

Introduction

- Using Kern’s six-step approach, we designed a curriculum for UTSW pediatric residency program
- Targeted needs assessment:
 - Residents lack crisis leadership experience and skills
 - Limited time and resources for direct education
- Defined educational strategy
 - Simulation-based medical education curriculum using rapid cycle deliberate practice to promote mastery learning of crisis management skills

Aims & Hypotheses

- Create a sustainable simulation-based medical education curriculum to improve pediatric resident competence and confidence in responding to, triaging, and managing an acute crisis scenario prior to help arriving.

Methods

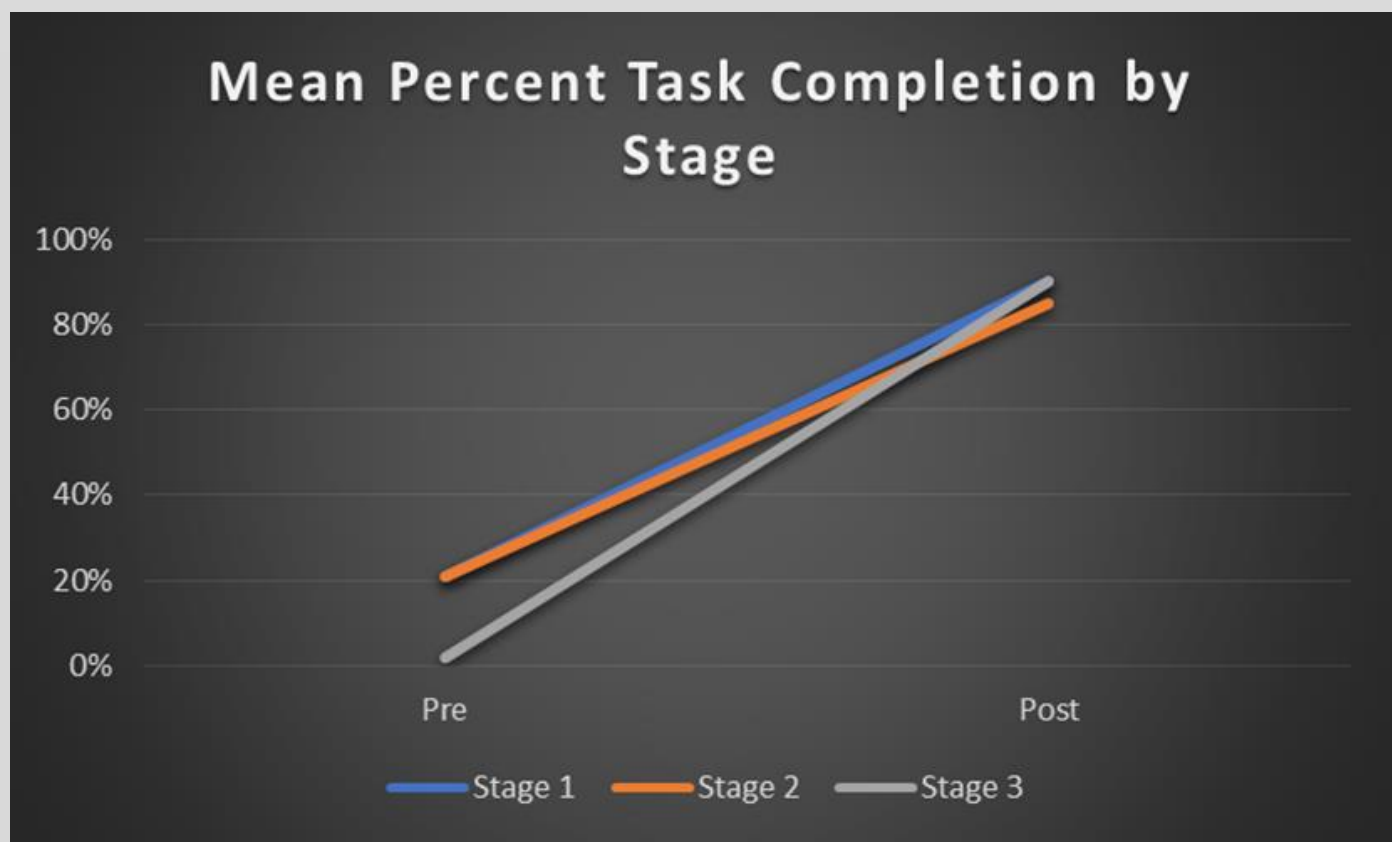
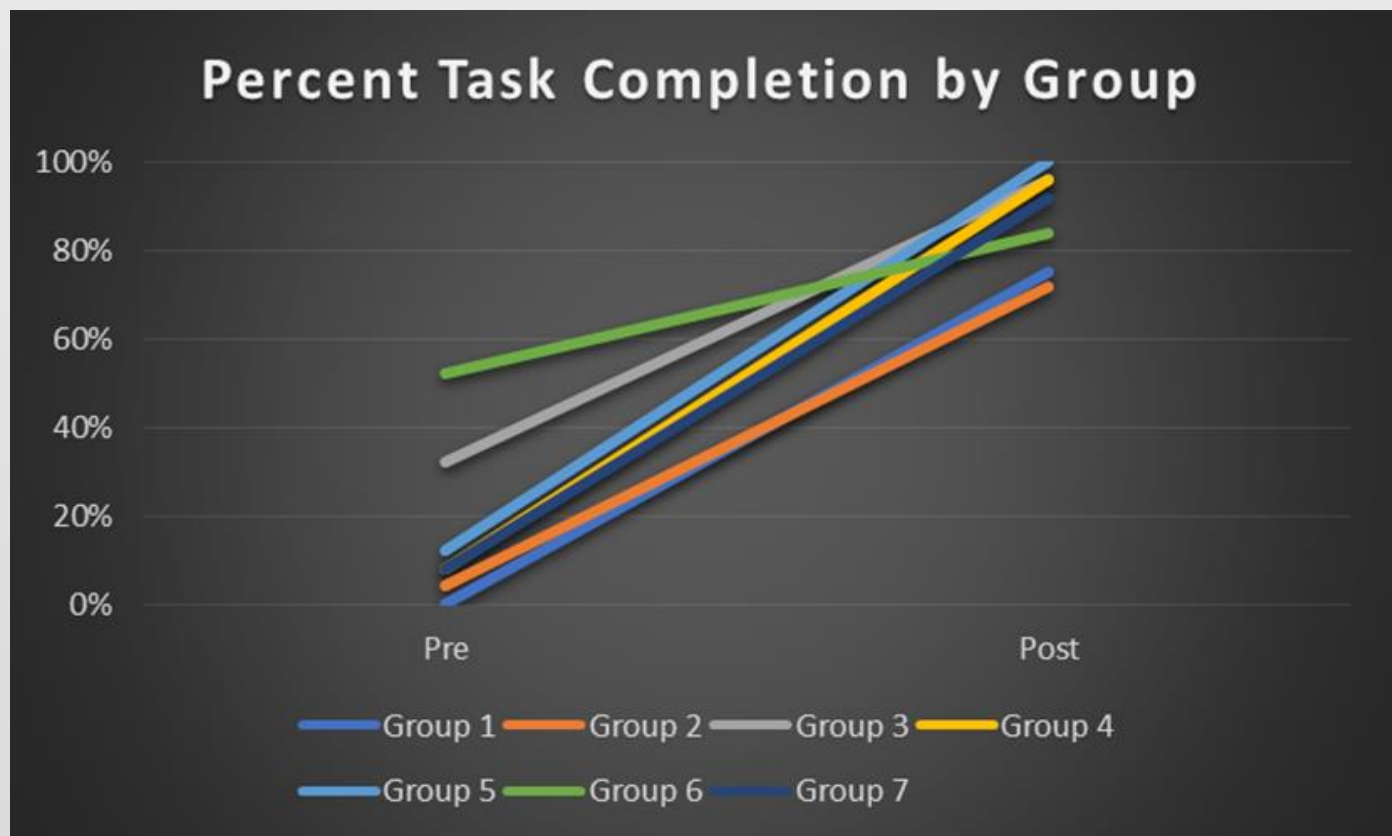
- We designed a simulation scenario divided into three separate stages
 - Stage 1: unresponsive patient evaluated by intern
 - Stage 2: senior responds and patient develops status epilepticus
 - Stage 3: patient develops acute respiratory failure
- Scenario ends with arrival of code team
- Debrief using rapid cycle deliberate practice.
 - The debrief was based on a previously published task list with defined stop-points based on time-to-initiation of a task
- Each stage divided into maximum of 5 cycles per stage
- Measured confidence and competence before and after education with full run-through of scenario

Figure 1. Stage 1 of task list.

The task list was designed with 5 cycles to incorporate stop-points for rapid cycle deliberate practice debriefing.

Rapid Cycle Deliberate Practice Task List							
Notes to Educator: - Give credit for a task when the provider verbalizes that they want the task performed or initiates the task. - If a task is not performed completely and/or not performed prior to the designated time-to-task initiation: stop, provide direct feedback, and resume from beginning of the stage. - Start timer for stage 1 when provider begins to ask embedded nurse about the patient.							
Stage 1	Task	Time-to-Task Initiation	Run 1	Run 2	Run 3	Run 4	Run 5
Child is difficult to arouse	Turn on Lights	10 seconds	☐	☐	☐	☐	☐
	Place Monitors/Ask for vitals	30 seconds	☐	☐	☐	☐	☐
	Perform Primary Survey (ABCDE*)	60 seconds	☐	☐	☐	☐	☐
	Obtain focused interval history from RN (may use SAMPLE** mnemonic)	90 seconds	☐	☐	☐	☐	☐
	Obtain POC Glucose	2 minutes	☐	☐	☐	☐	☐
	Call Senior	3 minutes	☐	☐	☐	☐	☐
*ABCDE – Airway, Breathing, Circulation, Disability, Exposure **SAMPLE – Signs and symptoms, Allergies, Medications, Past medical history, Last Meal, Events leading up to the situation							

Figure 2. Residents demonstrate improvement in percent task completion before and after curriculum. A. Percent task completion by group. Mean percent task completion improved from 17% to 88% before and after curriculum. **B. Mean task completion by stage.** All stages demonstrated improved task completion.



Results

- Seven groups of residents completed the curriculum
 - 44 total (64% PGY1 and 83% PGY3 residents)
- Residents uniformly expressed increased confidence in responding to, triaging, and leading a crisis scenario
- Mean task completion before simulation curriculum was 17%
- Mean task completion after simulation curriculum improved to 88%
- Mean task completion improved in all 3 stages of the simulation scenario

Conclusions

- We used Kern’s six-step approach to develop a sustainable simulation-based medical education curriculum for general pediatric residents at UTSW
- After completion of the simulation curriculum, all residents demonstrated increased competence by way of increased mean task completion based on a previously developed assessment tool
- After completion of the simulation curriculum, residents uniformly self-report improved confidence in responding to, triaging, and leading crisis scenarios
- This curriculum is sustainable given the limited time requirements and well-defined debriefing strategy
- Future study of this curriculum should focus on longitudinal retention of skills from this curriculum

References

- Van Schaik SM, Von Kohorn I, O’Sullivan P. Pediatric resident confidence in resuscitation skills relates to mock code experience. Clin Pediatr. 2008;47(8):777-783.
- Fung L, Boet S, Bould MD, Qosa H, Perrier L, Tricco A, et al. Impact of crisis resource management simulation-based training for interprofessional and interdisciplinary teams: A systematic review. J Interprof Care. 2015; 29(5):433-444.
- Hunt EA, Duval-Arnould JM, Nelson-McMillan KL, et al. Pediatric resident resuscitation skills improve after "rapid cycle deliberate practice" training. Resuscitation. 2014;85:945–95.
- Taras J, Everett T. Rapid cycle deliberate practice in medical education – A systematic review. Cureus. 2017;9(4):e1180. DOI 10.7759/cureus.1180.
- Sawyer T, Eppich W, Brett-Fleegler M, Grant V, Cheng A. More than one way to debrief: A critical review of healthcare simulation debriefing methods. Simul Healthc. 2016;11(3):209-217. doi: 10.1097/SIH.0000000000000148.
- Nichols BE, McMichael ABV, Ambardekar AP. Content evidence for validity of time-to-task initiation: a novel measure of learner competence. Simul Healthc. 2020; Publish Ahead of Print. Doi: 10.1097/SIH.0000000000000536