



# S.T.A.R Center

*Simulation, Teaching, and Research Center*

## **Experiential Medical Education- Emergency Residents Curriculum**

Simulation education is a bridge between classroom learning and real-life clinical experience

***“Practice doesn’t make perfect, perfect practice makes perfect”***, said coach Vince Lombardi. This is the cornerstone for the emergency medicine residency simulation teaching philosophy. The STAR center has created ***‘perfect practice’*** environments for our residents. Mount Sinai’s emergency medicine residency has had a simulation program now for over a decade.

Simulation education has been most effectively incorporated into emergency medicine curricula through the use of time-proven concepts which start with defining the targeted learners, assessing their general and specific educational needs, defining learning objectives, and selecting the best educational strategy for achieving each simulation in Emergency Medicine.

The Accreditation Council for Graduate Medical Education transitioned to a competency based assessment of residency programs in 2001 and included simulation as one method for incorporating the six core competencies into graduate medical education curricula and now milestones. These serve as the basis for resident evaluation process in the simulation center.

### **Format for post – conference simulation experiences**

We teach always with an utmost respect for our learners, in an intense environment that often challenges the boundaries of traditional learning experiences. Our learners are fully engaged in their simulation experiences, are constantly challenged intellectually – a balance which can be achieved only in a small group environment. Our debriefings are extensive covering critical thinking and application of knowledge for our adult learners. We use primarily advocacy inquiry as a debriefing method after the simulation experience. There is also a strong component of video review as part of the debriefing.

Our students benefit from having individualized customized learning sessions and debriefings, in small groups (3-5 students) and also individually bi-weekly throughout all 4 years of residency. The curriculum is a layered to address many education goals.

First, residents get to experience immersive learning with high fidelity mannequins and patient actors (although not standardized patients) that allow



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them the opportunity to learn in a “no risk” environment and practice clinical cases that are both ‘bread and butter’ in Emergency Medicine as well as cases that are low-frequency, but high risk (the zebras). With all cases, residents are provided with a variety of case stimuli appropriate for each case- ultra sound video, radiology studies, laboratory findings. Students get challenged to synthesize information, formulate assessments, practice making critical decisions, choose appropriate therapies and perform necessary procedures, as well as make disposition decisions. They are guided carefully through debrief after each case and provided with feedback on identified knowledge or skill deficits, suggested corrective actions and provided with strategies for future improvement. Cases are selected and written ahead of time, and include: case objectives, target audience (pgy level 1-4), all relevant data points, radiology images (xrays, ct, us pictures or video), case progression scenarios, critical actions checklist, and debriefing plan as well as reference list for content. Beyond the medical objectives/critical action completion, students are also evaluated on interpersonal communication skills and ability to practice in a team based -model.

After the case debriefing, residents participate in relevant skill stations and procedural training, feedback and opportunities to practice and improve their procedural skills if relevant. Residents are taught on partial simulations task trainers attending level procedural courses on advanced airway skills (direct laryngoscopy and video assisted glidescope), ultrasound guided central lines and also chest tube thoracostomy and pig tails thoracostomy.

## **Intern Orientation in S T AR Center**

Star center hosts PY 1- intern orientation with 4 sessions: common ED emergencies, pediatric emergencies, and neurologic emergencies. The PGY 1 residents also participate in a half day communication workshop which covers topics on how to break the bad news to patients and families, how to discuss DNR with family, how to feel comfortable participating in Palliative Care discussions, and how to approach ethical dilemmas in clinical practice.

We have a robust and continuously expanding case curriculum for the EM residents and each case is tailored the PGY levels of the students. Topics covered:

- *Toxicology emergencies:* Aspirin toxicity and vented patient, TCA overdose, Beta-Blocker and Ca channel blocker overdose, Digoxin overdose, Tylenol overdose in co-ingestion
- *Cardiac emergencies:* STEMI, tachy- dysrhythmia (ventricular tachycardia, ventricular fibrillation, atrial fibrillation , torsades, WPW, supraventricular tachycardia), brady- dysrhythmia ( heart blocks, sick sinus syndromes, tri-fascicular block with syncope, symptomatic bradycardia, LVAD patient management, infected endocarditis, acute aortic dissection



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- *Neurologic emergencies:* acute stroke syndromes, epileptic status management, acute stroke syndromes, subarachnoid hemorrhage management, meningitis/encephalitis, and acute alcohol withdrawal.
- *Respiratory emergencies:* asthma, copd, pneumothorax, tension pneumothorax on vented patient, acute pulmonary edema/chf, opioid induced respiratory arrest, traumatic respiratory arrest, pulmonary embolism leading to cardiac arrest
- *Psychiatric emergencies-* acute psychosis, delirium, acute depression suicidal patient
- *Obstetrical emergencies-* ruptured ectopic, ruptured ectopic with trauma eclampsia
- *ENT emergencies:* acute anaphylaxis with angioedema, increase intracranial pressure.
- *Geriatrics-* palliative care , poly pharmacy, sepsis/uti
- *Trauma:* methanol overdose with polytrauma, pedestrian struck pelvic fracture, diaphragmatic rupture, head trauma on Coumadin , neck hematoma on anticoagulation
- *Gastroenterology emergencies:* gastrointestinal hemorrhage with esophageal varices, small bowel obstruction with peritonitis, acute pancreatitis, acute mesenteric ischemia
- *Dermatologic emergency:* Stevens Johnson, burns
- *Pediatrics:* shaken baby syndrome/child abuse, asthma/croup , hyponatremia neonatal seizure, pediatric septic shock
- *Environmental :* black widow spider bite, tick bite with paralysis
  
- *Procedural workshops:*  
Sterile Central Venous Catheter Insertion Technique  
Procedural Workshop I: Transvenous pacemaker and also Transcutaneous pacing  
Procedural Workshop II: advanced airway skill sets - rapid cricothyrodomy and also glideslope usage

Lastly, the simulation division provides the EM residents at Sinai with remediation opportunities. We provides each resident with confidential and entirely personalized, focused remediation strategies for those who are experiencing challenges in residency- from lesson plans to improve in service exam performance, to management of patients in clinical practice , the STAR Center is always welcoming opportunities to guide our residents and help them improve.

## [What makes Sinai special?](#)

It is the education philosophy shared by the STAR Center and the medical education team for the residency. We teach always with an utmost respect for our learners, in an intense environment that often challenges the boundaries of the traditional learning experiences. Our learners are fully engaged in their simulation



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experiences and constantly challenged intellectually – a balance which can be achieved only in a small group environment. Our debriefings are extensive covering critical thinking and application of knowledge for our adult learners. The advanced technology used to operate many current simulators can erroneously become the focus of efforts to create a simulation-based curriculum. At Mount Sinai, our technology is only a tool to allow students to suspend disbelief. We do not emphasize the technological aspects of simulation, but rather place great value in the dissection of critical thinking and the decision making process.

Chasterton said " *It isn't that they can't see the solution. It is that they can't see the problem*". Under the experiential model residents are guided to find those problems and begin advancing their medical education experience. Constant feedback from our learners is requested and taken into consideration for future sessions and frequent educational needs assessments for the residency program provides us with opportunities to continue to provide a cutting edge program that is current, relevant and of highest quality and value for our residents at Mount Sinai.