Massive Upper GI Bleed

Section I: Scenario Demographics

Scenario Title:	Massive Upper GI Bleed
Date of Development:	10/03/2015
Target Learning Group:	☐ Juniors (PGY 1 – 2) ☐ Seniors (PGY ≥ 3) ☒ All Groups

Section II: Scenario Developers

Scenario Developer(s):	Cheryl French
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Section III: Curriculum Integration

Learning Goals & Objectives	
Educational Goal:	To manage a patient who presents to the ED with a massive UGIB.
CRM Objectives:	1) Anticipate and appropriately plan for intubation in a patient with a significant UGIB 2) Consider a massive transfusion strategy in a non-trauma context
Medical Objectives:	1) Employ adjunctive medications in the treatment of an undifferentiated massive UGIB including octreotide/somatostatin analogues, intravenous proton pump inhibitor, and broad-spectrum antibiotics. 2) Prioritize airway management and Blakemore tube insertion for the stabilization of a patient with a massive UGIB prior to definitive therapy. 3) Recognize the importance of limited crystalloid therapy and early blood transfusion in the setting of hypovolemic shock secondary to UGIB.

Case Summary: Brief Summary of Case Progression and Major Events
A 58-year-old male known for Alcohol Use Disorder presents to the emergency department with a two-day history of hematemesis with an active, massive upper GI bleed due to esophageal varices. The patient deteriorates into hypovolemic shock requiring medical management, blood transfusions, intubation for airway protection and insertion of a Blakemore tube before definitive management.

References

1) Marx, J. A., Hockberger, R. S., Walls, R. M., & Adams, J. (2013). *Rosen's emergency medicine: Concepts and clinical practice*. St. Louis: Mosby.

2) Chavez-Tapia NC, Barrientos-Gutierrez T, Tellez-Avila FI, Soares-Weiser K, Uribe M. Antibiotic prophylaxis for cirrhotic patients with upper gastrointestinal bleeding. Cochrane Database of Systematic Reviews 2010, Issue 9.

3) Chase, C. (2014, September 2). Management and Dispo of Upper GI Bleed - emdocs. Retrieved May 20, 2015, from http://www.emdocs.net/management-dispo-upper-gi-bleed/

Section IV: Scenario Script

A. Clinical Vignette: To Read Aloud at Beginning of Case

You are working in a tertiary care centre emergency department with full consultant services. A patient is brought into the ED with active hematemesis. He is triaged to the resuscitation area.

B. Scenario Cast & Realism

Patient:	☐ Computerized Mannequin	Realism:	☒ Conceptual
	☒ Mannequin		☒ Physical
	☐ Standardized Patient	*Select most important dimension(s)*	☐ Emotional/Experiential
	☐ Hybrid		☐ Other:
	☐ Task Trainer		☐ N/A

Confederates	Brief Description of Role
Nurse	Simulates copious hematemesis with kidney basin full of blood and prompts the team to recognize ongoing massive hematemesis.

C. Required Monitors

☒ EKG Leads/Wires	☐ Temperature Probe	☐ Central Venous Line
☒ NIBP Cuff	☐ Defibrillator Pads	☐ Capnography
☒ Pulse Oximeter	☐ Arterial Line	☐ Other:

D. Required Equipment

☒ Gloves	☒ Nasal Prongs	☒ Scalpel
☒ Stethoscope	☒ Venturi Mask	☐ Tube Thoracostomy Kit
☐ Defibrillator	☒ Non-Rebreather Mask	☒ Cricothyroidotomy Kit
☒ IV Bags/Lines	☒ Bag Valve Mask	☐ Thoracotomy Kit
☒ IV Push Medications	☒ Laryngoscope	☒ Central Line Kit
☐ PO Tabs	☐ Video Assisted Laryngoscope	☐ Arterial Line Kit
☒ Blood Products	☒ ET Tubes	☒ Sengstaken-Blakemore tube
☐ Intraosseous Set-up	☐ LMA	☐ Other:

E. Moulage

Hematemesis simulated by fake blood in kidney basin. If mannequin allows, continuous flow of red liquid from oral ports.

F. Approximate Timing

Set-Up:	5 min	Scenario:	15 min	Debriefing:	12 min

Section V: Patient Data and Baseline State

A. Patient Profile and History					
Patient Name: Franklin Jones		Age: 58		Weight: 80kg	
Gender: ☒ M ☐ F		Code Status: Full			
Chief Complaint: Massive Hematemesis					
History of Presenting Illness: The patient presents with a 2-day history of vomiting which began as coffee grounds and progressed to bright red. His last drink was 3 hours ago and he stopped because of vomiting. He complains of general chest discomfort and nausea. He insists that he is "fine" and just "needs a beer".					
Past Medical History:	Alcohol Use: (10-20 beers/day)		Medications:	Hydrochlorothiazide 25mg QD.	
	Hypertension				
Allergies: None					
Social History: Daily drinking 10-20 beer per day, 1PPD cigarette smoking X 40 years, no Hx of recent illicit drug use					
Family History: Non-contributory					
Review of Systems:	CNS:	Alert, but confused and seems intoxicated			
	HEENT:	Nil			
	CVS:	Central general chest discomfort.			
	RESP:	Nil			
	GI:	Hematemesis for 2 days, coffee grounds → bright red blood, ongoing.			
	GU:	Nil			
	MSK:	Nil	INT:		

B. Baseline Simulator State and Physical Exam			
☐ No Monitor Display	☒ Monitor On, no data displayed	☐ Monitor on Standard Display	
HR: 115/min	BP: 105/60	RR: 24/min	O_2SAT: 96%
Rhythm: Sinus	T: 37.8°C	Glucose: 10 mmol/L	GCS: 13 (E3 V4 M6)
General Status: Alert but drowsy, mild confusion, smells of EtOH and clinically intoxicated			

CNS:	GCS 13, Drowsy, no FND.		
HEENT:	Presence of blood in oropharynx and nares.		
CVS:	Normal S1 and S2, no EHS		
RESP:	GAEB, no adventitia		
ABDO:	Soft, non-tender, +caput medusa, cirrhotic habitus		
GU:	Normal		
MSK:	Normal	SKIN:	Jaundiced, cool skin.

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Section VI: Scenario Progression

Scenario States, Modifiers and Triggers			
Patient State	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State	
1. Baseline State Rhythm: Sinus Tach HR: 115/min BP: 105/60 RR: 24/min O_2SAT: 96 % T: 37.8°C	Alert, drowsy, intoxicated, GCS: 13 Active intermittent Bright red blood hematemesis	Learner Actions -☐ Monitors/Full vital signs -☐ Physical exam -☐ 2 large bore IV access -☐ IV NS Fluid bolus -☐ CXR/AXR -☐ EKG -☐ Blood work ordered, including type & screen + Coags	Modifiers *Changes to patient condition based on learner action* Triggers *For progression to next state* - 2 minutes → **2. Hemorrhagic Shock**
2. Hemorrhagic Shock HR → 140 over 30 seconds BP → 85/50	1 episode of copious hematemesis GCS: 7 (E1V3M4)	Learner Actions -☐ IV NS Fluid bolus #2 -☐ Blood Transfusion 2U -☐ Massive Transfusion protocol activation -☐ IV PPI (Bolus + infusion) -☐ Central line access -☐ Octreotide bolus + infusion -☐ Intubation -☐ ±Vasopressin infusion	Modifiers - Blood transfusion/MTP initiation → HR 120, BP 95/60 - IV NS bolus w/o blood → HR 125, BP 90/55 transiently. Triggers - Intubation → **3. Intubation** - 5 minutes w/o intubation → **6. PEA arrest**
3. Intubation Display (if possible) V_t: 500ml RR → 12 FiO2: 1.0 $EtCO_2$ = 50, normal waveform	Pt requires significant suction, able to intubate via direct laryngoscopy	Learner Actions -☐ 2 suction tips prepared -☐ Difficult Airway Kit -☐ Appropriate induction med -☐ Appropriate paralytic med -☐ Sengstaken-Blakemore tube -☐ GI/ICU/Surgery consult	Modifiers Triggers - Sengstaken-Blakemore tube → **Sengstaken-Blakemore tube** - 5 minutes without Blakemore tube placement after intubation → **6. PEA Arrest**
4. Sengstaken-Blakemore tube		Learner Actions -☐ Preparation (HOB at 45°, test balloons, check tube markings) -☐ Placement of tube -☐ CXR -☐ IV Antibiotics (Ceftriaxone)	Modifiers Triggers - Blakemore tube confirmed with CXR → **5. Resolution**.
5. Resolution HR → 110 BP → 105/80	Pt transferred for emergent endoscopy.	-☐ ±PCC/Vit K	**END SCENARIO**
6. PEA Arrest HR → 130 BP → 0/0 O_2SAT → 0	Pt has no pulse	Learner Actions -☐ CPR -☐ Epinephrine	**END SCENARIO PRN** **GI/ICU arrive and declare patient unsalvageable**

Section VII: Supporting Documents, Laboratory Results, & Multimedia

Laboratory Results						
Na: 129	K: 4.5	Cl: 104	HCO_3: 23	BUN: 40	Cr: 200	Glu: 10
Ca:	Mg:	PO_4:	Albumin:			
VBG	pH: 7.21	PCO_2: 32	PO_2: 40	HCO_3: 23	Lactate: 4.0	
WBC: 12.1	Hg: 50	Hct: 22%	Plt: 220			
INR: 1.8	PTT: 51					
AST: 175	ALT: 73	Bili (T): 756	ASA: 0	APAP: 0	EtOH: 40	

Images (ECGs, CXRs, etc.)	
EKG – Sinus Tachycardia http://cdn.lifeinthefastlane.com/wp-content/uploads/2011/12/sinus-tachycardia.jpg	CXR – Prior to intubation https://emsimcases.files.wordpress.com/2015/04/normal-cxr-male.jpg
Post Intubation X-ray https://emsimcases.files.wordpress.com/2015/03/post-intubation-male.png	Blakemore Tube X-ray http://images.radiopaedia.org/images/585576/652c659aa92ffac9625a44acfa7b9a_big_gallery.jpg

Section VIII: Debriefing Guide

General Debriefing Plan			
☐ Individual	☒ Group	☐ With Video	☒ Without Video

Objectives	
Educational Goal:	To manage a patient who presents to the ED with a massive UGIB.
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Medical Objectives:	1) Employ adjunctive medications in the treatment of a likely variceal UGIB including octreotide/somatostatin analogues and broad-spectrum antibiotics. 2) Prioritize airway management and Blakemore tube insertion for the stabilization of a patient with a massive UGIB prior to definitive therapy. 3) Recognize the importance of limited crystalloid therapy and early blood transfusion in the setting of hypovolemic shock secondary to UGIB.

Sample Questions for Debriefing

1) What are the medical management options for a significant variceal bleeding?
2) What are the evidence based outcomes for the use of octreotide in UGIB? Antibiotics? PPI?
3) What is a massive transfusion protocol? When and how would you initiate an MTP for a non-trauma patient?
4) What are the airway considerations in a patient with a massive UGIB?
5) Describe the set up and insertion of a Sengstaken-Blakemore tube.
6) Describe the coagulopathy associated with cirrhosis and its effect on management of the cirrhotic UGIB.

Key Moments

- Hemorrhagic Shock
- Intubation
- Sengstaken-Blakemore tube insertion