Provincial Clinical Knowledge Topic
Gastrointestinal Bleed, Adult – Inpatient
V 1.0

Revision History

Version	Date of Revision	Description of Revision	Revised By
1.0		Completion of Topic	Kerri Novak

Important Information Before You Begin

The recommendations contained in this knowledge topic have been provincially adjudicated and are based on best practice and available evidence. Clinicians applying these recommendations should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care. This knowledge topic will be reviewed periodically and updated as best practice evidence and practice change.

The information in this topic strives to adhere to Institute for Safe Medication Practices (ISMP) safety standards and align with Quality and Safety initiatives and accreditation requirements such as the Required Organizational Practices. Some examples of these initiatives or groups are: Health Quality Council Alberta (HQCA), Choosing Wisely campaign, Safer Healthcare Now campaign etc.

Guidelines

The recommendations in this topic are based on the following recent guidelines:

- ACG Clinical Guideline: Management of Patients with Ulcer Bleeding. Am J Gastro 2012;107:345-360
- ASGE Guideline: The role of endoscopy in the management of variceal hemorrhage. 2014;80(2)
- ACG Clinical Guideline: Management of Patients with Acute Lower Gastrointestinal Bleeding. Am J Gastro 2016;March 1, 2016
- ASGE Guideline: The role of endoscopy in the management of suspected small-bowel bleeding. 2017;85(1)

Keywords

- gastrointestinal bleed (GIB)
- GI bleed admission
- upper GI bleed
- lower GI bleed
- melena
- hematochezia

Rationale

- Gastrointestinal hemorrhage (GI bleed) is a common presentation to the Emergency. Department. GI bleed is one of the top 5 “case mix groups” for inpatient admissions in Alberta
- Early risk stratification using clinical decision support tools can avoid unnecessary invasive testing and hospitalization.
- Endoscopy is often diagnostic and therapeutic. Endoscopic risk stratification, guiding hospital length of stay.

Goals of Management

1. Safe transition from Emergency Department to Admitting service, and to the appropriate level of care (ward, extended care unit, ICU).
2. Initiate and continue targeted medical therapy, as appropriate, based on suspected source (if endoscopy results not available) and ongoing risk of bleeding.
3. Continued stabilization and monitoring of patient after admission.
4. Optimize appropriate use of blood products (e.g. avoid over-transfusion).
5. Arrange and coordinate consultations (e.g. gastroenterology, interventional radiology, surgical consultation) and timely investigations as required.
6. Identify and address common comorbid conditions (e.g. spontaneous bacterial peritonitis in cirrhotics, demand ischemia in cardiac patients).
7. Ensure appropriate hospitalization length of stay (e.g. ensure etiology of GI bleed found and treated, risk factors identified and removed or reduced, comorbidities managed).
8. Ensure transition to discharge planning occurs when appropriate.
9. Arrange outpatient follow up where required and patient education regarding risk factors for GI bleeding.
10. Reduce rate of recurrence of GI bleed and reduce rate of 30-day morbidities and mortalities after discharge from hospitalization due to GI bleed.

Decision Making

Scoring and Assessment Tools

Scoring Tool: Glasgow Blatchford Score (GBS)

Use GBS score to guide investigation and management for upper GI bleed. A score greater than 0 may require an endoscopy.

Table 1: Glasgow Blatchford Score[1,2,3]

	Admission Risk Marker	Score
Blood urea (mmol/L)	6.5 – 7.9	2
	8.0 – 9.9	3
	10.0 – 25.0	4
	Greater than 25.0	6
Hemoglobin for men (g/L)	120 – 129	1
	100 – 119	3
	Less than 100	6
Hemoglobin for women (g/L)	100 – 119	1
	Less than 100	6
Systolic blood pressure (mm Hg)	100 – 109	1
	90 – 99	2
	Less than 90	3
Other Markers	Pulse greater than or equal to 100/minute	1
	Presentation with melena	1
	Presentation with syncope	2
	Hepatic Disease*	2
	Cardiac Failure**	2

*Known history, or clinical and laboratory evidence of chronic or acute liver disease.
**Known history, or clinical and echocardiographic evidence of cardiac failure.

GBS Score Utility	
GBS Score	**Outcome**
0	No treatment required; can typically be managed safely without endoscopy.
Less than or equal to 3	Required no endoscopic therapy, blood transfusions, and suffered no rebleeding
Less than or equal to 7	Required no surgery and mortality was zero

Gastrointestinal Bleed, Adult – Inpatient Order Set

Order Set Keywords: gastrointestinal bleed (GIB), GI bleed admission, melena, hematochezia
Risk Assessment / Scoring Tools / Screening: Glasgow Blatchford Score

General

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~Start of Goals of Care Designation Order Panel~

Goals of Care

Conversations leading to the ordering of a Goals of Care Designation (GCD), should take place as early as possible in a patient's course of care. The Goals of Care Designation is created, or the previous GCD is affirmed or changed resulting from this conversation with the patient or, where appropriate, the Alternate Decision-Maker. Select a GCD order below and document the content of conversations and/or decisions on the ACP GCD Tracking Record.

Specify on the GCD order, if there are specific clarification to this GCD Order. Document these clarifications on the ACP/GCD Tracking Record as well.

- ☐ R1
- ☐ R2
- ☐ R3
- ☐ M1
- ☐ M2
- ☐ C1
- ☐ C2

~ End of Goals of Care Designation Order Panel~

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Diet and Nutrition

- ☐ Clear Fluids and then NPO for only 4 hours before scheduled endoscopy
- ☐ NPO – may have sips, may take medications
- ☐ NPO – may have ice chips
- ☐ Regular
- ☐ Other Diet: _____ *(for example diabetic or cardiac diet)*

Patient Care

Activity

- ☐ Activity as Tolerated
- ☐ Bedrest – with bathroom privileges
- ☐ Bedrest

Vital Signs

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~Start of Vital Signs Order Panel~

Vital Signs

- ☐ Every 2 hours for 8 hours, and THEN every 4 hours
- ☐ Every 4 hours

☐ Every 4 hours while awake
☐ Every 8 hours while awake
☐ Every 12 hours while awake

~End of Vital Signs Order Panel~
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Intake and Output
- ☐ Monitor Urine Output every _____ hour(s)
- ☐ Monitor Stool Output and Stool Chart
- ☐ Weight Patient - Daily

Point Of Care Testing Glucose

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~Start of Point of Care Testing (POCT) Glucose Order Panel~

Point of Care Testing Glucose
- ☐ Blood Glucose Monitoring – POCT 4 times per day 15 to 30 minutes before scheduled meals and at bedtime, AND PRN for suspected hypoglycemia
- ☐ Blood Glucose Monitoring – POCT at 0200 hours for _____ days
- ☐ Blood Glucose Monitoring – POCT 2 hours after meal time
- ☐ Blood Glucose Monitoring – POCT other (specify) _____

Refer to AHS Glycemic Management Policy
- ☐ If blood glucose less than 4.0 mmol/L initiate Hypoglycemia Procedure. Do not hold Insulin without prescriber order
- ☐ If blood glucose is greater than 18.0 mmol/L initiate Hyperglycemia Procedure and call prescriber

~End of Point of Care Testing (POCT) Glucose Order Panel~
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Respiratory Interventions
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~Start of Oxygen Therapy Order Panel~

Oxygen Therapy: All presentations EXCEPT Acute Coronary Syndrome, pCO2 retainers and Carbon Monoxide poisoning. All other presentations (including pregnancy and acute stroke) should adhere to the following Sp02 goals. NOTE: For acute stroke, don't apply supplemental oxygen unless SpO2 is under 90%:
- ☐ Titrate Oxygen to maintain saturation range of SpO2 92% to 96%

Oxygen Therapy: Known pCO2 retainer
- ☐ Titrate Oxygen to maintain saturation range SpO2 88% to 92%

Oxygen Therapy: All Acute Coronary Syndromes (ACS)
- ☐ When SpO2 is under 90%, titrate Oxygen to maintain saturation range SpO2 90% to 92%

Oxygen Therapy: MHRP Notifications

- ☐ Notify MRHP if Oxygen flow increase by greater than 2 LPM from previous to maintain the same level of oxygenation, or if there is a progressive increase in the work of breathing
- ☐ Notify MRHP if a new change to Oxygen flow of 8 LMP or higher to maintain same level of oxygenation

~End of Oxygen Therapy Order Panel~

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Laboratory Investigations Routine

Hematology

- ☐ Complete Blood Count (CBC) with differential
- ☐ PT (INR)
- ☐ PTT

Chemistry

- ☐ Electrolytes (Na, K, Cl, CO2)
- ☐ Glucose Random
- ☐ Troponins
- ☐ Creatinine
- ☐ Urea
- ☐ ALT
- ☐ AST
- ☐ GGT
- ☐ Alkaline Phosphatase (ALP)
- ☐ Bilirubin Total
- ☐ Albumin
- ☐ Lipase
- ☐ Iron and TIBC/Iron saturation
- ☐ Lactate
- ☐ Magnesium
- ☐ Calcium
- ☐ Phosphate

Transfusion Medicine

- ☐ Type and Screen

Blood Gas

- ☐ Venous Blood Gas

Laboratory Investigations Repeating

Hematology

- ☐ Complete Blood Count (CBC) every 6 to 8 hours x 1 day, then reassess
- ☐ Complete Blood Count (CBC) with differential daily x 3 days, then reassess

Diagnostic Imaging

General Radiology

- ☐ X-ray abdomen 3 views (GR Chest 1 Projection and GR Abdomen 2 Projections)

Computed Tomography

- ☐ CT Enterography
- ☐ CT Abdomen and Pelvis Angiogram

Ultrasound

- ☐ US Abdomen

Interventional Radiology

- ☐ Diagnostic/ Therapeutic Paracentesis
- ☐ Abdominal Angiography and Embolization

Other Tests

- ☐ Gastroscopy Pre-Procedure
- ☐ Colonoscopy/Sigmoidoscopy Pre-Procedure
- ☐ Electrocardiogram – 12 Lead

Fluid/Electrolytes

IV Maintenance

- ☐ Intravenous Cannula – Insert: Initiate IV
- ☐ IV Peripheral Saline Flush/Lock once patient stable and resumed oral intake
- ☐ IV Maintenance: 0.9% sodium chloride infusion IV at _____ mL/hour
- ☐ IV Maintenance: lactated ringers infusion IV at _____ mL/hour
- ☐ IV Maintenance (other): _____ infusion IV at _____ mL/hour

IV Fluid Boluses

- ☐ IV Bolus: 0.9% sodium chloride infusion IV _____ mL over _____ hour(s)
- ☐ IV Bolus: lactated ringers infusion IV _____mL over _____ hour(s)
- ☐ IV Bolus (other): _____ infusion IV _____ mL over _____ hour(s)

Transfusion Medicine

Transfusion Orders

Refer to AHS Transfusion Medicine for Blood Components & Products Information/Monographs

Red Blood Cells (RBC)

For stable patients, a hemoglobin threshold of 70 g/L is recommended before initiating PRBC transfusion; unstable or actively bleeding patients may need transfusions initiated sooner.

- ☐ Crossmatch _____ Unit(s) on standby
- ☐ Crossmatch _____ Unit(s) and Transfuse RBC _____ Unit(s) IV each over _____ minute(s) or _____ hour(s)

Fresh Frozen Plasma (FFP)

- ☐ Transfuse FFP _____ Unit(s) IV now over _____ minute(s) or _____ hour(s)

Platelets

- ☐ Transfuse Platelets _____ Unit(s) IV now over _____ minute(s) or _____ hour(s)

Elevated INR (not due to cirrhosis).

- ☐ prothrombin complex (octaplex) _____ units IV over _____ minutes(s) or _____ hours(s)

VTE Prophylaxis

Consider opening and merging VTE Prophylaxis order set (Placeholder - Provincial VTE Prophylaxis order set)

Medications

For Suspected Upper GI bleed or if endoscopy performed known etiology for upper GI bleed (see below). If unsure, error on the side of caution and treat as suspected Upper GI bleed.

Blood Formation, Coagulation and Thrombosis

Elevated INR (not due to cirrhosis)

- ☐ phytonadione (vitamin K1) 10mg mg PO/IV x 1, and repeat as required to treat supra-therapeutic INR

Antihistamines

Consider in scombroid or allergy mediated gastrointestinal symptoms

- ☐ diphenhydrAMINE 50 mg IV once

Antibacterial

If cirrhosis

For antibiotics, if UGIB in the setting of cirrhosis, decreases mortality, rebleeding and sepsis

Choose ONE while NPO:
For cefTRIAXone IV, recommended duration is 5-10 days total for antibiotics. 10 days recommended if bacteremic. 5 days if repeat paracentesis (at 48 hours) shows less than 0.25 x 10exp9/L PMNs and culture negative.

- ☐ cefTRIAXone 1 g IV daily for _____ days

If allergic to ceftriaxone. Recommended duration is up to 7 days

- ☐ ciprofloxacin 400 mg IV every 12 hours

Change to Oral route when not NPO for a total of 7-10 days - Choose ONE:

- ☐ sulfamethoxazole - trimethoprim 1 DS tab PO BID
- ☐ ciprofloxacin 500 mg PO BID

Gastrointestinal Agents

For patient with Helicobacter Pylori Infection, treatment should be initiated, with outpatient follow up and confirmation of eradication as per Toward Optimized Practice (TOP) Guidelines.

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~Start of Helicobacter Pylori Infection Order Panel~

Choose ONE Regimen/Therapy below

Options for First Line Treatment*:*

Clamet Quadruple Regimen:

Must choose ONE PPI:

- ☐ pantoprazole (Pantoloc) 40 mg PO BID for 14 days

Must choose ALL below:

- ☐ amoxicillin 1000 mg PO BID for 14 days
- ☐ clarithromycin 500 mg PO BID for 14 days
- ☐ metroNIDAZOLE 500 mg PO BID for1 4 days

Bismuth Quadruple Regime:

Must choose ONE PPI:

- ☐ pantoprazole (Pantoloc) 40 mg PO BID for 14 days

Must choose ALL below:

- ☐ bismuth subsalicylate 2 tabs PO QID for 14 days
- ☐ metroNIDAZOLE 500 mg PO QID for 14 days
- ☐ tetracycline 500 mg PO QID for 14 days

Options for Second Line Treatment – Rescue Therapy for Failed First Line*:* Consider Alternate First Line Therapy (above)

Options for Third Line Treatment – If Second Line Treatment Failure (no amoxicillin allergy) consider referral to Gastroenterology*:*

Must choose ONE PPI:

- ☐ pantoprazole (Pantoloc) 40 mg PO BID for 14 days

Must choose ALL below:

- ☐ amoxicillin 1000 mg PO BID for 14 days
- ☐ levofloxacin 500 mg PO BID for 14 days

Inpatient Specialty Consults

- ☐ Consult Gastroenterology

Options for First Line Treatment for Amoxicillin Allergy:

Bismuth Quadruple Regime:

Must choose ONE PPI:

- ☐ pantoprazole (Pantoloc) 40 mg PO BID for 14 days

Must choose ALL below:

- ☐ bismuth subsalicylate 2 tabs PO QID for 14 days
- ☐ metroNIDAZOLE 500 mg PO QID for 14 days
- ☐ tetracycline 500 mg PO QID for 14 days

Modified Triple Therapy (PCM):

Must choose ALL below:

- ☐ pantoprazole (Pantoloc) 40 mg PO BID for 14 days
- ☐ clarithromycin 500 mg PO BID for 14 days two times a day
- ☐ metroNIDAZOLE 500 mg PO BID for 14 days

~End of Helicobacter Pylori Infection Order Panel~

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For Suspected or known ulcer bleed

Intermittent proton-pump inhibitors IV (PPI) is equivalent to IV PPI infusions for patients with known ulcer bleeds. Furthermore, IV dosing has failed to show superiority to PO dosing. IV infusions are generally not indicated; suggest PO dosing in stable patients not actively vomiting.

- ☐ pantoprazole 40 mg IV BID for 72 hours post endoscopy and then pantoprazole 40mg PO BID
  OR
- ☐ pantoprazole 40 mg PO BID
- ☐ pantoprazole 80 mg bolus IV and 8 mg/hour IV infusion

For Suspected or known variceal bleed, ADD

- ☐ octreotide IV loading dose: 50 microgram IV x 1
  And/OR
- ☐ octreotide 50 microgram/hour IV continuous, reassess after 24 hours

Analgesics and Antipyretics

- ☐ Clinical Communication - Contact physician or nurse practitioner for reassessment if pain not controlled after administration of maximum dosage

For Non-Opioid Analgesia
Recommend 500 mg for mild to moderate pain, 1000 mg for moderate to severe pain

- ☐ acetaminophen tab 650 to 1000 mg PO once
- ☐ acetaminophen tab 650 to 1000 mg PO every 4 hours PRN for pain (maximum 2000 mg/day)
- ☐ acetaminophen tab _____ mg PO every _____ hour(s)

For Opioids
For 'susceptible patients' defined as elderly, frail, low body mass, systemically unwell, or on medications known to cause sedation or lower blood pressure we recommend decreasing narcotic dosing by 50%.

- ☐ codeine 30 mg-acetaminophen 325 mg-caffeine 15 mg _____ tabs PO every _____ hour(s) PRN for pain
- ☐ oxyCODONE 5 mg-acetaminophen 325 mg _____ tabs PO every _____ hour(s) PRN for pain

Suggest 1 mg for moderate pain and 2 mg for severe pain

- ☐ HYDROmorphone _____ mg PO every _____ hour(s) PRN for pain

Suggest 0.5 mg for moderate pain and 1 mg for severe pain

- ☐ HYDROmorphone _____ mg IV/SC every _____ hour(s) PRN for pain

Suggest 2.5 mg for moderate pain and 5 mg for severe pain

- ☐morphine _____ mg IV/SC every _____ hour(s) PRN for pain

- ☐ fentaNYL _____ mcg IV/SC every _____ hour(s) PRN for pain

Antiemetics

For dimenhyDRINATE, consider avoiding in cirrhotic patients.
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~Start of Antiemetics Order Panel ~
Avoid dimenhyDRINATE in patients 65 years of age or older due to increased risk of side effects including delirium. Suggest 25 mg for mild/moderate nausea, 50 mg for moderate/severe nausea

- ☐ dimenhyDRINATE 50 mg PO once
- ☐ dimenhyDRINATE 25 to 50 mg PO every 4 hours PRN for nausea/vomiting
- ☐ dimenhyDRINATE _____ mg PO _____
- ☐ dimenhyDRINATE 50 mg IV once
- ☐ dimenhyDRINATE 25 to 50 mg IV every 4 hours PRN for nausea/vomiting
- ☐ dimenhyDRINATE _____ mg IV _____

PO administration or slow infusion via IVPB are preferred for metoclopramide to reduce the risk of akathisia. Suggest 5 mg for mild/moderate nausea or if CrCl less than 40mL/min; 10 mg for moderate/severe nausea, and CrCl over 40mL/min

- ☐ metoclopramide 10 mg PO once
- ☐ metoclopramide 5 to 10 mg PO every 6 hours PRN for nausea/vomiting
- ☐ metoclopramide _____ mg PO _____
- ☐ metoclopramide 10 mg IVPB once
- ☐ metoclopramide 5 to 10 mg IVPB every 6 hours PRN for nausea/vomiting
- ☐ metoclopramide _____ mg IVPB _____

4 mg starting dose recommended for IV ondansetron

- ☐ ondansetron 4 mg IV once

- ondansetron 4 mg IV to be repeated once 30 minutes after first dose PRN for nausea/vomiting
- ondansetron 4 mg IV every 8 hours PRN for nausea/vomiting
- ondansetron _____ mg IV _____
- ondansetron tab 8 mg PO every 8 hours PRN for nausea/vomiting
- ondansetron tab _____ mg PO _____

Due to high cost, recommend reserving ondansetron DISINTEGRATING tab for actively vomiting patients without an IV

- ondansetron DISINTEGRATING tab 8 mg PO every 8 hours PRN for nausea/vomiting
- ondansetron DISINTEGRATING tab _____ mg PO_____

~End of Antiemetics Order Panel ~

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Laxatives

If emergent/urgent colonoscopy being considered

- ☐ COLYTE powder (polyethylene glycol-electrolyte solution) for oral solution 4,000 mL prep PO ONCE

Consider if hepatic encephalopathy complicating acute UGIB

- ☐ lactulose 15 to 30 mL PO TID PRN, titrate to 1 to 2 soft bowel movements per day

Other

- ☐ erythromycin (prokinetic) 250 mg IV infused over 30 minutes
  - o To be given 30 – 60 minutes pre-endoscopy; should be coordinated with gastroscopist to ensure appropriate timing

Consults/Referrals

Order as appropriate

Inpatient Specialty Consults

- ☐ Consult Gastroenterology
- ☐ Consult General Surgery
- ☐ Consult ICU

Inpatient Allied Health Consults

- ☐ Dietitian Referral
- ☐ Physiotherapy Referral - Assess and Treat: Ensure patient back to pre-admission ambulatory status
- ☐ Occupational Therapy Referral
- ☐ Social Worker Referral
- ☐ Consult (other): _____

Reminders: Blood transfusion

- Blood transfusion is recommended if hemoglobin drops below 70 g/L or if evidence of ongoing bleeding. Over-transfusion should be avoided.
- Patients with comorbidities, such as unstable cardiac disease, or high risk cardiac disease, and patients with unstable or active bleeding may need transfusions initiated sooner.
- In cirrhotic patients with suspected variceal bleeding or known variceal bleeding, aim to maintain hemodynamic stability and a hemoglobin of approximately 80 g/L. Over resuscitation increases portal pressure leading to higher risk of rebleeding and mortality[4,5].

Alerts: Medication Alerts

- Description of alert required: Nonsteroidal anti-inflammatory drugs (NSAIDS): Aspirin (ASA) should not be discontinued if used for secondary prevention of cardiovascular/cerebrovascular events. Discontinue all other NSAIDS.
    - Triggered for Alert:
        - when NSAIDS medications are ordered

- Description of alert required: Anti-coagulants: Ensure anti-coagulant are held or reverse until source of GI bleed found and treated. If cannot stop, follow local bridging protocol as per local institutional practice to IV heparin, and stop prior to endoscopy or other procedures.
    - Triggered for Alert:
        - when anti-coagulation medications are ordered

- Description of alert required: Anti-platelets: Dual anti-platelet therapy for cardiac stents should not be stopped acutely if placed in the last year (consult with cardiology)
    - Triggered for Alert:
        - when anti-platelets medications are ordered

Analytics – Outcome Measure#1 Compliance to Clinical Standards

Name of Measure	Compliance to clinical standards of GI Bleed Admission, Adult – Inpatient order set
Definition	The elements of the CKT for which it is important to measure compliance against ie. Scoring tools, specific items/orders in the order set are: • Appropriate use of blood transfusion (ie. transfuse only if hemoglobin is less than 70 or comorbidities) • Glasgow Blatchford Score (GBS) at admission • IV fluid, IV pantoprazole and IV octreotide usage • Antibiotic use (prophylaxis in cirrhosis) • Time to endoscopy (before admission/after admission) • Repeat endoscopy (e.g. if gastric ulcer)
Rationale	Measure compliance to specified clinical standards within the CKT

Analytics – Outcome Measure# 2

Name of Measure	Measurements of length of hospital stay and admission for reoccurrence to GI bleed (upper and lower).
Definition	For all patients admitted with GI bleed, will measure the following: • Repeat ED visit and admission within 30 days after discharge o Reason for ED visit and admission • Reduced length of hospital stay for GI bleed • Number (%) of admitted patients (by site/zone/hospital type or location [e.g. inner city]) admitted from the ED to ward / ICU (family medicine/medicine/gastroenterology/ surgery/ICU/cardiology) • Length of stay for admitted and discharged patients with GI bleed • 72-hour ‘unplanned’ ED return visits for recurrence of GI bleed • 30 day ED return visits and admissions for recurrence GI bleed
Rationale	Intended to show the following proposed reports: • Reduced in-hospital mortality due to GI bleed (upper, lower) • Reduced rate of recurrence of GI bleed (upper, lower) after discharge from hospital (within 30 days) • Reduced mortality due to recurrent GI bleed within 30 days of discharge

Analytics – Outcome Measure# 3

Name of Measure	Measurements morbidity within 30 days after discharge and mortality rates.
Definition	For all patients admitted with GI bleed, will measure the following: • Morbidity (e.g. thrombotic event) within 30 days after discharge • Mortality (e.g. cardiac event, thrombotic event, GI bleed) within 30 days after discharge of mortality rates. • Number (%) of mortality related to index GI bleed
Rationale	Intended to show the following proposed reports: • Reduced mortality due to potentially avoidable comorbidities (e.g. thrombotic events related to discontinuation of anticoagulation due to GI bleed)

References

1. Aquarius M, Smeets FG, Konijn HW, et al. Prospective multicentre validation of the Glasgow Blatchford bleeding score in the management of patients with upper gastrointestinal hemorrhage presenting at an emergency department. *Eur J Gastroenterol Hepatol*. 2015;27(9):1011-6. doi: 10.1097/MEG.0000000000000402.
2. Stanley AJ, Laine L, Dalton HR, et al. Comparison of risk scoring systems for patients presenting with upper gastrointestinal bleeding: international multicentre prospective study. *BMJ*. 2017;356(4):i6432. doi: https://doi.org/10.1136/bmj.i6432.
3. Sengupta N, Tapper EB, Patwardhen VR, et al. High Glasgow Blatchford Score at admission is associated with recurrent bleeding after discharge for patients hospitalized with upper gastrointestinal bleeding. *Endoscopy.* 2016;48(1):9-15. doi: 10.1055/s-0034-1392651.
4. Garcia-Tsao G, Sanyal AJ, Grace MD. Prevention and Management of Gastroesophageal Varices and Variceal Hemorrhage in Cirrhosis. Am J Gastroenterol. 2007; 102:2086–2102. doi:10.1111/j.1572-0241.2007.01481.x
5. Villanueva C, Colomo A, Bosch A et al. Transfusion Strategies for Acute Upper Gastrointestinal Bleeding. New England Journal of Medicine. 2013;368(1):11-21. doi:10.1056/nejmoa1211801.

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