Upper GI bleeding; presentation, initial assessment and management

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“if this is what greets you in the morning, you probably need to go see a doctor”
Plan

- Presentation
- Audit data and mortality
- NICE guidance
  - Risk assessment
  - Medical therapies
- Service delivery
GI Bleeding - Definitions

- **Occult**
  - Iron deficiency anaemia
  - Positive fecal occult blood test

- **Obscure**
  - No source identifiable

- **Overt**
  - Visible red blood
  - Coffee-ground emesis
  - Melaena

- **Haematemesis**
  - Vomiting of blood

- **Melaena**
  - Passage of black tarry stool

- **Haematochezia**
  - Bleeding per rectum
AUGIB – a common problem

- 50-1072/100,000 pa
- 50-70,000 hospital admissions pa
- 9000 deaths pa

- Relevance of ageing population
  - Increased use antiplatelets and anticoagulants
2 key prospective National Audits

• 1993/4
  – 74 hospitals, 4 health regions, 4m
  – 4185 patients
    • Rockall TA et al., BMJ 1995

• 2007
  – 217/257 hospitals (84%), 2m
  – 6750 patients (76%)
    • Hearnshaw et al., GUT 2011
## “Rockall” risk score for UGI bleed

<table>
<thead>
<tr>
<th>Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>&lt;60</td>
<td>60-79</td>
<td>&gt;80</td>
<td></td>
</tr>
<tr>
<td><strong>Shock</strong></td>
<td>Systolic bp &gt;100, Pulse &lt; 100</td>
<td>Systolic bp &gt; 100 Pulse &gt; 100</td>
<td>Systolic bp &lt; 100</td>
<td></td>
</tr>
<tr>
<td><strong>Comorbidity</strong></td>
<td>None</td>
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<td><strong>Diagnosis</strong></td>
<td>MW tear, no lesion, no SRH</td>
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<td><strong>Major SRH</strong></td>
<td>None or dark spot</td>
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<td></td>
</tr>
</tbody>
</table>

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![Rockall score distribution](image)

*Rockall et al., Gut 1995*
1993/4 versus 2007: What’s changed?

• 1993
  – Medical therapy variable
  – Use of endoscopy variable

• 2007
  – Endoscopic haemostasis
  – Proton pump inhibitors
  – *H. Pylori* eradication
  – Strategies to reduce NSAID toxicity
  – Increasing age and alcohol related liver disease
## Characteristics/Outcomes- 1993 vs. 2007

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>1993/4 Audit</th>
<th>2007 Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (median)</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td>&gt;80 years (%)</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>&gt; 1 major co-morbidity (%)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Peptic Ulcer (%)</td>
<td>47</td>
<td>36</td>
</tr>
<tr>
<td>Varices (%)</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>No cause identified (%)</td>
<td>30</td>
<td>17</td>
</tr>
<tr>
<td>Rebleeding (%)</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Surgery (%)</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Mortality (%)</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>New admissions</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>In-patients</td>
<td>33</td>
<td>26</td>
</tr>
</tbody>
</table>
# Mortality according to Rockall score 1993/4 vs 2007

<table>
<thead>
<tr>
<th>Complete Rockall Score</th>
<th>% with score 1993/4</th>
<th>% with score 2007</th>
<th>Mortality % 1993/4</th>
<th>Mortality % 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>14</td>
<td>16</td>
<td>0</td>
<td>0.6</td>
</tr>
<tr>
<td>2-3</td>
<td>26</td>
<td>25</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4-5</td>
<td>33</td>
<td>31</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>6-7</td>
<td>20</td>
<td>19</td>
<td>22</td>
<td>13*</td>
</tr>
<tr>
<td>8+</td>
<td>6</td>
<td>9</td>
<td>41</td>
<td>25*</td>
</tr>
</tbody>
</table>

*p<0.05*
Re bleeding after first endoscopy

<table>
<thead>
<tr>
<th>Rockall score</th>
<th>Expected</th>
<th>Observed</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>60</td>
<td>46</td>
<td>0.77 (0.55 to 0.99)</td>
</tr>
<tr>
<td>3-5</td>
<td>321</td>
<td>156</td>
<td>0.49 (0.41 to 0.57)</td>
</tr>
<tr>
<td>6-7</td>
<td>339</td>
<td>141</td>
<td>0.42 (0.35 to 0.49)</td>
</tr>
<tr>
<td>≥8</td>
<td>230</td>
<td>123</td>
<td>0.53 (0.44 to 0.62)</td>
</tr>
</tbody>
</table>

Significant improvement in re bleeding rates since 1993/4
Risk-adjusted mortality

- Using “expected” mortality from 1993 data
- Group by Rockall score (n=4989 who had complete Rockall score after endoscopy)
  - Expected mortality 2007
    - 524/4989 - 10.5%
  - Observed mortality 2007
    - 370/4989 – 7.4%
  - 34% reduction in mortality (95%CI 27-41%)
Analysis of UK HES 1999-2007

- Increasing co-morbidity

- Modest reductions in mortality
  - 14.7% to 13.1%
  - OR 0.87 (0.84-0.90)
  - Adjusted OR (age/comorbidity) 0.80 (0.77-0.83)

Crooks C et al., Gastro 2011
Can we do better? Acute provision

- 52% formal OOH provision
- 50% endoscoped within 24 hours
- Patients with Rockall score > 5
  - 42% > 24 hours; 14% > 72 hours
- 74% consultants on rotas “competent” at 4 haemostatic procedures (including SB tube)
  - 64% with varices received therapy
  - 76% with high risk stigmata received therapy
Differences between hospitals with and without OOH rota

<table>
<thead>
<tr>
<th></th>
<th>OOH on call rota (3499)</th>
<th>No OOH rota (2821)</th>
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<tbody>
<tr>
<td>1st Endoscopy OOH</td>
<td>586/2969 (20%)</td>
<td>254/1980 (13%)</td>
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<tr>
<td>Endoscopic therapy</td>
<td>25%</td>
<td>21%</td>
</tr>
<tr>
<td>Re-bleeding rate</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Median stay</td>
<td>6 days</td>
<td>5 days</td>
</tr>
<tr>
<td>Mortality after OGD</td>
<td>7.1%</td>
<td>8.2%</td>
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Risk adjusted mortality 1.20 (95% CI 0.96-1.51)

Hearnshaw et al., Gut 2010
NICE Guidance

• Assessment of risks
• Resuscitation and Initial Management
  – Blood products
  – Terlipressin
• Timing of endoscopy
• Management of non-variceal bleeding
  – Endoscopic Treatment
  – Proton pump inhibitors
  – Treatment options after first or failed endoscopic treatment
• Management of varices
  – Antibiotics
  – Oesophageal varices
  – Gastric varices
• Control of bleeding and prevention of rebleeding
• Primary prophylaxis
• Information and support for patients and carers
## Pre- and Post- endoscopy Rockall scores

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<th>Score</th>
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**Pre-endoscopy score:** 7

**Post-endoscopy score:** 11
## Blatchford Risk Score

<table>
<thead>
<tr>
<th>Blood urea (mmol/L)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 6.5 &lt; 8.0</td>
<td>2</td>
</tr>
<tr>
<td>≥ 8.0 &lt; 10.0</td>
<td>3</td>
</tr>
<tr>
<td>≥ 10.0 &lt; 20</td>
<td>4</td>
</tr>
<tr>
<td>≥ 20</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Haemoglobin (g/L) for men</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 120 &lt; 130</td>
<td>1</td>
</tr>
<tr>
<td>≥ 100 &lt; 120</td>
<td>3</td>
</tr>
<tr>
<td>&lt; 100</td>
<td>6</td>
</tr>
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</table>

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<tr>
<td>≥ 100 &lt; 120</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 100</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Systolic blood pressure (mm Hg)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100-109</td>
<td>1</td>
</tr>
<tr>
<td>90-99</td>
<td>2</td>
</tr>
<tr>
<td>&lt; 90</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other markers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse ≥ 100 (per min)</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with melaena</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with syncope</td>
<td>2</td>
</tr>
<tr>
<td>Hepatic disease</td>
<td>2</td>
</tr>
<tr>
<td>Cardiac failure</td>
<td>2</td>
</tr>
</tbody>
</table>

TOTAL / 23

Blatchford et al., Lancet 2000
Comparison of Rockall with Glasgow Blatchford score (GBS) to predict need for intervention

4 Hospitals; N = 676

Pre-endoscopy
Rockall

Blatchford

Stanley A et al., Lancet 2009
NICE Recommendation: risk assessment

- Use the following formal risk assessment scores for all patients with acute gastrointestinal bleeding:
  - the Blatchford score at first assessment, and
  - the full Rockall score after endoscopy.
- Consider early discharge for patients with a pre-endoscopy Blatchford score of 0.
The Leeds protocol

<table>
<thead>
<tr>
<th>Patient source</th>
<th>GBS = 0 or 1</th>
<th>GBS ≥ 2</th>
<th>GBS ≥ 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stable</td>
<td>Stable</td>
<td>Unstable*</td>
</tr>
<tr>
<td></td>
<td>Low-risk</td>
<td>Intermediate risk</td>
<td>Or suspected varices**</td>
</tr>
</tbody>
</table>
| A&E/SAU        | Follow CDU protocol¶  
GBS = 0: discharge and book O/P OGD  
GBS = 1: discuss with on-call Gastro Reg | Admit to Gastroenterology Ward 91/92 only  
Perform OGD on next available list | Urgent review by Gastro Reg  
Arrange bed on gastroenterology wards (91/92) only  
Perform emergency OGD (in acute theatre if after midnight)  
Consider Level 2 care bed |
| Existing Inpatients | Discuss with Gastro Reg and perform routine OGD (within 24 hours) | Discuss with Gastro Reg and perform routine OGD (on next available list) | Perform emergency OGD (in acute theatre if after midnight)  
Consider level 2 care bed |

¶ Follow CDU protocol:  
- GBS = 0: discharge and book O/P OGD  
- GBS = 1: discuss with on-call Gastro Reg

** Or suspected varices:  
- Perform emergency OGD (in acute theatre if after midnight)  
- Consider Level 2 care bed

GBS = 0 or 1: discharge and book O/P OGD  
GBS = 1: discuss with on-call Gastro Reg

GBS ≥ 2:  
- Stable: Intermediate risk  
- Unstable*: Or suspected varices**:  
  - High risk

Triage the urgency of endoscopy based on GBS and haemodynamic stability
Acid Suppression therapy

- pH > 6.5 stabilises clot
- Acid secretion should be completely suppressed for several hours
- Pre-endoscopy therapy?
  - Approx 80% ulcers will stop bleeding spontaneously
    - No significant difference in mortality, rebleed, surgery, transfusion requirements or length of hospital stay
    - Reduced SSRH and endoscopic Rx required
  - Lau JM, NEJM 2007
PPI therapy post endoscopy

- Reduced rebleeding
  - OR 0.43 (0.34 – 0.46)
- Reduced surgery
  - OR 0.36 (0.26 - 0.50)
- Trend on mortality
  - OR 0.76 (0.49 – 1.19)
- Reduced LOS and Transfusion requirements
- Preferable to H2RA
- Unable to differentiate between IV vs. oral PPI
- Do not offer acid-suppression drugs (proton pump inhibitors or H2-receptor antagonists) before endoscopy to patients with suspected non-variceal upper gastrointestinal bleeding.

- Offer proton pump inhibitors to patients with non-variceal upper gastrointestinal bleeding and stigmata of recent haemorrhage shown at endoscopy.
Stopping Aspirin after endoscopic haemostasis?
N=156; RCT – Aspirin cont for 8/52 vs. placebo

Rebleed rate at 30 days

All cause mortality

HR 1.9 for cont aspirin

HR 0.2 for cont aspirin

Sung JJ et al. Annals Int Med 2010
- Continue low-dose aspirin for secondary prevention of vascular events in patients with upper gastrointestinal bleeding in whom haemostasis has been achieved.

- Stop other non-steroidal anti-inflammatory drugs (including cyclooxygenase-2 [COX-2] inhibitors) during the acute phase in patients presenting with upper gastrointestinal bleeding.

- Discuss the risks and benefits of continuing clopidogrel (or any other thienopyridine antiplatelet agents) in patients with upper gastrointestinal bleeding with the appropriate specialist (for example, a cardiologist or a stroke specialist) and with the patient.
Varices

- Terlipressin
  - Reduces portal pressure
  - Reduces mortality
  - Increases haemostasis at endoscopy
    - use pre-OGD
  - No effect on rebleed rates
  - Probably equivalent to Octreotide
    - use if Terli c/i
  - 5 days equivalent to 10
Varices

• Antibiotics
  – Trend to reduced mortality < 30 days
  – Significant reduced re-bleeding, transfusion, infections
  – Usually given for 5 days; broad spectrum active against G-ve
• Offer terlipressin to patients with suspected variceal bleeding at presentation. Stop treatment after definitive haemostasis has been achieved, or after 5 days, unless there is another indication for its use.

• Offer prophylactic antibiotic therapy at presentation to patients with suspected or confirmed variceal bleeding.
Timing of endoscopy

• NICE
  – 3 RCTs – all VERY LOW QUALITY
  – No evidence for early vs. late for mortality, rebleeding, surgery, transfusion, LOS
  – Cost-effectiveness best if < 24hrs – if >330 cases/year

• 2007 Audit
  – 52% OOH rotas
  – Non-significant trend to better outcomes if OOH provision
  – No “weekend effect” despite sicker patients, longer delays
    • 38% endoscopy < 24hrs vs. 55% weekday
    – Jaireth V et al., Am J G 2011
• Offer endoscopy to unstable patients with severe acute upper gastrointestinal bleeding immediately after resuscitation.

• Offer endoscopy within 24 hours of admission to all other patients with upper gastrointestinal bleeding.

• Units seeing more than 330 cases a year should offer daily endoscopy lists. Units seeing fewer than 330 cases a year should arrange their service according to local circumstances.
Local models

- Dedicated lead
- Service review and audit
- Model depends on population size and resource
  - Appropriate training essential
- Dialogue with commissioners
- Daily endoscopy slots for GI bleed
- Weekend lists?
- On call rotas - ? networked
Potential model for UGI bleeding service

1. No ambulance assessment:
   - Local hospital
   - Low – High
   - Endoscopy within 24 hrs (may need to transfer during weekends dependant on local service model)
   - Local access to:
     1. Interventional radiology
     2. Surgical services
     *depenant on local service model

2. Ambulance assessment:
   - Ambulance assessment
   - Low – High
   - Urgent risk
   - TRANSFER if not in Regional GI bleed centre
   - Endoscopy within 6-12 hours
   - 24/7 access to:
     1. Interventional Radiology
     2. Surgical services

Regional GI Bleed centre

TRANSFER to Regional GI bleed centre if services not available locally at required time locally
Conclusions

- Mortality improving
- Clear guidance on medical therapy
- Room for improvement
- Need to decide on best model of service delivery
- The future
  - Networks
  - Data on Transfusion
  - Tranexamic Acid?
# Time to Endoscopy

<table>
<thead>
<tr>
<th></th>
<th>Weekday N=3931</th>
<th>Weekend N=1073</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median time-hours (IQR)</strong></td>
<td>21.8 (11.3-47.7)</td>
<td>38.9 (15.8-64.2)</td>
</tr>
<tr>
<td><strong>Endoscopy within 24 hours % (n)</strong></td>
<td>55.2 (2170)</td>
<td>38.2 (410)</td>
</tr>
</tbody>
</table>