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ACGME Milestone Achievement through Simulation: Development of an Extensor Tendon Repair Simulation Model

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managing patients during a MCI.

**Curricular Design:** A group of faculty and residents designed a multi-station disaster simulation scenario involving attendings, residents, nurses, and medical students. The aim was to provide participants with a realistic learning environment, enhance proficiency with clinical skills and triage models, and increase comfort managing complex, dangerous situations. Teams of 5-6 were introduced to a multi-victim scene using live actors in moulage and low-fidelity manikins. They triaged patients with colored tags, assigning treatment and modes of transport using hypothetical resources from a defined, limited supply. A subsequent scenario involved a scene patient, a high-fidelity SIM manikin. Other stations included the use of personal protective equipment (PPE) and performing clinical skills wearing PPE. Group debriefing followed, with a lecture on the different triage models (START, SALT, and JumpSTART).

**Effectiveness:** We measured the training's efficacy using pre- and post-scenario surveys designed to assess the individual's knowledge base and comfort with MCIs. Questions included "do you have an understanding of models for triage in a MCI?", "are you comfortable triaging multiple patients?", and "are you comfortable leading a team of providers?" 75% of respondents were residents; all reported an increase in comfort and understanding across the criteria surveyed. Furthermore, all respondents agreed (33%) or strongly agreed (67%) that a disaster and triage simulation is a



Figure 2.

useful training tool. The plan is to repeat a similar scenario in 18 months, with a follow-up survey.

## 8 ACGME Milestone Achievement through Simulation: Development of an Extensor Tendon Repair Simulation Model

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**Introduction:** Tendon repair is an Accreditation Council for Graduate Medical Education (ACGME) Emergency Medicine Milestone (Milestone 13, Wound Management, Level 5 - "Performs advanced wound repairs, such as tendon repairs"). However, emergency medicine (EM) residents may have limited opportunity to develop these skills. Previously described tendon repair simulation models, designed for surgical trainees, have used models such as rubber worms, sheep forelimbs and cadavers. We developed a simple and inexpensive extensor tendon repair simulation model for emergency medicine residents, designed to satisfy Level 5 of Milestone 13.

**Educational Objectives:** Development of a simulation module to teach EM residents: 1) the relevant anatomy of the extensor tendons of the hand; 2) the indications and contraindications for emergency department (ED) tendon repair and 3) the techniques of tendon repair.

**Curricular Design:** During the post graduate year-2, EM residents are provided an on-line module containing the: 1) relevant anatomy; 2) indications and contraindications; 3) relevant PE findings; 4) suture techniques; 5) aftercare and 6) a post-test.

Each month, 2-3 residents receive this module prior to their scheduled session. The module is to be completed ahead of time.

During each session, each resident is supplied two pig feet. They dissect out extensor tendons and perform tendon

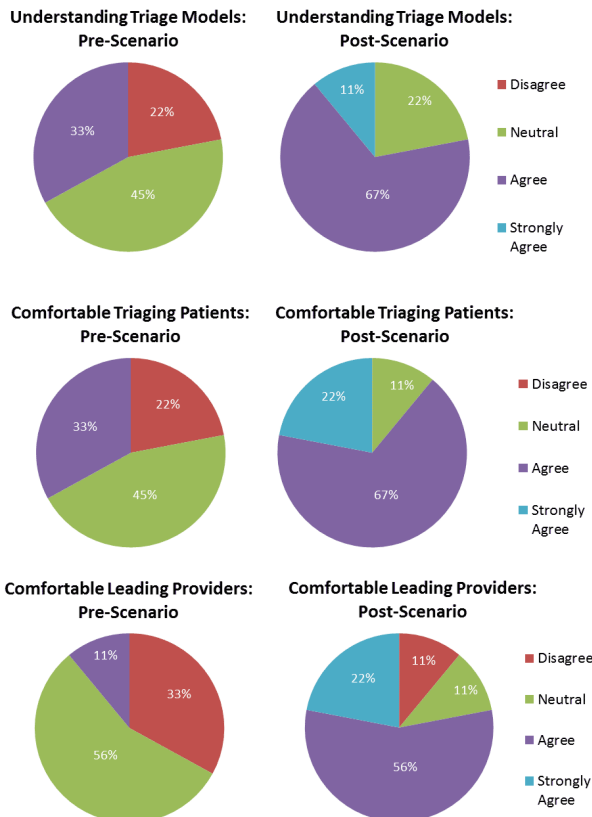


Figure 1.

repairs using 4 stitches: modified Kessler, modified Bunnell, figure-of-eight and horizontal mattress. The lab takes an hour and requires the presence of a single faculty member.

**Impact:** 16 residents have completed the module so far. A post-lab survey was given with an 81% response rate. 92% of respondents agreed or strongly agreed that the training was useful and 85% felt more confident in performing extensor tendon repairs.

This educational innovation meets our objectives. Pig feet are readily available and inexpensive. The module is on-line, self-taught and faculty time expenditure is low. Post-test results have revealed good mastery of the content and resident feedback has been positive.

## 9 All NYC EM: A Regional Education Conference Enhancing Emergency Medicine Education

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**Introduction/Background:** Emergency medicine (EM) residencies strive to improve the education of their residents through innovative didactic programs. The NYC area contains multiple EM residencies and as a result, numerous educators are concentrated in this region. In addition, highly desirable grand rounds speakers may limit repetitive travel to any single region, thereby preventing multiple residency exposures to them.

**Educational Objectives:** We sought to create a sustainable and innovative region-wide EM educational program for all learners in the NYC metropolitan area. A steering committee representing multiple residency programs was formed to design curriculum and to plan educational events. The "All NYC Emergency Medicine Conference, Inc" [All NYC EM] was registered as a 501(c) (3) non-profit entity with steering committee members serving on its inaugural board.

**Curricular Design:** All NYC EM hosts spring and fall conferences each year featuring local educators and prominent guest speakers from around the nation. Conferences are themed and have evolved to include multiple short lectures, panel discussions and resident lecture competitions. All NYC EM has also launched an EM Education fellowship (offering funding to Council of Emergency Medicine Residency Directors and iTEACH), an annual chief resident forum and a medical student residency application boot camp.

**Impact/Effectiveness:** Since its inception, All NYC EM

has hosted 7 conferences, 2 chief forums, 1 medical student boot camp and supported 2 fellows. Attendance at the regional conference continues to grow. 533 residents, students and faculty representing 18 EM residencies attended "All NYC 7" in April of 2014. Feedback has been overwhelmingly positive, with a satisfaction score of 4.1 on a 1-5 Likert scale in regards to education content and usefulness in April, 2014. Likewise the chief forum and medical student residency application boot camp have received praise for their contributions beyond traditional student/resident resources.

## 10 An Innovative Approach to Emergency Medicine Stroke Education Utilizing Simulation and E-Learning Improves Time to Diagnosis and Treatment: A Pilot Simulation Program

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**Introduction/Background:** Time is brain. It is of utmost importance to recognize and treat stroke immediately in the emergency department (ED), but residents begin their clinical duties with little practical education on how to approach this complex disease.

**Objective:** The objective of this curriculum is to teach emergency medicine interns how to recognize and manage acute strokes effectively and efficiently in the ED utilizing a blended curriculum of medical simulation and e-learning.

**Curricular Design:** Part 1 of the curriculum is completion of the American Heart Association's® National Institute of Health (NIH) Stroke Scale online module. Learners then participate in a small group stroke simulation session consisting of 6 cases of neurologic catastrophes and interactive post case debriefing. Cases are original and emphasize the time sensitivity of an accurate diagnosis and treatment plan.

**Effectiveness:** The effectiveness of the curriculum has been measured over 2 years (n=36). Time to Head computerized tomography (CT) and tissue plasminogen activator (t-PA) orders in the sim cases significantly improved. Initially time to CT order was 7.8 minutes into the case (SD 1.8, 95% CI 1.4), which improved to 3.42 minutes (SD 2.3, 95% CI 1.8) by the end of the sessions. The residents also ordered t-PA in ischemic strokes 4.2 minutes faster (CI: [1.97, 6.5]). The NIH scoring of the patients was very accurate (SD 0.06) in all cases. The self-efficacy score improvement over the course was significant at 1.6 (CI: [1.9, 1.25]). On a multiple choice post-test, scores were on average 22.25 percentage points higher (95% CI: [-29.0-15]).

Teaching complex processes may require multiple educational modalities to be effective. Interns who participated in this blended learning program had improved