Acute Gastrointestinal Bleeding

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Learning Objective

- *Describe the management of the patient with abdominal trauma.*
- *Describe the management of the patient with gastrointestinal bleeding.*

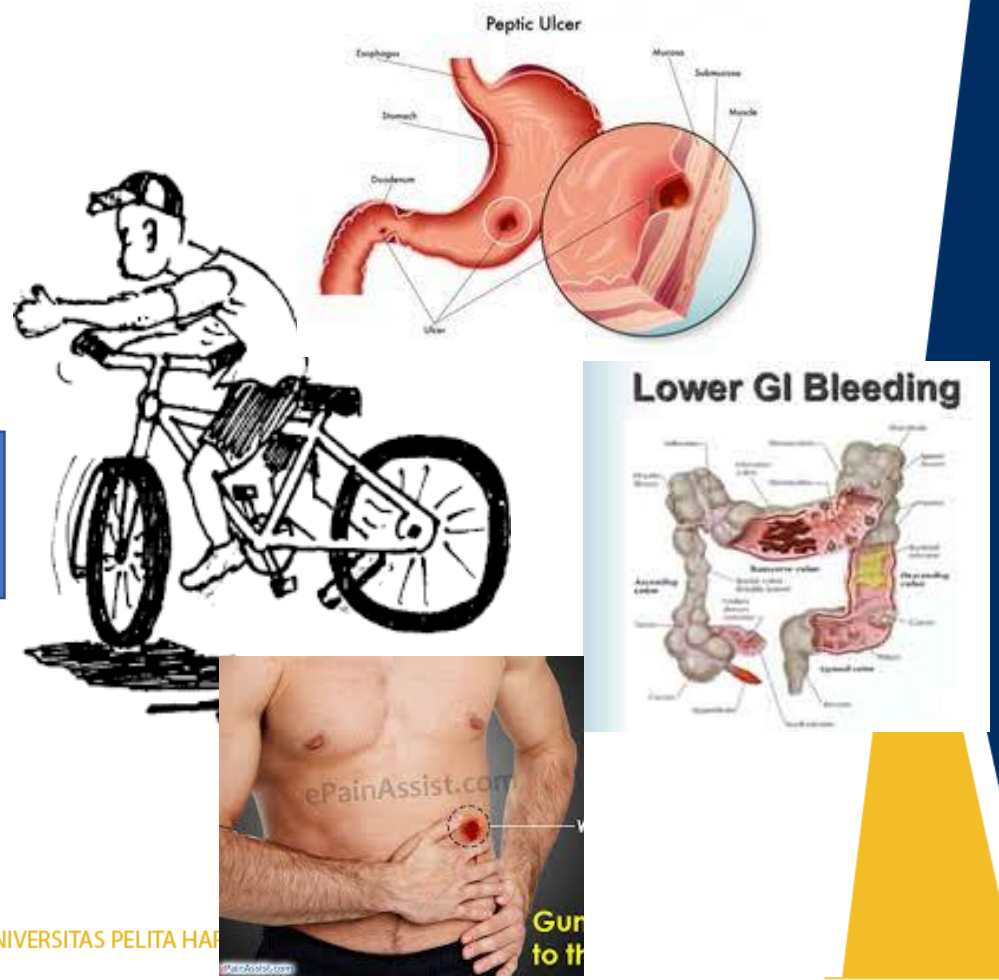
Matthew 14:15-21

14:15 Menjelang malam, murid-murid-Nya datang kepada-Nya dan berkata: "Tempat ini sunyi dan hari sudah mulai malam. Suruhlah orang banyak itu pergi supaya mereka dapat membeli makanan di desa-desa." 14:16Tetapi Yesus berkata kepada mereka: "Tidak perlu mereka pergi, kamu harus memberi mereka makan." 14:17Jawab mereka: "Yang ada pada kami di sini hanya lima roti dan dua ikan." 14:18 Yesus berkata: "Bawalah ke mari kepada-Ku." 14:19 Lalu disuruh-Nya orang banyak itu duduk di rumput. Dan setelah diambil-Nya lima roti dan dua ikan itu, Yesus menengadah ke langit dan mengucap berkat, lalu memecah-mecahkan roti itu dan memberikannya kepada murid-murid-Nya, lalu murid-murid-Nya membagi-bagikannya kepada orang banyak.14:20 Dan mereka semuanya makan sampai kenyang. Kemudian orang mengumpulkan potongan-potongan roti yang sisa, dua belas bakul penuh. 14:21 Yang ikut makan kira-kira lima ribu laki-laki, tidak termasuk perempuan dan anak-anak.

Definition

Acute gastrointestinal (GI) bleeding is defined as gross bleeding into the enteric tract (Israni & Cunney, 2002).

can be life-threatening



Why **can be life-threatening ???**

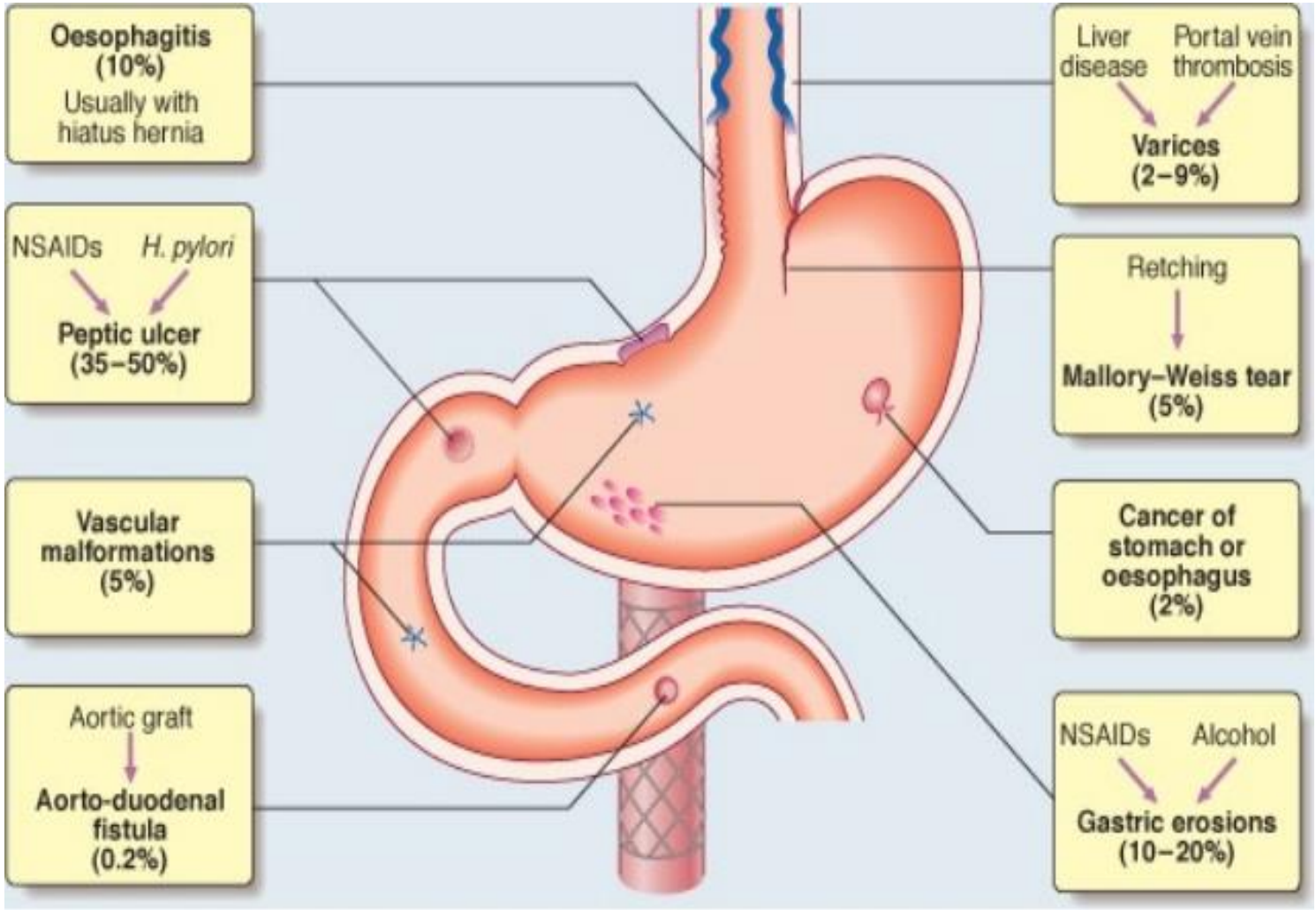
Loss of circulating blood volume → decreases venous return → decrease CO and BP → poor tissue perfusion → shifting interstitial fluid to intravascular space → SNS is stimulated → Vasoconstriction and increasing HR → RAA system is activated → fluid retention and increasing BP

If no treatment and blood loss continuous

Decreased CO → Cellular Hypoxia → All organ fail due hypoperfusion

DEATH

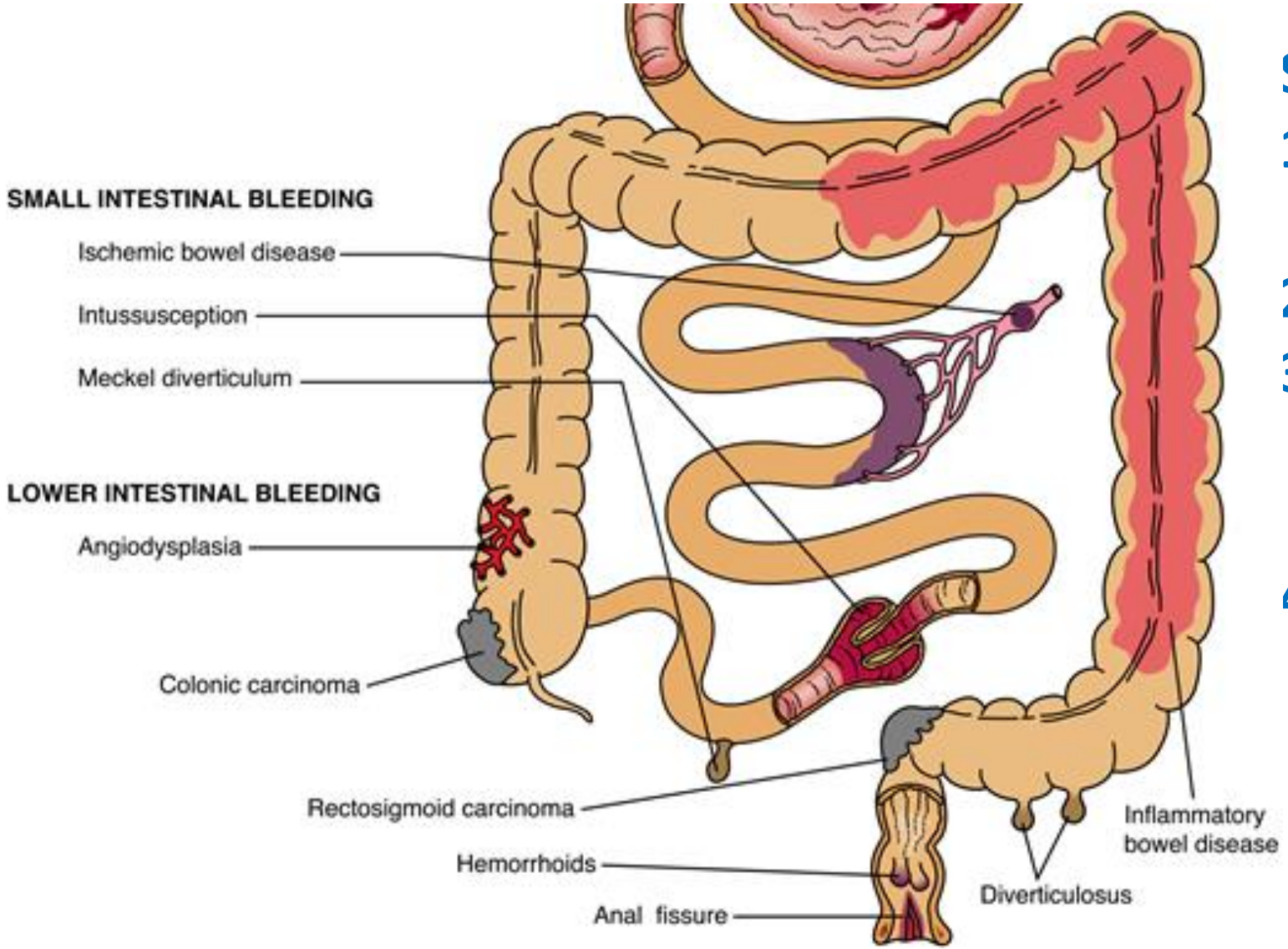
Upper GI Bleeding



Sign and Symptom

1. Hematemesis (coffee ground emesis)
2. Melena
3. Epigastric pain
4. Tachycardia
5. Hypotension
6. Hb less than 10 g/dl

Lower GI Bleeding



Sign and Symptom

1. Hematochezia (bright red blood)
2. Tachycardia
3. Hypotension or orthostatic hypotension
4. Hb less than 10 g/dl

Blunt/Stab GI Bleeding

Blunt

Trauma GI

Stab

Sign and Symptom depend on location and organ damage:

1. Hepatic Injury
2. Splenic Injury
3. Large and small bowel injury
4. Gastric esophageal injury
5. Renal Injury
6. Bladder and urethral injury

Focus assessment and management

- **ABC** → Make sure Air way, Breathing, Circulation stable
- **Hemodynamic stabilization** → IV access 2 line depend on patient condition, fluid resuscitation (colloid or crystalloid), Blood replacement.

Table 1: A comparison of the initial management, risk assessment, and timing of acute upper gastrointestinal bleeding.[2,7,12,20]

	National Institute of Clinical Excellence (NICE) 2012	Scottish Intercollegiate Guidelines Network (SIGN) 2008	American College of Gastroenterology 2012 (Non-variceal) and 2007 (Variceal)	*Annals of Internal Medicine* – Clinical Guidelines 2010 (Non-variceal)
Blood transfusion	Transfusion is recommended. No specific cut-offs.	Blood transfusion should be considered after a loss of 30% of the circulating volume.	Non-variceal: Transfuse to target haemoglobin levels of ≥7 g/dL with higher targets in severe blood loss or co-morbidities. Variceal: Transfuse to maintain haemoglobin of 8 g/dL.	Transfuse when haemoglobin levels ≤7 d/dL.
Correction of coagulopathy	FFP can be used in patients with either a fibrinogen level <1 g/L or a PT (INR)/APTT >1.5-times normal. PT complex concentrate can be given in those patients on warfarin and who are actively bleeding.	Not addressed.	Non-variceal: Not addressed. Variceal: Not addressed.	Correction of coagulopathy for patients on anticoagulants.
Transfusion of platelets	Transfuse when actively bleeding and a platelet count of <50.	Not addressed.	Non-variceal: Not addressed. Variceal: Not addressed.	Not addressed.
Risk scoring tools	Blatchford score initially, then complete Rockall score post endoscopy. Consider discharge if Blatchford is 0.	Use abbreviated and full Rockall score. Consider discharge if score is 0. Endoscopy if score is >0. Consider early discharge for patients with complete Rockall score of <3.	Non-variceal: A Blatchford score of 0 can allow the consideration of early discharge of these individuals without an inpatient endoscopy. Variceal: Risk assessment is not addressed with the use of formal scoring systems.	Both Blatchford and Rockall but there is no definitive statement as to which is recommended.
Timing	Immediate endoscopy unstable patients after resuscitation. Endoscopy within 24 hours for all other patients.	Within 24 hours.	Non-variceal: Within 24 hours. Within 12 hours if signs of shock or other high- risk clinical features. Variceal: Within 12 hours.	Within 24 hours.
Secondary care infrastructure	Not addressed.	Management in a dedicated gastrointestinal bleeding unit.	Not addressed.	Not addressed.

FFP: fresh frozen plasma; PT: prothrombin time; INR: international normalised ratio; APTT: activated partial thromboplastin time.

Focus assessment and management

- **Identification of causes** → History, physical assessment, Blatchford Score, endoscopy, lab, CT-Scan abdomen, FAST and the other supporting assessment.

Rockall Score

	Score			
Variable	**0**	**1**	**2**	**3**
Age	< 60 years	60-79 years	≥ 80 years	
Shock	'no shock', SBP* ≥ 100 mm Hg, pulse < 100 beats per minute	'tachycardia', SBP ≥ 100 mm Hg, pulse ≥ 100 beats per minute	'hypotension', SBP < 100 mm Hg,	
Comorbidity	no major comorbidity		cardiac failure, ischaemic heart disease, any major comorbidity	renal failure, liver failure, disseminated malignancy
Diagnosis	Mallory-Weiss tear, no lesion identified and no SRH	all other diagnoses	malignancy of upper GI tract	
Major stigmata of recent haemorrhage (SRH)	none, or dark spot only		blood in upper GI tract, adherent clot, visible or spurting vessel	

Low-risk (full Rockall score 0-3)
Medium-risk (full Rockall score 4-6)
High-risk (full Rockall score ≥ 7)

Table 1. Causes of Upper Gastrointestinal Bleeding

Diagnosis	*Distinguishing features*	*Frequency (%)*
Peptic ulcer bleeding	History of aspirin or nonsteroidal anti-inflammatory drug use associated with abdominal pain, food consumption reduces pain, nocturnal symptoms, history of peptic ulcer bleeding or *Helicobacter pylori* infection	62
Gastritis and duodenitis	Same as peptic ulcer bleeding	8
Esophageal varices	History of cirrhosis and portal hypertension	6
Mallory-Weiss tear	History of repeated retching or vomiting	4
Gastrointestinal malignancy	History of weight loss, smoking, or alcohol consumption; more common in Asians	2
Arteriovenous malformations	Painless bleeding in older patients (older than 70 years), history of iron deficiency anemia	10
Esophagitis or esophageal ulcer	Heartburn, indigestion, or dysphagia	
Dieulafoy ulcer	Painless bleeding, more common in men	
No identifiable source	—	8

Focus assessment and management

- Treatment → Fluid recuscitation, Blood replacement, O2 support, NGT, catheter urine, balloon tamponade, prepare ET if patient shock, Endoscopy, OT

- Monitor closely → Vital sign (BP, HR, respiration,Temperature)

Focus assessment and management

- Treatment → Fluid recuscitation, Blood replacement, O2 support, NGT, catheter urine, balloon tamponade, prepare ET if patient shock, Endoscopy, OT (stop bleeding), Monitor closely. Stab trauma → stabilization object

Nursing diagnosis and intervention

NURSING CARE PLAN

for the Patient with Acute Gastrointestinal Bleeding

NURSING DIAGNOSIS

Fluid volume deficit related to decreased circulating blood volume

PATIENT OUTCOMES

Adequate circulating blood volume

- Hemorrhage controlled or resolved
- Preload indicators WNL
- Hct and Hgb levels stable
- I&O balanced

NURSING INTERVENTIONS	RATIONALES
• Monitor vital signs for hemodynamic instability and orthostatic changes	• Assess volume status
• Measure preload indicators: RAP, PAOP	• Assess volume status
• Monitor ECG, skin, urine output, amount and characteristics of GI secretions	• Monitor volume status and tissue perfusion
• Monitor response to blood and fluid replacement	• Assess response to treatment
• Monitor laboratory values: serial Hct, Hgb, BUN, potassium, sodium	• Assess acute bleeding
• Monitor bowel sounds	• Assess integrity and function of the gut
• Monitor for clinical manifestations of perforation: severe persistent abdominal pain; boardlike abdomen	• Assess for life-threatening complication
• Gastric lavage as ordered until clear	• May help to stop or reduce bleeding
• Administer medications and parenteral fluids	• Control bleeding and maintain fluid volume status
• Prepare for endoscopy, assist as necessary, and monitor for complications	• Assist in diagnosis of clinical problem; patients may not tolerate moderate sedation for GI procedures

Nursing diagnosis and intervention

NURSING CARE PLAN

for the Patient with Acute Gastrointestinal Bleeding—cont'd

NURSING DIAGNOSIS

Altered tissue perfusion related to decreased circulating blood volume

PATIENT OUTCOMES

Adequate tissue perfusion

- Signs and symptoms of decreased perfusion absent: decreased sensorium, chest pain, renal failure
- Hemodynamics stable
- Urine output >30 mL/hr
- Skin warm and dry
- Bowel sounds WNL

NURSING INTERVENTIONS	RATIONALES
• Monitor for hypoperfusion and hemodynamic instability	• Prevent end-organ destruction
• Monitor vital signs every 15 minutes until stable	• Assess for hypovolemia and volume status
• Measure RAP, PAOP, cardiac output every hour until stable	• Assess volume status
• Monitor for tachycardia, chest pain, ST-segment elevation, diaphoresis, and cool/clammy extremities	• Assess for decreased cardiac output and decreased tissue perfusion
• Measure urine output every hour	• Monitor renal tissue perfusion
• Monitor level of consciousness	• Monitor tissue perfusion to the brain
• Assess bowel sounds	• Monitor tissue perfusion to the gut
• Monitor for elevated bilirubin	• Monitor liver dysfunction from hypoperfusion
• Notify the physician of changes and abnormalities	• Promote early intervention and prevent complications

NURSING DIAGNOSIS

Risk for fluid volume excess related to fluid overload from treatment regimen

PATIENT OUTCOMES

Normal volume status

- Respiratory pattern normal
- Lung congestion or pulmonary edema absent

NURSING INTERVENTIONS	RATIONALES
• Monitor hemodynamic response to fluid administration	• Monitor for fluid volume excess
• Monitor breath sounds at least every hour during fluid administration	• Monitor for pulmonary interstitial fluid collection, hypoxia, and fluid volume excess
• Monitor for restlessness or anxiety, dyspnea, tachycardia, coughing, crackles, frothy sputum, dysrhythmias, abnormal ABG results, blood pressure, increased RAP, jugular vein distention	• Assess signs and symptoms of fluid volume excess
• Record accurate I&O hourly	• Monitor fluid balance
• Document and report any abnormalities	• Maintain nurse-physician collaboration

ABG, Arterial blood gas; *BUN*, blood urea nitrogen; *ECG*, electrocardiogram; *GI*, gastrointestinal; *Hct*, hematocrit; *Hgb*, hemoglobin; *I&O*, intake and output; *PAOP*, pulmonary artery occlusion pressure; *RAP*, right atrial pressure; *WNL*, within normal limits.

Algoritm

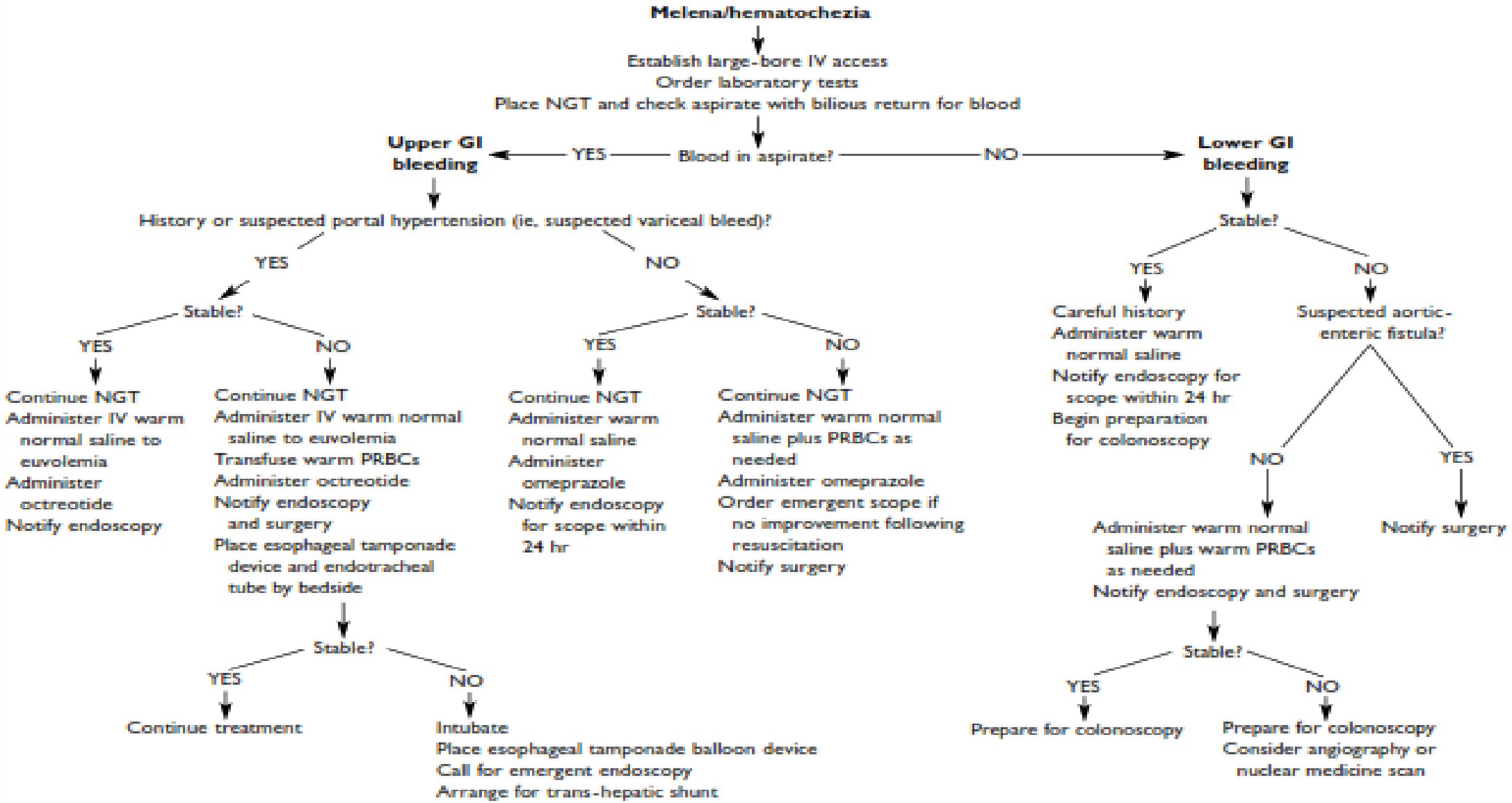


Figure 1. Emergency management of acute gastrointestinal bleeding. GI = gastrointestinal; IV = intravenous; NGT = nasogastric tube; PRBCs = packed red blood cells; Scope = endoscopic procedure.

Guideline for management of massive blood loss due to trauma

1. Activate hospital **trauma team** PRIOR to patient arrival
2. Team should have a **designated trauma team leader** and at least a general surgeon and anesthesiologist
3. Receive the patient in the **emergency room** (warm environment)
4. Give **oxygen**
5. **Primary survey** <C> A (cervical spine protection) BC
6. Establish **IV access**
7. Send blood for a **group and save** (type and screen) AND crossmatch 4 units of red cells Ensure specimens accurately labelled and hand deliver it to the blood bank
8. **Start fluid resuscitation** prior to further transport (Failure to respond to crystalloid and blood dictates the need for immediate definitive intervention)
9. **Assess injuries** and **prioritise** treatment (aortic injury, head injury)
10. **Ensure availability of specialists** based on injuries (neurosurgeon, thoracic surgeon obstetrician)
11. **Alert clinical lab, blood bank, haematologist**

1

Bleeding uncontrolled

Early surgical intervention to stop bleeding

Transfer patient to theatre (operating room or interventional radiology suite)

Bleeding stopped

Stabilise patient

Transfer to ICU/HDU

Monitor for continued bleeding and shock

Secondary survey and attend to other injuries

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Ongoing bleeding

(but surgical bleeding addressed)

Maintain tissue perfusion and oxygenation

Restore circulating volume

- Warm IV fluids (crystalloid)
- Avoid excessive haemodilution & hypertension
- If available consider hypertonic saline, plasma expanders or albumin

Concealed blood loss is usually underestimated

Monitor for complications of massive transfusion

- coagulopathy
- lung injury

3

Maintain Hb > 8g.dl^{-1}

Assess urgency of transfusion

Urgent (blood group unknown)

- **Women of reproductive age** transfuse 2 units group O Rh-ve
- **Older women and men** transfuse O positive units

As time permits (when blood group known)

- Transfuse ABO specific uncrossmatched units
- Fully crossmatched blood

Use blood warmer or rapid infusion device if flow rate is > 50ml.kg.hr^{-1} in adults

Employ cell salvage to minimise allogenic blood use

Further serological crossmatch not required after 1 blood volume replacement

4

Coagulopathy

Keep patient warm (>35°C)

Send specimens to lab

- Full blood count, prothrombin time, APTT, fibrinogen, biochemical profile, arterial blood gases

Anticipate need to give blood products

- FFP: 12-15ml.kg^{-1} after 1-1.5x blood volume replacement
- Platelets: after 2x blood volume replacement
- Cryopreciptate: 5 packs
- Antifibrinolytics

Maintain

- PT & APTT < 1.5 x normal
- Platelets > 75 x 10^{9}.L^{-1}
- Fibrinogen > 1.0 g.L^{-1}

Antifibrinolytics

Results of coagulation tests may be affected by colloid infusion

5

Avoid DIC

Mortality id high

Treat underlying cause

- Shock
- Hypothermia
- Acidosis

Keep ionized Ca^{+} >1.13mmol.L^{-1}

Repeat pre-exisiting coagulopathy in patients with end stage:

- Cardiac failure
- Hepatic failure
- Renal failure

Consider drug effect in those on anticoagulants

6

I. *Guideline for management of massive blood loss.*

Reference

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- Hauser, C., Moya, M. De, Moore, E. E., Rowell, S., & Vercruysse, G. (2018). A Western Trauma Association critical decisions algorithm, *00*(00). https://doi.org/10.1097/TA.0000000000001930
- Kozul, C., Judson, R., Gumm, K., Santos, R., Walsh, M., & Pascoe, D. (2012). TRM 05 . 03 BLUNT ABDOMINAL TRAUMA Trauma Service Guidelines Title : Blunt Abdominal Trauma Developed by : Y . Cho , R . Judson , K . Gumm , R . Santos , M . Walsh , D . Pascoe & ACT Created : Revised by : Revised : Version 2 . 0 August 2017 Diagnosis of an abdominal injury : Decision making in BAT :
- NICE. (2018). Acute upper gastrointestinal bleeding o ov verview, (February 2017), 1–12.