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Title

Can Simulation be Used as a Tool to Assess Senior Resident Competence in Supervising Junior Residents Placing Central Lines

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literature on incorporating social determinants of health (SDH) training into undergraduate medical education within Emergency Medicine (EM) courses. We designed a novel SDH curriculum to address gaps and limitations of teaching SDH that goes beyond an introductory approach and challenges students to assess SDH and how to address them in clinical practice.

Educational Objectives: 1. Assess SDH, risk factors, and barriers to health care facing patients from diverse backgrounds. 2. Examine how social work consult services operate in the ED and how to identify appropriate referrals, resources, and treatment plans. 3. Examine and interpret health disparities' impact on patients and develop potential solutions to reduce these disparities to improve health outcomes. 4. Analyze the experiences and lessons learned and use them to inform future patient interactions.

Curricular Design: The curriculum was developed by a workgroup that considered the following: scope, target learners, overall structure, and instructional and delivery methods. The curriculum consists of four components over the 4-week course including a SDH shift, small group case discussion, solutions-focused presentation, and written reflection. Finally, students complete an end-of-course survey that is quantitatively and qualitatively analyzed.

Impact/Effectiveness: Of all respondents, 92% indicated they would apply lessons learned from the curriculum. We posit that the lessons learned through the SDH curriculum can translate to improved patient care and health outcomes. We implemented changes such as reducing components of the curriculum and integrating social medicine concepts into existing sessions. Overall, social medicine integration into a core EM course is a replicable approach to experiential and collaborative exposure to the SDH that can improve the way future generations of physicians identify and address the social needs that affect their patients.

Table 1. Quantitative results for end-of-rotations social determinants of health survey questions.

Question/Statement	Yes	No			
Will you apply lessons learned from your Health Equity Experience to your future practice?	68 (92%)	6 (8%)			
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
This course helped increase my understanding of how diversity, equity, and inclusion relate to the practice of medicine.	2 (3%)	-	12 (16%)	34 (46%)	26 (35%)
I had an opportunity to participate in the care of a variety of different patients in this course. Examples of variety include: different medical conditions, diverse cultures, ethnicities, socioeconomic backgrounds, sexual orientations, and belief systems.	-	-	4 (5%)	27 (36%)	43 (58%)
	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)
Rate the overall quality of the Health Equity Experience during your course (social determinants of health shift, small group experience, and large group discussion).	5 (7%)	15 (20%)	25 (34%)	18 (22%)	13 (18%)

Table 2. Thematic analysis of end-of-rotation social determinants of health narrative responses with additional exemplar quotes.

How can we improve the Health Equity Component of the Clerkship?		
Theme	**Sub-theme**	**Exemplar Quotes**
General Comments	Positive	I thought this part was great. Much more than I've had in any other rotation (clinical or non-clinical) thus far in med School. I was surprised by that, but very pleasantly surprised by how much I got out of it even in a short time.
		It was the best health equity clerkship course so far
	Negative	Remove it (SDH curriculum), we do this during family med rotation, so it is repetitive.
	Neutral	I really thought it was great and can't think of any improvements to be made at this time.
Course Design	Structure of patient interviews	Encourage asking the SDH questions to patients the student has already been building a relationship with. It's so awkward going up to a random patient or asking the attending on if there are any patients with SDH barriers.
		The questionnaire can be improved - it is very objective and the whole concept of SDH is subjective that extends beyond simple questions like "do you have housing/food"
	Structure of SDH shift	Work with social work when they are consulted when it is a patient that we saw during a normal shift so that we can better understand when social work is needed and how it is incorporated into better health care for our patient. It would make integrating the medicine and the social pieces more powerful and tangible.
	Reduce components	The SDH curriculum is great and a fundamental aspect of what we should be learning as EM students. That being said, it was more work than expected, and tough during a stressful time of the year to have several added requirements. A panel where peers can talk thoughtfully about their experiences (vs a project and essay) would have been less stressful and more fulfilling.
	Variability of SDH shift	I think shadowing the social workers is a little challenging. Often they are on the phone calling consults or are in meetings and there is little engagement for us. I think it was helpful to see all that they do and how they are integrated into patient care in the ED.
	Remove SDH shift	I don't think there needs to be an extra SDH shift. I think it would be sufficient to provide students with the questionnaire and seek patients out during their shifts.

9 Can Simulation be Used as a Tool to Assess Senior Resident Competence in Supervising Junior Residents Placing Central Lines

Jessica Parsons, Deborah Pierce

Introduction/ Background: ACGME program requirements state that senior residents should supervise junior residents. Historically, once residents are deemed competent in a skill, they are permitted to supervise that skill. However, the ability to supervise may not be the same as the ability to perform a skill.

Educational Objective: Our goal was to develop a tool to assess a senior resident's competence to supervise a junior resident placing a central line.

Curricular Design: Sixty residents were assigned to teams consisting of each PGY level. The SIM scenario involved managing a post-cardiac arrest patient who required a central line. During the procedure, the patient developed hypoxia due to an iatrogenic pneumothorax.

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).