

Appendix D – Latent Safety Threats Identified (N = 73)

Sim #	Medication Threats (N = 22)
2	Lack of communication from nurse right to medication nurse, who drew up 1:1000 epinephrine for IV use instead of 1:10,000.
5	Code book (medication and equipment book) was in the bay, but was not utilized. It was not brought to bedside.
10	Didn't use insulin dilution kit for small dose of insulin, potentially resulting in overdose.
12	Medication and Specialty Resource Unit (SRU) nurse very late. Physician was left to draw up meds - drew up epinephrine, but didn't label correctly, put tape over med line. Bedside nurse questioned it, but didn't verbalize.
12	Atropine drawn up and given, but never recorded by nurse team leader and wasn't verbalized loud enough that it was given by nurse right.
21	No one aware of insulin dilution kit's existence or where to find it.
27	Physician team leader asked for Zosyn, which was appropriate, however that medication is not in resuscitation bay Pyxis MedStation® system.
35	Team did not realize Gentamicin was available in resuscitation bay Pyxis MedStation® system for this size patient.
40	Worry for giving sedation before giving succinylcholine - medication nurses and nurse right were concerned about not giving sedation before giving succinylcholine, even though patient was unresponsive and had ketamine on board. This slowed down arrival of succinylcholine to bedside.
42	Respiratory therapist (RT) noticed medication nurse struggling with preparing albuterol. RT could have asked someone else to bag and he could have gotten medicine more quickly. RT's usually are the one who prepare albuterol in the remainder of ED, but not in resuscitation bay due to "inability to leave the head of the bed."
59	Rocephin given in penicillin allergic patient.
67	Team was planning on giving succinylcholine for rapid sequence intubation (RSI) in spite of known potassium of 8.1; potential severe adverse medical event.
72	Team had difficulty calculating burn resuscitation fluid rates. Information was eventually found in "miscellaneous calculations" page in drug and drip reference book.
74	Knowledge gap around indications for and location of glucagon. Pharmacist discussed where to locate glucagon.
77	Ativan not listed on Code book sheet; delay in preparing for patient in status epilepticus
78	Need to specify which intubation medications should be drawn up – cannot just call out for "intubation meds."
79	Team asked for intubation medication instead of being specific. Pharmacist prepared then made the nurse clarify what she wanted - must be a direct verbal order from physician.
80	Hydrocortisone – knowledge gap on how to dose for stress dosing and shock and whether to give dose based on mg/kg or meter squared.
80	Identified only 200 mg of hydrocortisone in Pyxis MedStation® system. Inadequate dose for steroid stress dose in larger patients.
81	Long interval to mix dopamine drip, due to physician asking for multiple medications at once. Need to prioritize order of medications needed.
84	Team appropriately asked for prostaglandin (PGE1) infusion, but there was obvious confusion on how to get it, knowledge gap about the continuous infusion sheet, and requirement that pharmacy requires dose/concentration/rate when ordering this.
89	1:1000 vs. 1:10,000 epinephrine confusion – located in same drawer of resuscitation bay Pyxis MedStation® system.
	EQUIPMENT THREATS (N = 26)
6	Endotracheal tube (ETT) too big for 8-year old.
10	Didn't synchronize for stable ventricular tachycardia, instead delivered defibrillation. Team had difficulty locating synch button due to lack of familiarity with defibrillator.
13	Clock is stopped in resuscitation bay
14	Clock still broken in resuscitation bay
15	Missing in line nebulizer device
15	Missing one liter anesthesia bag
16	Oxygen mixer not working
19	Synchronized button was not pushed before shock given, resulted in patient going from stable ventricular tachycardia to ventricular fibrillation.
21	Bag valve mask too large and was not changed to appropriate size. Potential for barotrauma
28	Lack of familiarity with T-pod (device used to secure unstable pelvis)-how to apply and indications
39	Magill forceps missing. They had been present when checked that morning. In follow up, we discovered that obstetric resident(s) was taking them from the resuscitation bay to use on the floor.
40	Endotracheal tube that was too large for patient initially chosen
43	Delay in getting ice on the patient, despite having ice machine in bays. Need bigger bags than just lab specimen bags and need way to seal them other than tape.
46	Called for fans and misting, but no one knew where or how to get fans (in patient with environmental hyperthermia).
49	Stopcocks are blowing apart when attempting to administer adenosine (new supplier)
49	Defibrillator out of paper
50	Team asked for tracheostomy box to bedside, which was appropriate. However, box was not in the Pyxis ProcedureStation™ System.
58	Confusion over T-pod use
58	Need to use rapid infuser for packed red blood cell transfusion in resuscitation bay- no one in team aware of this.
67	Team had large amount of task fixation on laryngoscope, despite equipment having been checked prior and it was working.
72	Overhead speaker does not work in triage. Needed to get extra staff in the resuscitation bays.
75	There was a need for team to put in intraosseous (IO) catheter. There was a general reluctance to do this due to lack of confidence/knowledge in performing an IO line
76	Team did not know location of Magill forceps
79	Team had knowledge gap as to how to use the defibrillator
80	EZ-IO® works well, but people forgot it was there. We need to identify specific individuals who can be responsible for bringing drill to bedside.
82	Team had confusion on how to warm resuscitation fluids using available equipment (hotline, rapid infuser).
	RESOURCE/SYSTEM THREATS (N=25)
5	Radiology and Neurosurgery did not call back when trauma activation paged.

6	Radiology did not attend medical team response - some in team thought they come to medical teams, whereas others said they just sometimes show up.
9	Still confusion with "who is who" in the bay, especially for non-ED staff who participate in these.
11	Nurse team leader (recorder) had to leave as "off load" team to helicopter pad in order to take different patient directly to ICU.
19	Team leader verbalized that she did not know a patient care assistant (PCA) could not set up and run an ECG, so it was delayed.
22	No one thought or verbalized to upgrade this to trauma stat when intubation/airway required. This forced ED fellow into staying at head of bed and be less available to team lead.
40	No medication nurse or SRU nurse showed up and pharmacy was not there. Lack of these providers definitely delayed care,
40	Only two providers in the room had ever taken care of a patient with an anaphylaxis before this simulation. In fact, none of the nurses or residents had managed or seen anaphylaxis. Knowledge gap for recognition and management priorities
43	RT not there at beginning of simulation, so nurse right started with bag valve mask ventilation which took her from the nurse right role. Team was missing critical nurse right role.
44	Wrong dose of epinephrine given: 1:1000 not 1:10,000. Syringe clearly labeled 1:1000 and wrong dose given twice. SRU nurse said, "I looked at the wrong line in the medication book and no one was there to do an independent double check (IDC)."
50	Absent nurse left
50	Patient requiring surgical airway. No clear algorithm of calls/management. Discuss potential use of airway page and consultation of anesthesia and ENT when patient is so sick that needs intubation and recognize possibility of surgical airway.
51	There is no nurse left is assigned to trauma evaluation (lowest of three levels of trauma patients), so the only nurse in the room was the nursing team leader. When IV fentanyl was ordered, she appropriately left the bay to find help. This meant no nurse was in the bay with the patient.
60	Started as a trauma evaluation, there was only one nurse and no RT which led to quite a few problems as no one really made up for these roles/responsibilities. Team did not upgrade to higher trauma activation to obtain more resources.
60	Staff in bay did not really know where most equipment was located. Eventually, when asked, someone was able to find it – identified need for equipment supply provider to attend resuscitations.
67	No RT showed up. Team unaware that sometimes one isn't scheduled in the ED.
71	Pharmacist re-iterated need for order of meds to come from physician, that nurse cannot call out for intubation meds.
77	Didn't know there was a second code (medication and equipment) book in resuscitation bay.
78	<i>Need to develop a separate documentation flowsheet for arrest patients so it's easier to read</i>
78	Used the incorrect arrest algorithm because only an adult size was available at the bedside
79	Team could not find ventricular tachycardia/ventricular fibrillation algorithm. It took a while and they actually brought adult algorithm to bedside, which confused them because doses were inappropriate for 7-year old.
79	Two critical patients presented simultaneously. Although team was able to recruit extra RT and RN, did not ask for more physician help. Instead, physician team leader decided which patient was sicker and sent resident to deal with "less sick" patient.
79	<i>Nurse team leader feels the current medical/trauma flow sheet is very difficult to use during an arrest-"too hard to jump all over the place, doesn't flow"- suggested we need to develop a separate arrest documentation flowsheet.</i>
81	Medication and SRU nurses cannot see vitals from medication bench.
84	There was no nurse available to help with meds/perform independent double check. Question of why so understaffed on a Monday in the winter?

Legend:

- Sim # - refers to the chronological order on simulations run
- ***Bolded and italicized text*** – latent threat that was NOT addressed
 - Example: Nurse team leader feels the current medical/trauma flow sheet is very difficult to use during an arrest-"too hard to jump all over the place, doesn't flow"- suggested we need to develop a separate arrest documentation flowsheet. To date, there has not been a separate "arrest flowsheet" developed, as nursing leadership has chosen to keep the current flowsheet that is used for both medical and trauma resuscitations.