

S1: Simulation Scenarios: Details on the two simulation scenarios. The baseline simulation was a case of anaphylaxis while the follow-up simulation was on local anesthetic systemic toxicity.

Case set up and resident information

The patient is a 56-year-old, 5'10", 72 kg male presents for laparoscopic right inguinal hernia repair. Past medical history includes hypertension, hypothyroidism, and 30 pack year history of tobacco use. The patient is intubated and currently under a general anesthetic following an uneventful induction with propofol, fentanyl, lidocaine, ketamine, and succinylcholine. Anesthesia maintenance is with sevoflurane. You have performed an ultrasound guided, bilateral TAP block using bupivacaine 0.25% x 20 mL/side (40 mL total) approximately 10 minutes ago. Ancef 2g IVP was given 3 minutes ago for surgical site infection prophylaxis. Rocuronium 40 mg IVP was given 1 minute ago after return of twitches. Monitors should read as follows: Heart rate: 80-85 bpm; Blood pressure: 135/82 (101); SpO2: 98%; EtCO2: 38; T: 37.1; EtSevo: 1.9%. Ventilator settings are as follows (since there is no anesthesia machine): VC: TV 450; RR: 14; FiO2: 40%; PEEP: 5 cmH2O; PIP: 21; Plat pressure: 17.

The patient has been prepped, draped, and the surgeon is currently scrubbing in.

Simulation 1: Anaphylaxis

1. Incorporate gradual decrease in blood pressure to 90/50 (63) and heart rate to 109 over 3 minutes. No other changes.
 - a. Resident should respond by treating soft blood pressure with phenylephrine or IVF bolus and decreasing volatile anesthetic.
2. Incorporate worsening hypotension to 80s/40s with minimal response to resident treatment.
 - a. Resident should further decrease anesthetic and become more aggressive in treatment.
3. 3 minutes later, blood pressure is now 50s/30s, heart rate is 121, SpO2 is 93%, EtCO2 is 28, T is 36.1, and EtSevo is 1.1%. Ventilator settings are unchanged. PIP is 48 and Plat pressure is 38.
 - a. Resident should be thinking about anaphylaxis versus pneumothorax.
 - b. Looking for resident to check lung sounds, should hear wheezing if possible.
 - c. Resident should administer epinephrine and call for staff.
4. If resident verbalized administration of epinephrine, return blood pressure to 90s/50s, then eventual normalization of blood pressure. Heart rate remains elevated 120-130s.
 - a. Resident should discuss leaving the patient intubated and taking them directly to the ICU.
 - b. If resident does not give epinephrine, the patient should progress to PEA arrest and ACLS should ensue.

Simulation 2: Local Anesthetic Systemic Toxicity

1. Incorporate gradual decrease in blood pressure to 90/50 (63) and heart rate to 109 over 3 minutes. No other changes.
 - a. Resident should respond by treating soft blood pressure with phenylephrine or IVF bolus and decreasing volatile anesthetic.
2. Incorporate worsened hypotension to 80s/40s with minimal response to resident treatment.
 - a. Resident should further decrease anesthetic and become more aggressive in treatment.
3. 3 minutes later, blood pressure is now 50s/30s, heart rate is 121, SpO2 is 93%, EtCO2 is 28, T is 36.1, and EtSevo is 1.1%. Ventilator settings are unchanged. PIP 20 and Plat pressure is 16.
 - a. Resident should be thinking about anaphylaxis vs LAST.
 - b. Looking for the resident to check lung sounds and they should hear normal breaths, if possible.
 - c. Would expect resident to administer multiple phenylephrine and/or norepinephrine boluses with mini-

mal physiological responses.

4. Patient should convert to pulseless ventricular tachycardia, followed by ventricular fibrillation.
 - a. Resident should make the diagnosis of LAST quickly. Epinephrine should be administered at reduced doses of 100 mcg.
 - b. Resident should call for staff and initiate ACLS protocol.
 - c. Resident should call for intralipid at a dose of 2.5 mL/kg bolus.
5. If the resident verbalized that they started CPR, administered epinephrine at reduced doses, defibrillated and administered intralipid, the patient should achieve ROSC and return blood pressure to 90s/50s. Heart rate remains elevated in the 130s.
 - a. Resident should discuss leaving patient intubated, continuing epinephrine and intralipid infusion, and taking the patient directly to the ICU.
 - b. If the resident does not follow ACLS as above and administer intralipid, the patient should remain in ventricular fibrillation.

S2: Didactic Survey: The post-didactic survey used to gauge residents' general and skill knowledge of non-technical and human factor skills.

Supplement 2: Human Factors Didactic Survey

Please rate the following questions on a scale of 1 (low) to 5 (high).

General	1	2	3	4	5
You were aware that non-technical skills could influence patient outcomes before the didactic presentation.					
Did the didactic presentations further your understanding of non-technical skills?					
Would you like more didactic presentations about non-technical skills in the future?					
Are you likely to practice your non-technical skills more than before the didactic presentation?					
You will practice your non-technical skills often.					
How likely are you to consciously incorporate non-technical skills into your practice?					
New skills/strategies were gained that you can apply to your practice.					
You feel more confident in handling high-risk, high-stress situations because of your non-technical skills trainings.					

Skills	1	2	3	4	5
You are confident in your situational awareness skills (gathering information, recognizing and understanding, anticipating) after the didactic presentation.					
You are confident in your decision making skills (identifying options, balancing risk and selecting options, re-evaluating) after the didactic presentation.					
You are confident in your teamwork skills (coordinating activities, exchanging information, using authority and assertiveness, assessing capabilities, supporting others) after the didactic presentation.					

Skills	1	2	3	4	5
You are confident in your task management skills (planning and preparing, prioritizing, providing and maintaining standards, identifying and utilizing resources) after the didactic presentation.					
The coping strategies discussed throughout the presentations will enhance my clinical skills and expertise, leading to less mistakes and anticipation of problems.					
You will practice and use the coping strategies in your practice.					

S3: Simulation Survey: The post-simulation series survey to gauge resident engagement and to obtain feedback for future training sessions.

Please rate the following questions on a scale of 1 (low) to 5 (high)

	1	2	3	4	5
How would you rate your experience with the simulation session?					
How helpful were the simulations to your professional educational needs?					
How much did the activity challenge your current practice?					
How likely are you to change your practice as a result of this study?					
Was the length and content of the simulation adequate?					
New skills/strategies were gained that I can apply to my area of practice.					
I plan to implement the information in my area of practice.					
Similar simulations would be beneficial in the future.					

A) List some of the positive points in this session that you would like repeated in the future.

B) List some areas of improvements that you would like to see in future sessions.

ST1: Group Combinations: Resident group composition for simulations. The follow-up simulation occurred 120 days after the baseline simulation.

Group Composition	
Baseline Simulation	Follow-up Simulation
CA2/CA2	CA3/CA2
CA2/CA3	CA3/CA1
CA3/CA1	CA2/CA1
CA2/CA1	CA3/CA1
CA2/CA3	CA2/CA2
CA3/CA3	CA2/CA1
CA1/CA1	CA3/CA3

CA = clinical anesthesia year