

Simulation-based team training: Crisis Resource Management and the Use of Emergency Manuals in the OR

Simulation Stems*

Introductory Demonstration Simulation (Using Emergency Manual to address PEA, Role of Reader)

<i>Surgical Setup:</i>	Emergent Ex-Lap for Trauma – 68 yo male MVA, No known PMH, no known meds
<i>Monitor Setup:</i>	EKG, HR, Arterial Line BP, Respiratory Rate (RR), Oxygen saturation, End Tidal CO2 (EtCO2), Temperature (C°)
<i>Starting Vitals:</i>	HR 82, BP 118/60, RR 10, EtCO2 35, Temp (peripheral) 36
<i>Trending over 90 seconds:</i>	HR 130, BP 142/78, RR 10, EtCO2 35, Temp 36
<i>Followed by:</i>	PEA with HR 130, BP 0/0, RR 10, EtCO2 35, Temp 36 (With good CPR, BP 38/20)
<i>Confederate** Roles:</i>	Surgeon Anesthesiologist Circulating Nurse Resource Nurse who becomes EM Reader

Participatory Simulation (Malignant Hyperthermia, Rare Event)

Practice empowering questions to trigger Emergency Manual use. Prep participants in advance on utility of empowering questions – See **Facilitator's Guide** (Resource D).

<i>Surgical Setup:</i>	Laparoscopic appendectomy
<i>Monitor Setup:</i>	EKG, HR, NIBP (auto 2 min), RR, Oxygen saturation, EtCO2, Temperature (C°); NO Arterial Line
<i>Starting Vitals:</i>	HR 82, BP 118/60, RR 10, EtCO2 35, Temp (peripheral) 36
<i>Trending over 90 seconds:</i>	HR 130, BP 142/78, RR 10, EtCO2 70, Temp 39
<i>Confederate** Roles:</i>	Surgeon Anesthesiologist
<i>Participant Roles</i>	Circulating Nurse, Surgical Technician
<i>Anesthesiologist:</i>	“The heart rate and EtCO2 are rising despite my interventions... This could be malignant hyperthermia but it's not entirely clear.”

Participatory Simulation (Massive Hemorrhage, Refractory Event)

<i>Surgical Setup:</i>	Laparoscopic appendectomy
<i>Monitor Setup:</i>	EKG, HR, NIBP (auto 2 min), RR, Oxygen saturation, EtCO2, Temperature (C°); NO Arterial Line
<i>Starting Vitals:</i>	HR 82, BP 118/60, RR 10, EtCO2 35, Temp (peripheral) 36

Goldhaber-Fiebert S¹, Lei V², Jackson ML³, McCowan K³.

¹Stanford University Department of Anesthesiology, Perioperative and Pain Medicine ² Vanderbilt University Medical Center, Department of Emergency Medicine ³ Stanford Health Care

Trends over 60 seconds: Trend to HR 130, BP 72/32
If no effective interventions: Trend to HR 150, BP 60/30

Confederate** Roles: Surgeon, Anesthesiologist
Initial Participants: Circulating RN, Surgical Technician
Helper Participants: Anesthesia Tech
Runner
Charge RN
2 Assisting RNs

Surgeon: "We have some bleeding... I'm not sure where it's coming from"

Anesthesiologist: "It looks like 500cc in the suction just now, do you have it under control?"

Surgeon: "Not yet... Get me a second suction" (focusing completely on surgical field, only brief communication)

*All three simulation scenarios require the same basic OR setup, as well as emergency anesthesia medication and equipment. See **Setup List** (Resource C) for general setup. Brief details specific to each scenario are provided in this document. Debrief themes follow the teamwork concepts and Emergency Manual use, triggers, effectiveness, facilitators or barriers that were introduced in Instructor's guide and that participants specifically bring up themselves.

**Confederate = simulation faculty, RN educator, technician, medical student, or other helpers who are not participants. Confederates are familiar with the scenario and the teaching objectives. Confederates should be able to demonstrate in the PEA-demonstration-simulation both effective teamwork skills and emergency manual use, including a reader role interaction with team leader.