St. James Healthcare
Surgical Services - Endoscopy
Butte, Montana

GI Emergency Interventions: Upper & Lower Endoscopy
OBJECTIVES:

- Identify patients at risk for GI Bleeding complications.
- Demonstrate competencies related to hemostasis during a GI Emergency.
- Give examples of collaborative action with health team members during a GI emergency.
- Identify areas of practice improvement following completion of this learning module.
TEST YOUR KNOWLEDGE: True/False

- Rapid clinical decisions and appropriate interventions can make the difference between resolving a GI bleed and prolonged hospitalization.

- Effective hemostasis involves ONE intervention.

- Hematochezia is gastric (vomit) or duodenal frank red or old “coffee” color.

- Being prepared for a GI Bleed intervention involves having your “tool box” ready for immediate use.
INTRODUCTION

GI Emergency interventions: *Rapid clinical decisions* and appropriate interventions make the difference between resolution of bleeding and prolonged hospitalization from bleeding complications of the upper or lower GI tract;
GI EMERGENCY: TRIAGE

*Triage* for acute or induced GI bleeding:

*Identifying the level of risk involves* -

- Collaborative Team Work – GI ENDO Team and designated referral center all working quickly together.

- Often involves a decision to proceed with an elective outpatient intervention versus a later emergency endoscopy and possible hospitalization.
Identifying the High Risk Factors?

Screening guidelines would include the following risk factors:

- Co-morbid conditions (poor health status)
- Age (elderly)
- Recent bleeding events
- Severity of endoscopic findings, such as a large bleeding visible vessel (vs. a clean small tear)
ACUTE GI BLEED: Signs & Symptoms

Signs:
- **Hematemesis** – gastric (vomit) or duodenal frank red/“coffee” color
- **Melena** – gastric (vomit) or bowel (stool) stained black “tarry” by blood pigment
- **Hematochezia** – red blood, i.e. lower bowel or hemorrhoids

Symptoms:
- **Skin** = pallor, diaphoresis
- **Neuro** = lightheaded or syncope
- **Pulmonary** = dyspnea (exertional)
- **Cardiac** = tachycardia and hypotension
ACUTE GI BLEED

Nursing Assessment:
- Mental Status
- Vital Signs: HR, BP, RR
- Pallor – skin, eyelids, nails
- Lab (CBC, Chemistry, Coagulopathy)

Interventions and Preparation:
- IV Fluids/Blood Transfusion
- Oxygen Supplement
- Warm Blankets 😊
- Music Therapy ♫ ♫ ♫
- Urgent Endoscopy

Create a Calm Environment
UPPER GI BLEEDING
CAUSES OF UPPER BLEEDING

• Peptic Ulcer Disease (PUD)
• Esophageal or Gastric Varices
• ArterioVenous Malformation (AVM)
• Mallory-Weiss Tear
• Tumors
• Dieulafoy Lesion
• Other Causes, i.e. esophagitis or mucosal abnormality, bleeding complications during upper endoscopy
HAVE YOUR TOOLS READY!

- Lavage Tube or Irrigation Set-Up
- Sclerotherapy Needle + Meds, i.e. Epinephrine 1:10,000 [10 ml]
- HemoClips
- Band Ligator, Endo-Loop (ligation device)
- Heater Probe (7 Fr/10 Fr)/BICAP (7 Fr/10 Fr)
- ERBE – APC, Valley Lab
- Other - Tatro, Snare Box, Biopsy (lesion, inflammation), Roth Net Retrieval Device
- Examples preferred in your tool box?
So, Let’s Have An Intervention!
HEMOSTASIS TECHNIQUES

Anticipate dual therapy during an active, uncontrolled, bleed to achieve effective hemostasis, and to reduce re-bleeding and the need for surgery - i.e. Sclerotherapy + Hemoclip + BICAP/Heater Probe
INJECTION SCLEROTHERAPY: GI ENDO PROTOCOL

**Purpose:** Tissue injection to control bleeding

**Epinephrine 1:10,000 [10 ml]:**
Epinephrine 1:1,000 [1 ml] + NaCl 0.9 % [9 ml]
= Epinephrine 1:10,000 [10 ml]

- Needle exits from protective sheath
- Syringe leur-locks to injection port
- Needle exits from protective sheath
- Sclerotherapy Injection is made to the bleed site during endoscopy
HEMOCLIP

Purpose:

• Immediate hemostasis

• Types: Olympus and Boston Scientific

• Other Uses: to grasp, i.e. decompression tube or drain
THERMOCOAGULATION

Heater Probe –

- Irrigates, Tamponades and Coagulates
- 7 Fr. Probe is accommodated by an upper diagnostic endoscope
- Ulcer Bleeding – coagulation is usually done in 4 quadrants or center of a lesion
- Other – M-W Tear and Angiodysplasia
Argon Plasma Coagulation (APC):

- Colon Prep required

- Coagulation with continuous movement (“painting”)

- Not the first line of therapy in active bleeding (due to dissipation)
# THERMOCOAGULATION:
## APC Settings – standard settings

<table>
<thead>
<tr>
<th>SITE</th>
<th>Esophagus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stomach</td>
</tr>
<tr>
<td>FLOW</td>
<td>1.4 LPM</td>
</tr>
<tr>
<td>COAG</td>
<td>A-60 Watt</td>
</tr>
<tr>
<td></td>
<td>Blue Pedal</td>
</tr>
</tbody>
</table>

**Note:** recommended settings may differ in hospital settings; follow department policy or standard work
THERMOCOAGULATION: APC

<table>
<thead>
<tr>
<th>Clinical Indication</th>
<th>Energy</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAVE “Watermelon Stomach”</td>
<td>40 – 100 Watt</td>
<td>2 LPM</td>
</tr>
<tr>
<td>Angioectasia</td>
<td>40 – 60 Watt</td>
<td>2 LPM</td>
</tr>
<tr>
<td>Barrett’s</td>
<td>30 – 90 Watt</td>
<td>0.1 – 2 LPM</td>
</tr>
<tr>
<td>Bleeding Ulcer</td>
<td>40 – 70 Watt</td>
<td>1.5 – 3 LPM</td>
</tr>
<tr>
<td>Palliation GI Cancer</td>
<td>40 – 100 Watt</td>
<td>0.8 – 2.5 LPM</td>
</tr>
<tr>
<td>Post Variceal Ablation</td>
<td>50 – 60 Watt</td>
<td>1.5 – 2 LPM</td>
</tr>
</tbody>
</table>

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BAND LIGATION

- **Goal** – local control and ↓ Portal Hypertension and re-bleeding risk
- **Esophageal or Gastric Varices** –
  - non-bleeding (with risk of bleeding)
  - during hemorrhage
- **Concurrent Interventions** –
  Sclerotherapy, Medications
- **Equipment** – Multi-Bander;
- **Non-Variceal Indications** (less common): protruding vessel (Dieulafoy’s), M-W Tear, gastric angiodysplasia or polyp
LOWER GI BLEED
CAUSES OF LOWER GI BLEEDING:

Causes:
- Diverticulosis
- Colon Cancer or Polyps
- Colitis (i.e. IBD, Infectious, Ischemic, Radiation)
- Angiodysplasia
- Post-Polypectomy, Anorectal Fistula,
- Anorectal, i.e. hemorrhoids
- Obscure (unknown origin)
HAVE YOUR TOOLS READY!

- Sclerotherapy Needle + Meds, i.e. NaCl 0.9 % + Epinephrine 1:10,000 [10 ml]
- HemoClips
- Endo-Loop, Snare
- ERBE Unit, Valley Lab
- Heater Probe (7 Fr/10 Fr)/Bicap (7 F)
- Concurrent Intervention – Tatto, Biopsy (lesion, inflammation), Roth Net Retrieval Device
- Examples preferred in your tool box?
Anticipate dual therapy during an active bleed to achieve effective control and to reduce re-bleeding and the need for surgery -
i.e. Sclerotherapy + Hemoclips + BICAP/Heater Probe
SCLEROTHERAPY

Injection Solutions:

Epinephrine 1:10,000 [10 ml] –
Epinephrine 1:1,000 [1 ml] + NaCl 0.9 % [9 ml]
= Epinephrine 1:10,000 [10 ml]

Needle exits from protective sheath

Syringe leur-locks to injection port

Sclerotherapy Injection is made to the bleed site during endoscopy
HEMOCLIPS

**Purpose:**

- Immediate hemostasis
- **Types:** Olympus and Boston Scientific
THERMOCOAGULATION

Heater Probe –

- Irrigates, Tamponades and Coagulates
- 7 Fr. Probe recommended for Angiodysplasia
- Safe in unprepped Bowel (no sparks)
- Bowel – saline lift or “pillow” to decrease burn depth
Argon Plasma Coagulation (APC) –
- Colon Prep required
- Coagulation with continuous movement ("painting")
- Saline lift or "pillow" to reduce burn depth or injury (with a sclero needle)
- Not the first line of therapy in active bleeding (due to dissipation)
# THERMOCOAGULATION: APC

<table>
<thead>
<tr>
<th>SITE</th>
<th>Rectum</th>
<th>Right Colon</th>
<th>Transverse Colon to Sigmoid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Rectum</td>
<td>• Right Colon</td>
<td>• Transverse Colon to Sigmoid</td>
</tr>
<tr>
<td></td>
<td>• Cecum</td>
<td>• Cecum</td>
<td>• Sigmoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Small Bowel</td>
</tr>
<tr>
<td>FLOW</td>
<td>1.4 LPM</td>
<td>0.4 LPM</td>
<td>1 – 1.4 LPM</td>
</tr>
<tr>
<td>COAG</td>
<td>• A-60 Watt</td>
<td>• A-40 Watt</td>
<td>• A-50 Watt</td>
</tr>
<tr>
<td></td>
<td>• Blue Pedal</td>
<td>• Blue Pedal</td>
<td>• Blue Pedal</td>
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<tr>
<td></td>
<td></td>
<td>(tap)</td>
<td></td>
</tr>
</tbody>
</table>

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THERMOCOAGULATION: APC

<table>
<thead>
<tr>
<th>Clinical Indication</th>
<th>Energy</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyp Residue</td>
<td>40 – 60 Watt</td>
<td>0.8 – 2 LPM</td>
</tr>
<tr>
<td>Radiation Proctitis</td>
<td>40 – 60 Watt</td>
<td>0.6 – 3 LPM</td>
</tr>
<tr>
<td>Angioectasia</td>
<td>40 – 60 Watt</td>
<td>2 LPM</td>
</tr>
<tr>
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<td>40 – 100 Watt</td>
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</tr>
</tbody>
</table>

Settings are adjusted depending on small bowel or colon location (setting rt. colon/small bowel)

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# Retrieval Devices

<table>
<thead>
<tr>
<th>Device</th>
<th>Purpose</th>
<th>Label</th>
<th>Types</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roth Net</td>
<td>Tissue retrieval</td>
<td>Single use</td>
<td>Polyp/foreign body</td>
<td>U.S.E.</td>
</tr>
<tr>
<td>Rat tooth/grasping</td>
<td>Foreign body retrieval</td>
<td>Re-use sterile</td>
<td>Large/small sizes</td>
<td>N/A</td>
</tr>
<tr>
<td>Overtube</td>
<td>Prevent mucosal damage</td>
<td>Single use</td>
<td>Standard and sizes</td>
<td>U.S.E.</td>
</tr>
</tbody>
</table>
Found On Routine Endoscopy: Diamond Ring In A Stomach
References:

- Ananya Das, MD, Richard C.K Wong. Prediction of outcome of acute GI hemorrhage: a review of risk scores and predictive models. Volume 60, Issue 1, Pages 85-93 (July)
- General Practice Notebook (2009). Retrieved online at www.gpnotebook.co.uk
TEST YOUR KNOWLEDGE: True/False

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- Effective hemostasis involves ONE intervention.

- Hematochezia is gastric (vomit) or duodenal frank red or old “coffee” color.

- Being prepared for a GI Bleed intervention involves having your “tool box” ready for immediate use.
POST QUESTIONS:

After completing this online learning module:

- Describe three things that will improve or change your everyday practice.
- List the learning content you would like covered in future online modules relative to GI Bleeding Emergency Interventions.
- Skills Lab session of $\frac{1}{2}$ - 1 hour was attended by me on GI Emergency Interventions:
  
  YES □        NO □
The End