multiple-choice test that

## 12 Creation of a Residency-Based Medical Student Education Committee

*Danielle Kerrigan, Stephanie Hess, Anita Knopov, Christina Matulis, Eric Ebert, Kaitlin Lipner, Jeffrey Savarino, Brian Clyne, Jayram Pai*

**Introduction/ Background:** The Resident Student Education Committee (RSEC) is a novel approach to integrate and expand medical student education within an EM residency at a large academic center. Historically, little formal or sustained interaction existed between students and residents in the ED. There is a paucity of literature on such programs