

**Bucksbaum Institute for Clinical Excellence
2012 Pilot Grant Final Report**

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**Communication During Pediatric Resuscitation: A Pilot Simulation Training
Program for Pediatric Critical Care and Emergency Medicine Fellows**

Introduction/Background

One of the most stressful events in the hospital is the resuscitation of a critically ill child. Because it is a relatively rare event, physicians in training frequently report significant discomfort with managing such a scenario well into their training. And of course, such an event is unthinkable for a parent. How can we best train our future pediatricians in the competent resuscitation of a critically ill child while simultaneously prioritizing the compassionate care of their parents? One such means is through medical simulation. A successful resuscitation requires effective, clear communication among team members who often come from different disciplines and different subspecialties. For the past few years, we have been conducting simulated pediatric resuscitations for emergency medicine and surgery residents in pediatric trauma (McQueen) and for pediatric residents in medical resuscitation (Mitchell). These rigorous scenarios use high fidelity mannequins and technical support from the University of Chicago Simulation Center. To date, however, they have been conducted only with residents in training and have not incorporated the critical elements of communication with family members.

In keeping with the guiding principles of the Bucksbaum Institute and of patient-centered care, we have developed a simulation based resuscitation curriculum to train fellows in pediatric critical care and pediatric emergency medicine how best to carry out a pediatric resuscitation in the presence of a family member. This curriculum emphasizes effective communication skills with family members, using standardized patients (SP) acting as parents during simulated pediatric resuscitation scenarios. Our hypotheses are (1) fellows currently feel poorly trained to resuscitate a child in the presence of a family member and to communicate difficult information (i.e. medical error, death, suspected abuse) to a parent/family member and (2) this curriculum will allow fellows to learn, practice, and improve communication skills and gain comfort with parental/family presence during a resuscitation.

Methods

We have created an advanced interdisciplinary and interprofessional pediatric simulation curriculum for pediatric critical care (PICU) and pediatric emergency medicine (PEM) fellows. The targeted learners are the PICU and PEM fellows, though PEM nurses are also included in the sessions. The simulation experience brings together trainees from different specialties that routinely work together in actual clinical practice, yet have not had the opportunity for self-reflective dedicated training time together. The simulation curriculum was developed with the assistance of an education specialist with the University of Chicago Simulation Center and follows a rigorous design including goals and objectives specific to each scenario, formalized video debriefing, technical skills practice, self- assessment of learners, and program evaluation.

Our curriculum uses cases based upon actual patient encounters from the Comer Children’s Hospital emergency department and pediatric intensive care unit. Each case guides fellows through advanced medical interventions and procedural skills required during pediatric resuscitation. In addition to communicating with nursing staff and with one another, fellows must also communicate with standardized patients acting as parents. These simulated scenarios allow fellows to explore and practice how best to communicate with one another and with family members during the resuscitation of the critically ill child. With the addition of standardized patients acting as parents, each case builds upon communication skills introduced during previous cases. The medical knowledge and communication skills required for each case are summarized below:

Case	Medical Knowledge	Communication Skill
Cardiac failure with cardiac arrest and defibrillation (December 20, 2012)	<ul style="list-style-type: none"> Recognize cardiac etiology of respiratory arrest Demonstrate effective CPR and defibrillation 	<ul style="list-style-type: none"> Encourage parental presence during arrest Explain critical interventions Convey gravity of clinical condition to parent
Calcium channel blocker overdose with medication error during resuscitation (February 21, 2013)	<ul style="list-style-type: none"> Recognize toxicologic etiology of neurologic and cardiovascular instability Identify and deliver antidote(s) to calcium channel blocker overdose 	<ul style="list-style-type: none"> Encourage parental presence during arrest Explain critical interventions Disclosure of medication error
Traumatic arrest with intracranial injury and death (June 20, 2013)	<ul style="list-style-type: none"> Recognize traumatic etiology of cardiopulmonary arrest Identify and treat increased intracranial pressure Discriminate between accidental and non accidental head injury 	<ul style="list-style-type: none"> Encourage family presence during arrest Explain critical interventions Communicate suspected non-accidental trauma to family member Communicate patient death to parent

Simulation sessions have occurred or will occur on the dates listed above. The sessions are two hours in length and occur in the trauma bay of Comer Children’s Hospital Pediatric Emergency Department. Each session starts with an orientation to the mannequin and guiding principles of simulation-based training (15 minutes), simulated case scenario (30 minutes), debriefing with video playback (45 minutes), and technical skill practice (30 minutes). Drs. McQueen and Mitchell facilitate all sessions and debriefings. In addition, the SP and fellows provide feedback based on self-reflection and direct observation during debriefing sessions, which immediately follow each scenario. Video debriefing focuses on both medical care delivered and communication within the

medical team and between the physicians and the simulated parents. At the conclusion of each session, fellows assess their own performance using evaluation forms specific to each session (available upon request). In addition to the self-assessments, participants complete a course evaluation that assesses the curriculum, training environment, and facilitators (available upon request).

Results

This is a curriculum development project for the 2012-13 academic year. We have currently completed two of the three scheduled simulation sessions. The program evaluations thus far indicate that the sessions are rated as highly realistic (average score of case realism 4.4/5). Uniformly, all fellows report that they plan to change some aspect of their management of actual patients based on the simulation sessions. Self-assessment of their skills before and after each session indicate that fellows feel more comfortable with parental presence during a resuscitation, explaining medical interventions in real-time to family members during a resuscitation, communicating with family members, and answering hard questions (i.e. “is my child going to die?”) after completion of the simulation sessions.

Average self assessment scores reported by participants (1 = area of weakness, 5 = area of strength)

Skill	Before first case	After second case
Comfort with family presence	3.8	4.25
Explain medical interventions	4.1	4.5
Communicate with parents	4.0	4.25
Answer tough questions	3.5	3.75

Discussion

The University of Chicago Comer Children’s Hospital currently trains up to nine pediatric ICU (PICU) fellows and three pediatric emergency medicine (PEM) fellows yearly. The Accreditation Council for Graduate Medical Education (ACGME) requires that programs provide training not only in the basic science, pathophysiology, and procedural skills of their specialties, but also in communication and professionalism. PICU and PEM fellows need to learn to integrate all of these skills to care for the most critically ill patients during emotionally charged events, including the resuscitation of a critically ill child. Prior to the development of this simulation curriculum, no formalized curriculum existed within either fellowship program to teach pediatric intensive care and emergency medicine fellows the medical knowledge and hands on skills needed to manage and resuscitate a critically ill child, or to teach fellows how to communicate with parents/family during and after resuscitation. Literature review reveals no published combined PICU and PEM simulation curriculums available for peer review.

This simulation curriculum includes the novel addition of a standardized patient playing the role of a parent of the “child” being resuscitated. A growing body of medical literature indicates that family members wish to be with their loved ones during invasive

procedures and resuscitation. This is particularly true for pediatric patients, who may experience certain procedures more comfortably if their parents or other critical family members are present. The option of family member presence reflects a culture change in the practice of medicine that many health care providers resist. While most have grown comfortable having family members present during certain procedures (minor suturing, lumbar puncture, the delivery of a baby), many physicians draw the line at family member presence during resuscitation. Yet, the literature suggests that family members wish to be present during the resuscitation of a child most of all. Our curriculum provides a critical opportunity to train fellows in communicating effectively and empathetically with parents during pediatric resuscitation.

Future Directions

The program evaluations and participant self-assessments are crucial to our ability to determine success and efficacy of our curriculum. Given the successful feedback from our initial sessions, we plan several initiatives to strengthen and continue this curriculum:

- (1) With support from the Bucksbaum Institute pilot grant, we have enrolled in the Difficult Conversations in Health Care course which is scheduled for March 9, 2013. We anticipate that we will apply skills and knowledge acquired from this course to the development of future simulation scenarios
- (2) Also with support from the Bucksbaum Institute pilot grant, we will produce a video that summarizes best practices in communication with family members. This video can then be disseminated to other training programs within the University of Chicago including pediatric and emergency medicine residency programs, allowing for a wider audience and increased impact of our curriculum.
- (3) We plan to apply for additional departmental support to continue the SP portion of this curriculum beyond the pilot grant year. We plan to continue our simulation curriculum as an essential and mandatory component of PICU and PEM fellow training in future academic years.

After development and revision of our curriculum based on program evaluation, we plan to publish a manuscript detailing creation and implementation of our curriculum. We also plan to publish a curriculum bundle detailing case scenarios, equipment required, goals and objectives specific to each scenario, SP training and incorporation into scenario, and debriefing tactics. This will allow our innovative and rigorous curriculum to serve as a guide to other training programs for replication. Literature review reveals a need for current articles that address curriculum design and development, as well as the need for access to a formalized rigorous curriculum that can be used across multiple levels of training and fields of medicine. We believe that our curriculum fulfills such a need and can be modified to suit different learners (medical students, residents, fellows, and faculty) as well as different fields of medicine (pediatrics, internal medicine, OB/GYN, family medicine).