CDDW 2014:
Small Bowel Bleeding

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Medical Expert (as Medical Experts, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centered care. Medical Expert is the central physician Role in the CanMEDS framework.)

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Collaborator (as Collaborators, physicians effectively work within a healthcare team to achieve optimal patient care.)

Manager (as Managers, physicians are integral participants in healthcare organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system.)

Health Advocate (as Health Advocates, physicians responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.)

Scholar (as Scholars, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.)

Professional (as Professionals, physicians are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour.)
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**Financial Interest Disclosure**
(over the past 24 months)

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Outline

• 1. Burden of Illness
• 2. Diagnostic Approach
  – a. Who, when and which end to scope?
  – b. When to use capsule, radiology, and balloon assisted endoscopy.
• 3. Outcomes
  – a. Diagnosis and therapy outcomes
Epidemiology

• ~5% of all Gi Bleeding occurs between the Ligament of Trietz and the IC valve = Small bowel Gi Bleeding

• Small bowel bleeding has low mortality rates (1-2%), but high morbidity and excess hospitalization rates.

• Small bowel bleeding can usually initially be described as “Overt Obscure GI bleeding” assuming that no source is found on EGD and Colon

• Occult bleeding (iron deficiency with +FOBT), although common is not the discussion today.

AGA Position paper 2007
What bleeds in the small bowel?

- Angiodysplasias: 30-88% of cases
- Dieulafoy lesions: 5-35%
  - (depends if overt or occult bleeding, and on what you calll a bleeding red spot...)
- Cancers/neoplasms: 5-15%
- IBD or ulcers: 15-25%
- Varices: 1%, Diverticuli: 1%, Meckel’s: 1-2%

Kamalaporn P, Can J Gastro 2008
Zaman A, GIE 1998
Lewis BS, GUT 1991
ASGE 2008 Guideline
Options for overt bleeding

- Repeat endoscopy (gastro/colon)
- Push enteroscopy
- Video capsule endoscopy
- Deep enteroscopy (DBE/SBE)
- Nuclear medicine, tagged RBC scan
- CT angiography
- Conventional angiography
- Intraoperative enteroscopy
- Do nothing....
Repeat endoscopy

- Repeat **colonoscopy** has a low yield assuming a QUALITY assessment the 1st time
  - 0% yield vs. >20% yield if poor prep or “difficult case”

- Repeat gastroscopy has yield of 3-33%
  - Commonly missed lesions = GAVE, Cameron lesions, angiodysplasias, bulb ulcers, ampulla lesions
  - Low risk, no prep, low cost

References:
Gilbert D Gastroenterol hep 2008
Leaper M Endoscopy 2004
Lara LF Endo 2005
Push enteroscopy

• Either pediatric colonoscope or an enteroscope.
  – Pros: No prep required, minimal increase risk over EGD, therapeutic potential.
  – Cons: incomplete examination (20-40cm beyond LOT, may get up to 100cm into the jejunum.)

• Diagnostic yield:
  – Occult bleeding: 26%,
  – Overt Bleeding: 25-41% (distal to LOT), 30-56% (any lesion, including stomach)

May A Am J gastro 2008
De Leusse A Gastro 2007
Sidhu R J Clin Gastro 2008
Capsule endoscopy

• Pros: Non-invasive, well tolerated, higher sensitivity.
• Cons: No therapeutics, no precision for location, COST

• Compared Vs. Intraop enteroscopy: Sens 95%, spec 75%
• Yield:
  – Overt bleeding: 50-80%
  – Obscure occult Gi bleeding: 35-61%

• Higher Sensitivity than SBFT, CT angio, CTE, PE, gastro/colon
• Equivalent sensitivity to DBE.
  – More likely to complete panenterosocpy with VCE

Yamada A Hepatogastro 2012
Triester SL Am J Gastro 2005
Capsule endoscopy

• Early VCE is better than later!
  – <72 hours vs >72 hours 44.4% vs. 25.8%
  – <72 hours of bleeding, “urgent VCE” compared to angiogram: diagnostic lesions 53% vs. 20%
  – Inpatient vs. outpatient: 48% vs. 37% yield
  – Case series of <48 hours of active bleeding: 90.9%

Singh A GIE 2013
Leung W Am J gastro 2012
Robinson CA GIE 2011
Apostopalous DDS 2007
What about repeat capsule

• For incomplete evaluation: 45% yield on 2\textsuperscript{nd} VCE

• For ongoing bleeding: 38% yield on 2\textsuperscript{nd} VCE

• For follow up after Rx: 30% yield on 2\textsuperscript{nd} VCE

• Immediately repeat Capsule “back to back”
  — Yield 41% vs. 50% yield, with 88% agreement.

Svarta S Can J Gastro 2010
Jones BH Am J Gastro 2007
Kim HM Gut Liver 2010
Negative VCE

• What now? maybe nothing..

• Long term follow up studies after negative VCE, rebleeding rates:
  – 18 months follow up of 42 pt: 11%
  – 2 year follow up of 49 patients: 5.6%
  – 4+ year follow up of patients, over 5 years: 17% rebleeding rate

• Overall a negative VCE is predictive of no clinically significant lesions.

Lai Am J gastro 2006
Macdonald J GIE 2008
Leung W Am J gastro 2012
VCE questions?

• 1. Does Capsule miss malignancies in the small bowel found on CT or Deep enteroscopy?
  – Data are lacking, BUT one study from Mayo,
    • N=17 SB tumors, VCE found 6, while CTE found 16
  
  – My practice is to get a CTE as well in a negative VCE if patient is >50 or at risk for SB tumors

Hakim F DDS 2011
Other modalities:

• SBFT: essentially useless (<5% yield)
• CT enterography: 20-49%,
  – pooled yield of 30% in metanalysis of 18 studies
• CT angiography: (Active bleeds only) 24-45%
• NM techn99 RBC scan:
  – Detect bleeding >60%, localize bleeding <30%, lead to successful treatment ~20% of the time.
• Angiography: active bleeding up to 20% yield
  – Lower rates in most centers.
  – Still usefull in massive bleeds, hyptoeosion etc.

Saperas E  Am J Gastro 2007
Wang Z  J med imaging 2013
Balloon assisted enteroscopy
DBE, SBE & Spiral

• DBE (Fujinon) and SBE (olympus) may insert slightly deeper (10-20cm)
  – Rates of locating pathology are similar.
  – Length of procedure, similar at 55-85mins (each way),
  – Slightly higher rates of pan endoscopy in DBE studies

• Spiral enteroscopy: faster procedure (20-35min), but depth of insertion is much lower (40-100cm less in two studies)
  – Complication rates are higher... won’t be commonly done.

Takano N, GIE 2011
Domaqk D Endoscopy 2011
Efthymiou M GIE 2012
BAE: Short term outcomes

• Metanlysis of 66 studies DBE, N= 12,823
  – Cause for Gi bleeding found: 68% (raged 40-88%)
  – Treatment “success”: 55% (40-84%)
  – Rate of pan-endoscopy: 44% (if both ends done)
  – Complications 9% (minor), 0.7% (major)
    • Perforations, Mallory weiss tears, acute pancreatitis (quite rare, though increased lipase is more common)

Xin L GIE 2011
BAE: Short term outcomes

• Metanalysis of 11 studies comparing VCE to DBE, N=375
  – Diagnostic yield of 60% vs. 57%
  – For bleeding angiodysplasias: 24% vs. 24%
  – Subset of pan endoscopic DBE vs. VCE: 88% vs. 56%

• Overall, yields are similar, so availability in your center and expertise will decide what you do first.

Pasha S Clin Gastro hep 2007
Long term outcomes: BAE for bleeding

- Retrospective studies only: 5 >50 patients followed
- Complete resolution of small bowel bleeding: 30-55%
- Decrease in transfusion requirements: 60-70%
- Recurrence of transfusion dependence >2 years out: 42-61%
  - In multifocal Angiodysplasias = 75%
- Data >3-4 years out is lacking.

May A Endo 2012
Samaha E AJG 2012
Williamson JB GIE 2012
Kushnir VN DDS 2013
Shinzoki 2010 CGH
If you don’t have DBE available

• Retrospective analysis of 72 studies locating angiodysplasias found with VCE

• Bleeding cause found:
  – 26.7% duodenum
  – 40.2% Ligament of Trietz area
  – 23.62% jejunum
  – 9.45% Ileum

• At least 66% of lesions should be reachable by PE, potentially 75% (getting to mid jejunum), 90% if you are able to advance to the ileum!

Plotkin DDW 2013
Summary

1. Small bowel bleeding is relatively common, low mortality, high morbidity problem
   - Diagnostic approach has to be individualized to each patient, and center
2. Overt bleeding, first line should be EGD + PE
3. VCE has the highest sensitivity and is non invasive.
   - Repeat VCE has added value if no lesion found, or incomplete study
4. DBE/SBE probably equivalent to VCE, but is more invasive, time consuming, although does allow immediate therapy
5. If VCE/SBE not available, CT enterography/angiography
6. RBC scanning, SBFT of little value today
7. Last resort -> intraoperative enteroscopy