RTVS Simulation Scenario

Section 1: Case Summary

Scenario Title:	RTVS Code Red Belly
Keywords:	UGIB, Cirrhosis, hemorrhagic shock
Brief Description of Case:	A **72-year-old** male with **alcohol-related cirrhosis** presents with **hematemesis** and **shock**. Learners must: lead resuscitation in a limited resource setting, start evidence-based variceal-bleed adjuncts

Goals and Objectives	
Educational Goal:	Expose learners s to the **time-critical resus + team leadership** required for UGIB in a patient with liver disease
Objectives: (Medical and CRM)	**CRM** 1. Lead an interprofessional team through a complex resuscitation using role clarity, closed-loop communication, and frequent summaries 2. Call for early help and coordinate patient transfer to higher level of care **Medical** 1. Recognize likely **variceal UGIB** in cirrhosis and initiate early adjuncts: vasoactive agent + antibiotics + early definitive therapy activation. 2. Resuscitate **hemorrhagic shock** (minimize crystalloid, follow local protocols for blood transfusion).
EPAs Assessed:	TBD

Learners, Setting and Personnel				
Target Learners:	☐ Junior Learners	☐ Senior Learners		☐ Staff
	☒ Physicians	☐ Nurses	☐ RTs	☒ Inter-professional
	☐ Other Learners:			
Location:	☒ Sim Lab	☐ In Situ		☐ Other:
Recommended Number of Facilitators:	Instructors: 1-2 (one RN support, one provides physical exam findings)			
	Sim Actors: 2 (acts as wife, pt, and EHS)			
	Sim Techs: 1			

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Scenario Development	
Date of Development:	10/02/2026
Scenario Developer(s):	Dr. Ilyana Voth, Dr. Jeanne MacLeod
Affiliations/Institutions(s):	University of British Columbia, Fraser Health, Vancouver Coastal Health
Contact E-mail:	Dr.ivoth@gmail.com
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Revised By:	Dr. Ilyana Voth
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Section 2A: Initial Patient Information

A. Patient Chart					
Patient Name: George I. Bond			Age: 62	Gender: M	Weight: ~85kg
Presenting complaint: Vomiting blood					
Temp: 36.4	HR: 120	BP: 95/55	RR: 26	O_2Sat: 94	FiO_2: RA
Cap glucose: 4.8			• GCS: 12 (E V M) 3 - 4 - 5 (eyes to voice, confused, localizes pain)		
Triage note: Found lying in bed by his wife, vomiting bright red blood two times, very confused. Several episodes of hematemesis en-route with EHS. The patient appears pale/diaphoretic, altered. Approximately 250mL blood on scene. Scoop and go by EHS.					
Allergies: NKDA					
Past Medical History: - multiple admissions related to alcohol withdrawal, gastritis, and delirium tremens. - alcohol-related cirrhosis (Child-Pugh C) - ascites, no history of SBP - one previous UGIB with known esophageal varices (banded 1 year ago)			Current Medications: • carvedilol • spironolactone • lactulose no anticoagulants		

Section 2B: Extra Patient Information

A. Further History
Include any relevant history not included in triage note above. What information will only be given to learners if they ask? Who will provide this information (mannequin's voice, sim actors, SP, etc.)? *Facilitator acting as Wife/EHS can provide this information if asked directly. * - Last seen alert and oriented 1 hour previous while watching television with wife. - Drinks 13-14 beers daily, and sometimes vodka. Robert has no intention of discontinuing his alcohol intake per wife. - Uncertain if taking medications regularly - Reported black stools last week. Having 3 soft, stools daily, no recent fevers, weight loss, or constitutional symptoms. - Had similar bleeding episode one year ago, he had a procedure done at that time and followed in community by a GI specialist for his "liver" - There is no history of depression, suicide, or other drug use. - EHS says there is no evidence of any toxic ingestions or pill bottles at bedside. House appeared in poor condition, many empty alcohol bottles and beer cans scattered across floors.

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B. Physical Exam	
List any pertinent positive and negative findings	
Cardio: NS1S2, bilateral BP's no pulse deficits	Neuro: No focal neurological deficits
Resp: AEEB	Head & Neck: No abnormality, dentition is intact, no trauma sign
Abdo: Distended, non-tender, positive fluid shift, liver edge is palpable.	MSK/skin: Pale. No jaundice. There is stigmata of liver disease including spider angiomata and abdominal distension
Other: Pt does not follow commands, cannot test for asterixis.	

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Section 3: Technical Requirements/Room Vision

A. Patient
☒ Mannequin *(specify type and whether infant/child/adult)*
☐ Standardized Patient
☐ Task Trainer
☐ Hybrid

B. Special Equipment Required
• Ducanto and Yankauer suctions

C. Required Medications
• Ceftriaxone • Pantoprazole • Octreotide • Norepinephrine • Blood Products • Fluids

D. Moulage
Blood all over patient.

E. Monitors at Case Onset
☐ Patient on monitor with vitals displayed
☒ Patient not yet on monitor

F. Patient Reactions and Exam
Include any relevant physical exam findings that require mannequin programming or cues from patient (e.g. – abnormal breath sounds, moaning when RUQ palpated, etc.) May be helpful to frame in ABCDE format. A: **initially patient airway intact, able to speak some words** and **vomiting blood**. B: **increased respiratory rate**. No stridor or wheeze. D**: does not appropriately respond to questioning (confused).**

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Section 4: Sim Actor and Standardized Patients

Sim Actor and Standardized Patient Roles and Scripts	
Role	*Description of role, expected behavior, and key moments to intervene/prompt learners. Include any script required (including conveying patient information if patient is unable)*
Nurse/RT	● "Should we call for blood?" (if not activated by 2–3 min) ● "Should we give octreotide/ceftriaxone/pantoprazole?" (if missed) ● "GI/IR/PTN is on the line, do you want to talk to them?"
Wife	"I can't believe this is happening again!" (if no patient details or history is taken)

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Section 5: Scenario Progression

Scenario States, Modifiers and Triggers				
Patient State/Vitals	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State		Facilitator Notes
1. Baseline State Rhythm: Sinus HR: 120 BP: 95/55 RR: 26 O_2SAT: 94% RA T: 35.6°C GCS: 12	*The patient is confused, Actively vomiting blood.*	Expected Learner Actions ☐ Assign roles, call for help (RT, additional nurses) ☐ Provides active ongoing suctioning ☐ High flow or NP O2 (no mask) ☐ Place 2 large bore IV (at least 18G) ☐ Activate local blood product protocol 2U O+ PRBC start) ☐ Ceftriaxone 2g IV ☐ Pantoprazole 80mg IV bolus ☐ Octreotide 50ug IV bolus ☐ Potassium Repletion via IV ☐ Call RTVS Give 1 g IV calcium chloride if 4u pRBC are given.	Modifiers *If blood is started, transient BP bump to ~110/65* *HR ~95* Triggers *For progression to next state, all meds and blood are ordered.*	*Note that TXA is NOT advised in UGIB and providers should prioritize blood instead of fluids,* *Nursing may prompt to give UGIB bundle meds if not given* *Can provide istat labs* *Can provide FFP if locally available.* *Can provide Ocatplex (4 factor prothrombin complex concentrate (4F-PCC) if available and no other blood products available. Note this is an "off label" suggestion for patients who are NOT on anticoagulants and thus has little evidence.*
2. Deterioration Rhythm: Sinus HR: 1 BP: 65/40	*Patient vomits large amount. Then becomes more confused as vitals change*	Expected Learner Actions	Modifiers *- pulse if continuous pressors and more blood product are not initiated, Patient will proceed into cardiac arrest (OPTIONAL STAGE 3)*	

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RR: 115 O_2SAT: 92% on O2 GCS: 12		☐ Escalate to MHP (if available at center) or give more blood products ☐ Initiate continuous pressor intubation ☐ RTVS contact PTN of patient requiring definitive treatment in ICU setting	<u>Triggers</u>	
3. OPTIONAL: Cardiac Arrest HR: 50 on monitor (not palpable) BP: ? RR: 12 on vent O_2SAT: 70% on O2 GCS: 3 (1- no eyes, 1- no words, 1 – no response)		<u>Expected Learner Actions</u> ☐ Declare pulseless electrical activity ☐ Give epinephrine 1mg IV ☐ Provide high quality compressions ☐ Pressure bag blood products ☐ Supportive airway measures (bagging) Make sure that patient does not just have a "pseudo PEA" and check pulse and heart with PocUS- consider push dose pressors or increasing IV Norepinephrine infusion and adding a second inotrope infusion.	<u>Modifiers</u> <u>Triggers</u> *After first dose epinephrine is given, patient will get ROSC*	*Learners may insert more definitive airways if they are comfortable eg. iGel or RSI intubation. If intubation is done, ensure post intubation sedation is offered.*
3. Disposition HR: 95 BP: 120/80 RR: 12	Patient stabilizes	☐ Organize transfer to ICU through local protocols – Level 1 Transfer (Life or limb)	*End case when patient transfer to higher level of care (PTN, GI, or IR) is initiated*	

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O_2SAT: 92% on O2 GCS: 12 (NT if sedated with airway)				

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Appendix A: Laboratory Results

iStat Labs Na 135 mmol/L K 2.9 mmol/L Cl 102 mmol/L iCa 1.22 mmol/L Glu 4.5 BUN 22 mg/dl Cr 140 Hct 27 Hb 65 AG 12	

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Appendix B: ECGs, X-rays, Ultrasounds and Pictures

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Appendix C: Facilitator Cheat Sheet & Debriefing Tips

Facilitator Cheat Sheet (errors to watch for)

- Delayed blood product administration/ over-reliance on crystalloids/ over administration of plasma/ administration of TXA
- Leaving the department for imaging or tests while unstable
- No early antibiotics or vasoactive therapy in suspected variceal bleed

Debrief Prompts

1. What findings made variceal bleed most likely? What else was on your differential?
2. What are the "early bundle" elements in acute variceal hemorrhage + definitive therapy activation?
3. Is there good evidence to support MHP in UGIB? TXA? PPI? Octreotide? Ceftriaxone?
4. How might you manage this case if the airway became a concern?
5. CRM: What helped your shared mental model? Where did closed-loop comms break?

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