Perioperative Drill-Based Crisis Management

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Edited by
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Preface

This manual was developed to help medical directors and administrators run drills at their healthcare facilities. Although this was primarily designed with ambulatory surgical facilities in mind, it can be used by hospitals and office settings where patient care takes place. The chapters will lead a person through a drill. The drill unfolds stepwise and will be broken up with actions that the participants are expected to take. This will help the drill instructor to lead the participants down a particular pathway if they start to "wander".

The chapters are organized by group. The first two are general enough to be used by any facility. The stems are surgical, but can be generalized to any patient population. Chapters 3 to 8 are surgery specific. They deal with health issues that are unique to the surgical setting. The last two chapters are applicable to any setting. The book is written from a surgical point of view, but really applies to any building that is open to the public.

The layout of each chapter is consistent. There is an introduction with learning goals. Drill scenarios follow that flow between an evolving story and what anticipated actions are. There are at least three drills per chapter. Following the scenarios are debriefing questions and then the detailed discussion with learning points. This permits any drill leader to be an "expert" even if addressing a scenario outside his or her field of expertise. If a group of scenarios is closely related, the debriefing will follow after the last scenario. If the scenarios are very individual, the debrief and discussion unique to each case will follow immediately.

As stated, the drills can be used "out of the box", but there are some tips to make them work better. First of all, the person running the drill should read the entire drill, debrief and discussion. This will help focus the drill and bring up relevant questions. When doing a drill myself and I see that the staff is on a tangent or not able to pick up correctly on the problem I am presenting, I will have an imaginary colleague "stop by" and give advice. I may say, "Another anesthesiologist steps in and says that the last time he saw a patient not wake up, we checked his blood sugar." That way the drill can continue in the direction intended and people accept it as part of the drill without taking offense like they are doing something wrong.

In much the same way, a scenario stem can be changed to fit a different setting. Instead of a patient having crushing chest pain in the recovery room, they can present to the front desk of a medical office or urgent care. The rest of the story can be easily tailored from there.

Medical lingo has many acronyms and regional abbreviations. Many of these were edited out, but a glossary was also put in to help. Sometimes a term is defined early in the chapter, but may appear again in the drill. This may confuse someone that hasn't heard it before. All abbreviations and some geographically regional terms are all placed alphabetically in the glossary. As an additional note, this American-written book uses lab values common in the United States. For instance, blood sugars are reported in mg/dl and partial pressures are in mmHg. A book that contains algorithms for ACLS will make a great companion to this book. Many of these are widely available and are of great quality. Most common are the products of the American Heart Association for Advanced Cardiac Life Support or Pediatric Advanced Life Support.

I hope people learn as much from using this book as I did writing and editing it. Most of all, I hope that it increases the quality and quantity of drills performed by a medical team and all with less effort!

Glossary of terms

"9-1-1" or "911"	Emergency number in United States that connects to a municipality's joint answering center for police, ambulance or fire emergencies
"9/11"	Refers to bombing incident on Sept 11, 2001 when terrorists piloted jet liners into the World Trade Center in New York City and the Pentagon in Washington, DC. A fourth plane was downed by passengers in Pennsylvania
AA	Anesthesia Assistant; a physician assistant specialty trained in anesthesia
A-a gradient	Difference between alveolar and arterial concentrations, most commonly in reference to oxygen levels
ABG	Arterial blood gas
ACL	Anterior cruciate ligament
ACLS	Advanced Cardiac Life Support, an American Heart Association course that teaches pathways or algorithms using drugs and defibrillation/pacing to treat many causes of cardiac arrest, shock and stroke
ACS	Acute coronary syndrome
AED	Automated external defibrillator
AFOI	Awake fiberoptic intubation
AMBU	Artificial manual breathing unit
ASA	American Society of Anesthesiologists
ASC	Ambulatory surgery center, usually freestanding and completely separated from a hospital
ASRA	American Society of Regional Anesthesia
ATP	Adenosine triphosphate
BLS	Basic life support which is essentially chest compressions and rescue breathing without administering drugs
BMI	Body Mass Index; developed to quantify obesity by more than just weight. May be elevated for a very muscular individual. The calculation is weight (kg)/height (m) squared
Cath	Short for catheter or catheterization as in a cardiac catheterization laboratory or suite
CKD	Chronic kidney disease
CK-MB	Creatine kinase enzyme with myocardial subtype indicative of myocardial infarction when released into the bloodstream and measurable via a laboratory serum test
CMS	Centers for Medicare and Medicaid Services; a US agency that acts as a national health insurance for the poor and elderly. It creates many conditions to participate in caring for its patients that are, in effect, federal law
CNS	Central nervous system, i.e. brain and spinal cord
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
Crash cart	Rolling cart that is typically stocked with resuscitation drugs and equipment necessary to run a cardiac resuscitation
CRNA	Certified Registered Nurse Anesthetist
DC	Direct current

Glossary of terms

DKA	Diabetic ketoacidosis
EAP	Emergency action plan
ECG/EKG	Electrocardiogram
EF	Ejection fraction, specifically cardiac
EMS	Emergency medical services, typically a transport ambulance staffed with paramedics or emergency medical technicians
ENT	Otolaryngology or "Ears, Nose and Throat" specialists
ETT	Endotracheal tube
FBI	Federal Bureau of Investigation; a police force in the United States with the entire country as its jurisdiction
FEMA	Federal Emergency Management Agency; a US agency that manages disasters (natural or man-made) within the US borders
FiO_2	Fraction of inspired air that is oxygen
GERD	Gastroesophageal reflux disease
GETA	General endotracheal anesthesia; a general anesthetic using an endotracheal tube as an airway
HAZMAT	Hazardous material
HR	Heart rate
HTN	Arterial hypertension or high blood pressure
HVAC	Heating, ventilation, air-conditioning; a building's heating and cooling system
IC	Incident commander
ICU	Intensive Care Unit; critical care unit with ability to have patients on ventilators, vasoactive drips, and invasive monitoring
IED	Improvised incendiary or explosive device
ILCOR	International Liaison Committee on Resuscitation
IT	Information technology; a facility's computer system
IV	Intravenous, as in intravenous route of medicine administration or as in a peripheral intravenous line
JVD	Jugular venous distension
LAD	Left anterior descending coronary artery
LAST	Local anesthetic systemic toxicity
LMA	Laryngeal mask airway specifically, or any supraglottic airway in general terms
LR	Lactated Ringer's, a balanced intravenous fluid solution
LVH	Left ventricular hypertrophy
MAC	Monitored anesthesia care; a billing term, but used to indicate procedural sedation given by an anesthesia provider
MH	Malignant hyperthermia
MHAUS	Malignant Hyperthermia Association of the United States. They run the 24-hour MH hotline, 800-644-9737, staffed full-time by MH experts
MI	Myocardial infarct or heart attack
min	Minute
NIBP	Non-invasive blood pressure
NIDDM	Non-insulin dependent diabetes mellitus
NPO	Nil per os; fasting
NSAID	Non-steroidal anti-inflammatory drug
ORIF	Open reduction internal fixation
$PaCO_2$	Partial pressure of arterial carbon dioxide
PACU	Post-Anesthesia Care Unit, generally the area in which patients first recover from a general anesthetic
PCA	Post-conceptual age; the estimation of the number of weeks of age from conception for a fetus or infant

PCI	Percutaneous cardiac intervention
PE	Pulmonary embolism
PEA	Pulseless electrical activity
PEEP	Positive end expiratory pressure
PPV	Positive pressure ventilation
PR	Electrocardiogram segment from the P-wave to the R-wave
PTT/ptt	Partial thromboplastin time; a measure of heparin effectiveness on a patient
PVC	Premature ventricular contraction
QRS	The waves on an electocardiogram that reflect ventricular contraction
QT	Electrocardiogram segment from the Q-wave to the T-wave
RCA	Right coronary artery
Remorphinization	When an opioid is reversed by naloxone, there is a risk that the shorter half-life of naloxone will allow it to wear off while a significant amount of morphine (opioid) is still present and sedation and hypoventilation may recur
SGA	Supraglottic airway
s/p	Status post
SpO_2	Oxygen saturation from a pulse oximeter reading
ST	The segment on an electrocardiogram between the S- and T-waves
STEMI	ST-segment elevation myocardial infarction
SVR	Systemic vascular resistance
TEE	Trans-esophogeal echocardiography
TIVA	Total intravenous anesthetic, as in no inhalational component
TOF	Train of four
VF	Ventricular fibrillation
VT	Ventricular tachycardia
VTE	Venous thromboembolism