Variceal and non-variceal gastrointestinal bleeding

Centre for Life – 24 April 2018

John Greenaway
Session overview

- Background – significant healthcare problem
- Pre-endoscopy management
  - Recognition
  - Resuscitation
  - Risk assessment
  - Rx (treatment)
  - Referral for endoscopy - Who needs intervention?
  - Right ward & post procedure care
- What interventions are available?
  - Non-variceal & Variceal upper GI haemorrhage
- Restarting anti-thrombotic drugs
- Outcomes
AUGIB – Background (1)

- Gastrointestinal bleeding is one of the commonest medical emergencies
- UK Incidence of 1.33 / 1000 population - approximately 85,000 cases / year
  - Gastrointestinal bleed every 6 minutes
- £155.5M per annum
- 8% of acute hospital admissions (@ 85% of all AUGIBs)
- Approaching 4000 AUGIB deaths per annum in UK
- Median UK LOS is 5 days & mean in-hospital cost £2458 per patient

<table>
<thead>
<tr>
<th>Study</th>
<th>Mortality – All</th>
<th>Mortality – 1º Admission</th>
<th>Mortality – In-patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockall 1995</td>
<td>14%</td>
<td>11%</td>
<td>33%</td>
</tr>
<tr>
<td>Blatchford 1997</td>
<td>8.1</td>
<td>6.7%</td>
<td>42%</td>
</tr>
<tr>
<td>BSG 2007</td>
<td>10%</td>
<td>7%</td>
<td>26%</td>
</tr>
<tr>
<td>NCEPOD 2015</td>
<td>23.7%</td>
<td>14.4%</td>
<td>37.7%</td>
</tr>
</tbody>
</table>

### AUGIB – Background (2)

<table>
<thead>
<tr>
<th>Endoscopic finding</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oesophagitis</td>
<td>24</td>
</tr>
<tr>
<td>Gastritis/ erosions</td>
<td>22</td>
</tr>
<tr>
<td><strong>Ulcer</strong></td>
<td><strong>36</strong></td>
</tr>
<tr>
<td>Erosive duodenitis</td>
<td>13</td>
</tr>
<tr>
<td>Malignancy</td>
<td>4</td>
</tr>
<tr>
<td>Mallory- Weiss</td>
<td>4</td>
</tr>
<tr>
<td><strong>Varices</strong></td>
<td><strong>11</strong></td>
</tr>
<tr>
<td><strong>Portal Gastropathy</strong></td>
<td><strong>5</strong></td>
</tr>
<tr>
<td>Vascular malformation</td>
<td>3</td>
</tr>
<tr>
<td>None</td>
<td>17</td>
</tr>
</tbody>
</table>

32% SRH  
6% 1993 

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Co-morbidity – directly related to mortality in 82% of AUGIB case

- Co-morbidity (46%) – Mortality $\times$ 3.8 (two or more – $\times$ 6.3)
- Liver Disease – AUGIB common in cirrhotics
  - doubles mortality -overall mortality for variceal bleeding 15% but falling

Haemodynamic factors - modifiable

- Shock – Mortality OR of 3.8
- Continued bleeding – up to 50-fold increased mortality

<table>
<thead>
<tr>
<th>Age</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 60 yoa</td>
<td>3%</td>
</tr>
<tr>
<td>60 – 79 yoa</td>
<td>11%</td>
</tr>
<tr>
<td>&gt; 79 yoa</td>
<td>20%</td>
</tr>
</tbody>
</table>

Numerous AUGIB Guidelines (NICE, SIGN & ESGE)

- Unanimously acknowledge importance of timely management within the first 24 hours
- Early resuscitation and endoscopy correlate with improved outcomes.

2015 NCEPOD GIB review

- Highlighted variations in practice and raised concerns regarding sub-optimal care
- Series of recommendations, some of which relate to early management

### NCEPOD Findings

<table>
<thead>
<tr>
<th>NCEPOD Findings</th>
<th>NCEPOD Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>64% of patients with AUGIB did not have any risk assessment score calculated.</td>
<td>GI bleed specialists need to develop risk stratification methods relevant to all GI bleeding.</td>
</tr>
<tr>
<td>Important basic investigations were omitted in 20% admitted with AUGIB and 33% of inpatients.</td>
<td>The NICE Clinical Guideline (CG141) for AUGIB should be adhered to.</td>
</tr>
<tr>
<td>Early basic treatment was omitted in 9% of patients. 39% of patients with variceal bleed did not receive antibiotics</td>
<td>Unstable patients should have anaesthetic and/or critical care support.</td>
</tr>
<tr>
<td>18% of patients had complications that could have been avoided with improved care.</td>
<td></td>
</tr>
<tr>
<td>24% died overall; 38% died who developed a GI bleed whilst already in hospital</td>
<td></td>
</tr>
<tr>
<td>8% should have had escalation to critical care but did not.</td>
<td></td>
</tr>
<tr>
<td>GI bleeding was the cause of death in 36% and due to complications in 49%.</td>
<td>The ongoing management of care for patients with a major bleed should rest with, and be directed by the named consultant responsible for GI bleeds; to ensure timely investigation and treatment.</td>
</tr>
<tr>
<td>In 16% of cases the reviewers felt that the first consultant review was not sufficiently prompt for the patient’s condition.</td>
<td></td>
</tr>
<tr>
<td>35% of patients waited &gt; 24 hours for an OGD.</td>
<td>All patients who present with major AUGIB should be discussed with the duty consultant responsible for major GI bleeds, within one hour of the diagnosis of a major bleed.</td>
</tr>
<tr>
<td>77% of patients with shock index &gt;1 did not have an OGD within 4 hours</td>
<td>All patients with a GI bleed and haemodynamic instability should have 24/7 access to an OGD within 2 hours of optimal resuscitation.</td>
</tr>
</tbody>
</table>

Only 44% “Good” care

Immediate assessment and action

• Suspected in patients with:-
  – Haematemesis, coffee-ground vomiting, melaena
  – Unexplained fall in haemoglobin

• AUGIB should also be suspected in patients with bright red rectal bleeding (BRRB) with haemodynamic compromise
  – In up to 20% of cases AUGIB may mimic lower GI bleeding and present with BRRB
  – Predictive factors:-
    • Haemodynamic instability
    • Increased serum urea : creatinine ratio
    • Reduced haematocrit

Figure 4.2 Presenting features – upper GI bleed patients

Immediate assessment and action

• DRE examination should be performed to confirm the presence of melaena or BRRB
  – DRE especially important in patients with unexplained fall in Hb
  – Presence of melaena is also a measure of severity of AUGIB

• Patients with suspected AUGIB should be placed nil by mouth ASAP
  – Expectation should be for endoscopy within 24 hours

• Make sure endoscopy is appropriate for that patients
  – Terminal disease
  – Peri-endoscopic mortality < 0.1% (50% cardio-pulmonary)
  – Major complication 0.9%
Within 1 hour

- Prompt assessment and empirically resuscitated using the ABCDE approach
  - Triaged for early fluid / blood product resuscitation
- NEWS observations every 15 minutes in the first hour; then review
- The shock index (SI) can be used as an indicator of severity and should be calculated
  - \[ \text{SI} = \frac{\text{Heart Rate}}{\text{Systolic BP}} \]
  - SI > 0.9 is a reliable indicator of haemorrhagic shock
- Secure IV access for fluid resuscitation
  - at least 2 large bore IV cannulae
  - Colloid = crystalloid. No benefit (? harm) from albumin
- Urgent blood tests - FBC, U&Es, LFTs, Clotting, G&S / X-match

Within 1 hour

- Patients with shock (Clinical diagnosis or SI >0.9) should be immediately reviewed / triaged by an experienced clinician (at least middle grade)
- Duty endoscopist should be notified within 1 hour of diagnosis
- Early assistance from the critical care team should be considered in all unstable patients
  - Airway compromise from haematemesis, hypoxia (needing more than 4L O2 via nasal cannulae) or reduced consciousness e.g. from encephalopathy secondary to variceal bleeding
- Catastrophic haemorrhage - consider major haemorrhage protocol
  - Expedites Group O-negative blood, platelets and fresh frozen plasma & alerts key clinical and support personnel
  - A blood gas should be performed if there is haemodynamic compromise - rapid Hb estimate and assess for Acidaemia / hyperlactataemia from tissue hypoperfusion
- Focused clerking (once resuscitated) – Should include:-
  - Antithrombotic medications (e.g. Aspirin, Clopidogrel, Warfarin, NOAC) - indications & time of last dose should be ascertained. Document NSAIDs use
  - Co-morbidities should be managed prior to endoscopy
  - Features of peritonism may indicate perforated ulcer and requires urgent surgical referral

Within 1 hour

Following resuscitation, patients should be undergo variceal assessment and severity assessment

Severity assessment

- Both admission Rockall and Blatchford Score are validated scoring systems
  - Predict endoscopic and clinical outcomes for AUGIB and can be used as triaging tools for endoscopy
  - Risk assessment score should be calculated at the point of AUGIB presentation using index parameters prior to fluid resuscitation e.g. first paramedic observations
- **Low-risk patients** - Blatchford scores of 0-1 may be considered for discharge with outpatient endoscopy
- **High risk patients** - should be prioritised for endoscopy and escalation of care

Within 1 hour
Glasgow-Blatchford Score (GBS) [/23] – Who can go home?

- Commonly available blood indices, standard observations & limited co-morbidity
- GBS = 0; @ 9%. NICE CG141- Consider “early discharge” as mortality = 0
- GBS <2; @19%. Most need no intervention and can safely be managed as O/P
  - Endoscopic treatment performed in 1.4% and overall mortality 0.4%

13

Within 1 hour
Admission Rockall Score (\( / 7 \))

- 2-tier treatment based clinical scoring system
- Integrated with clinical acumen and concern
  - Occult liver disease (particularly in the young)
- Rockall score less than 3
  - 30% fall into category where mortality < 0.3%
    - Home after swift endoscopy <24 hours
- Rockall score of 3 or more
  - Urgent discussion and endoscopy after resuscitation

**Risk Assessment (4)**

**Within 1 hour**

**Comparison of risk scores**

- Comparisons of scores in prediction of need for **intervention** - transfusion, endoscopic treatment, interventional radiology or surgery - or **30-day mortality**

- GBS – “Home or need to do something”

\[ \text{AUROC} = \text{area under the receiver operating characteristic curve} \]

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*PNED* - progetto nazionale emorragia digestive & *AIMS65* - albumin level <30 g/L (A), international normalised ratio >1.5 (I), altered mental status (M), systolic blood pressure ≤90 mm Hg (S), and age >65 years (65) score

*Stanley et al. BMJ 2017.*
Question 1

68 year old male presenting to A&E with melaena after alcohol binge (12 units) at wedding. Co-morbidity – treated HT. Hb 127 g/L with Urea 6.2 / Creat 108 BP 120/80mmHg. P80 BPM.

A. Home without any follow up
B. Home with outpatient endoscopy within 2 weeks
C. Admit – NBM and endoscopy within 24 hours
D. Admit – NBM and urgent OGD within 2 hours
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Risk Assessment (5)

Within 1 hour

Variceal assessment

• Decision should be made whether to manage patients as non-variceal upper GI bleed (NVUGIB) or variceal bleed

• Patients with a risk factors for varices should be empirically managed as variceal bleeding
  – History of cirrhosis +/- varices
  – Stigmata of chronic liver disease
  – Blood result and radiological findings

Within 1 hour

Variceal assessment

<table>
<thead>
<tr>
<th>5. GI bleeding</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Fluid resuscitate according to BP, pulse and venous pressure</td>
<td>Y N</td>
</tr>
<tr>
<td>b) Prescribe IV terlipressin 2mg four times daily (caution if known ischaemic heart disease or peripheral vascular disease)</td>
<td>Y N NA</td>
</tr>
<tr>
<td>c) Prescribe prophylactic antibiotics as per Trust protocol (cefuroxime unless contraindicated)</td>
<td>Y N</td>
</tr>
<tr>
<td>d) If prothrombin time (PT) prolonged give IV vitamin K 10mg stat</td>
<td>Y N NA</td>
</tr>
<tr>
<td>e) If PT&gt; 20 seconds (or INR &gt;2.0) – give FFP (2-4 units)</td>
<td>Y N NA</td>
</tr>
<tr>
<td>f) If platelets &lt;50 – give IV platelets</td>
<td>Y N NA</td>
</tr>
<tr>
<td>g) Transfuse blood if Hb &lt;7.0g/L or massive bleeding (aim for Hb &gt;8g/L)</td>
<td>Y N NA</td>
</tr>
<tr>
<td>h) Early endoscopy after resuscitation (ideally within 12 hours)</td>
<td>Y N</td>
</tr>
</tbody>
</table>

Within 2 hours

- Patients with coagulopathy should receive urgent correction where possible
  - Requires urgent discussion with the on-call gastroenterologist
  - Patients on NOAC therapy may benefit from discussion with a haematologist & cardiologist
  - Reversal of coagulopathy may not be safe in patients with high risk thrombotic indications, e.g. pulmonary embolism or metallic heart valve

<table>
<thead>
<tr>
<th>Coagulopathy</th>
<th>Threshold</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelets</td>
<td>&lt;50 x10⁹/L</td>
<td>Platelet transfusion</td>
</tr>
<tr>
<td>INR</td>
<td>&gt;1.5</td>
<td>FFP</td>
</tr>
<tr>
<td>aPTT r</td>
<td>&gt;1.5</td>
<td>PCC (if on warfarin)</td>
</tr>
<tr>
<td>Fibrinogen</td>
<td>&lt;1.5g/L</td>
<td>FFP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cryoprecipitate (if low despite FFP)</td>
</tr>
</tbody>
</table>

Within 2 hours

**GUIDE TO THE MANAGEMENT OF BLEEDING AND URGENT SURGERY IN PATIENTS TAKING DABIGATRAN (A DIRECT THROMBIN INHIBITOR)**

**Major bleed**

- Consider time since last oral dose + dosing regimen, concurrent medications
- Measure FBC, U/E, eGFR, PT/INR, aPTT/Hemost; thrombin time (TT)
- **Dabigatran assay** if TT is abnormal
  - Consider oral activated charcoal (2-6 hours since ingestion)
  - Local haemostatic measures (mechanical compression, surgical/endoscopic/radiological intervention)
  - Blood product replacement therapy and optimisation of pH and body temperature as per major haemorrhage protocol
  - Transaminase acid (L/g IV)
  - If reversal is necessary, administer idarucizumab (Praxbind)**

**Limb / Life-threatening bleed**

- **Idarucizumab (Praxbind)**
  - Send a coagulation sample 15 mins after administration and continue to monitor any other factors that are contributing to bleeding

**GUIDE TO THE MANAGEMENT OF BLEEDING AND URGENT SURGERY IN PATIENTS TAKING A FACTOR Xa ANTAGONIST**

**Major bleed**

- Consider time since last oral dose + dosing regimen, concurrent medications
- Measure FBC, U/E, eGFR, PT/INR, aPTT/Hemost
- **Drug-specific assay**
  - Consider oral activated charcoal (2-6 hours since ingestion)
  - Local haemostatic measures (mechanical compression, surgical/endoscopic/radiological intervention)
  - Blood product replacement therapy and optimisation of pH and body temperature as per major haemorrhage protocol
  - Transaminase acid (L/g IV)

**Limb / Life-threatening bleed**

- **Protamine solution concentrate**
  - Activated FFP (FFBA) rFVIIa (NovoSeven)**

**TREATMENT [Rx](2)**

**NORTHERN REGION HAEMATOLOGISTS GROUP GUIDE TO WARFARIN REVERSAL**

**BLEEDING**

- Significant bleeding without haemodynamic compromise
  - 2mg Vitamin K IV
  - Check INR & aPTT at 4-6 hours or sooner if clinical deterioration

- Inadequate correction
  - Consider other factors contributing to prolonged coagulation tests e.g. DIC, Congenital coagulation factor deficiency, Liver disease, inadequate replacement. Seek haematological advice

- Repeat INR & aPTT in 4-6 hours

**CONTACT HAEMATOLOGIST**

- Intracranial (CT or MRI)
- Retropertioneal (CT or MRI)
- Intra-ocular (NOT conjunctival)
- Spontaneous muscle bleed with compartment syndrome
- Pericardial
- Active bleeding from other orifice plus either BP ≤ 90 mm Hg systolic, oliguria or 2 g fall in haemoglobin

- Vitamin K 5 mg IV and Prothrombin complex concentrate IV (Beriplex PF 20 units/kg)
- Check INR & aPTT immediately
- Insufficient correction
  - Consider other factors contributing to prolonged coagulation tests e.g. DIC, Congenital coagulation factor deficiency, Liver disease, inadequate replacement. Seek haematological advice
Within 2 hours

- Suspected variceal haemorrhage
  - Terlipressin to patients with suspected variceal haemorrhage
    - Reduces mortality and improves control of bleeding
    - Vasoconstrictor drug that reduces portal pressure controls bleeding in 80% of bleeds
  - Empirical antibiotics to patients with suspected variceal haemorrhage
    - Without prophylactic antibiotic 50% of patients with variceal bleed will develop a significant infection

- Consider bolus of 250mg Erythromycin IV in patients with ongoing AUGIB (Metoclopramide as alternative) – improved views

- Do not prescribe Tranexamic acid routinely, unless in a palliative or research setting

Within 2 hours

- Active bleeding / unstable after initial resuscitation – transfuse
- Blood product transfusion
  - BTx: Villanueva & Jairath, Hearnshaw et al
    - Better outcomes (Less re-bleeding or death) if restrictive transfusion to Hb < 70 g/L
    - Restriction most beneficial for Child’s-Pugh A&B liver disease bleeds
      - NB – Villanueva study excluded patients with massive haemorrhage & cardiac disease

<table>
<thead>
<tr>
<th></th>
<th>Restrictive (Hb &lt; 70 g/L)</th>
<th>Liberal (Hb &lt; 90 g/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received BTx</td>
<td>49%</td>
<td>76%</td>
</tr>
<tr>
<td>Died</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>Re-bleeding</td>
<td>10%</td>
<td>16%</td>
</tr>
</tbody>
</table>

- Stable patients - aim for a Hb of 70-90 g/L (80-100 g/L at d/c)
  - In patients without cardiac co-morbidity offer transfusion when Hb < 70 g/L, if cardiac co-morbidity / old / frail offer transfusion when Hb < 80 g/L

Question 2

49 year old female admitted to A&E after being found collapsed in a pool of fresh red haematemesis. Melaena on DRE.
Co-morbidity – Known Cirrhosis (recidivist alcohol misuse)
Hb 63 g/L with Urea 12.1 / Creat 65. PLT 90.
Alb 32, PT 19.5 s (INR 1.3), Bil 75, Na⁺ 140.
BP 90/50 mmHg, P105 BPM.

A. Vitamin K IV & Tranexamic Acid IV - NBM and urgent endoscopy (stop list)
B. Resuscitate (includes BTx) – NBM and endoscopy within 2 hours (stop list)
C. Resuscitate (blood products), Terlipressin & prophylactic antibiotics – NBM and endoscopy within 2 hours (stop list)
D. Resuscitate (blood products), Terlipressin & prophylactic antibiotics – NBM and endoscopy in theatre with critical care / anaesthetic input
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D. Resuscitate (blood products), Terlipressin & prophylactic antibiotics – NBM and endoscopy in theatre with critical care / anaesthetic input
Within 2 hours

- IV PPI

  - Conflicting guidance on whether to administer PPI therapy prior to endoscopy - No evidence of harm!
    - Cochrane meta-analysis of six RCTs (n=2223)
      - PPIs before endoscopy significantly reduced stigmata of recent haemorrhage (SRH) at index endoscopy
      - Without affecting rates of re-bleeding, surgery, or mortality
    - NICE and BSG do not recommend routine PPI administration - may mask targets for therapy
    - ESGE have recently recommended for pre-endoscopic intravenous PPI

Within 24 hours

• Patients should be referred for endoscopy following senior review/discussion (endoscopy may not be appropriate)

• Patients with ongoing haemodynamic instability or with GBS >12 should have 24/7 access to urgent endoscopy (within 2-12 hours) of optimal resuscitation.

• Discussion with duty endoscopist:-
  – Patients with ongoing bleeding, or initial shock index >1
  – Other indications for urgent discussion include:
    • Rockall >2 or GBS >12
    • In-hospital bloody emesis / nasogastric aspirate
    • Contra-indication to the interruption of anticoagulation

Within 24 hours

• All other patients with AUGIB should otherwise receive early endoscopy (< 24 hours)
  – Ideally within 6-12 hours within working hours

• If endoscopy failed achieve haemostasis – consider urgent interventional radiology- CT Angiography, but involve surgical team

• Patients with BRRB with shock index >1 should also be referred for urgent OGD
  – If this is normal, urgent sigmoidoscopy +/- CT angiogram may be helpful in establishing a bleeding source
  – Early colonoscopy should be encouraged if colonic bleed suspected

Within 24 hours

- All stable patients with AUGIB should be managed on a specialist gastroenterology ward
  - Only moved after senior PTWR
  - Patients with bleeding as in-patients can be discussed with on-call consultant to consider takeover of care; however, the referring team will remain responsible for monitoring and seeing patients on their ward until the patient is transferred to Gastroenterology ward.

- Patients with bleeding peptic ulcers should be urgently commenced on PPI infusion - 80mg IV Omeprazole / Pantoprazole stat then 8mg/hr for 72 hours - prior to transfer.
  - Reduced re-bleeding (NNT 13), BTx need, LOS need for surgery (NNT 10) and mortality in high-risk lesion sub group
  - Data support IV BD or even high dose oral

- Patients with BBRB should be managed in a surgical ward unless AUGIB is likely

- Unstable patients should be managed in an HDU / ITU setting

- Clear Handover:-
  - Plan in place for endoscopy arrangements prior to ward transfer
  - If endoscopy has already been performed, recommendations on the endoscopy report should be followed.
  - Staff (doctors and nurses handing over) should be clear on endoscopic findings and re-bleed plan.

Resumption of antithrombotic Rx (1)

Once bleeding controlled

- Resumption of anti-platelet, anticoagulant in high risk patients
- Antithrombotic therapy - after successful endoscopic control of GI bleeding
- Antiplatelet therapy - Data to guide the timing of re-initiation of antiplatelet therapy limited
  - Current cardiac and GI society consensus statements recommend resumption of antiplatelet therapy as soon as haemostasis is achieved
  - Sung et al (RCT) No increased risk of post-procedural bleeding associated with continued ASA use but a clear increase in 30-day mortality in cardiac patients in whom ASA was not resumed
  - Proton pump inhibitor should be co-prescribed if bleeding is ASA related
Endoscopy - Variceal bleeding (1)

Oesophageal varices
• Endoscopic Band Ligation (EBL)
  – Superior to Sclerotherapy (6RCTs)
  – Post therapy PPI – “Adjunctive”
  – B Blocker and eradication program

Gastric varices
• Present in 20% of cirrhotics at first endoscopy
• Bleed at lower pressure the oesophageal varices
• Worse outcomes then oesophageal varices
• Cyanoacrylate “Glue” (> Thrombin)
  – Glue superior to banding
  – Better haemostasis [87% cf 45%]
  – Reduced mortality [29% cf 48%]
  – Lower re-bleeding [31% cf 54%]

EVL for Oesophageal varices

Oesophageal varices banding clip.mpeg

Oesophageal varices banding clip 2.mpeg
Endoscopy - Variceal bleeding (3)

Cyanoacrylate – Gastric varices
Forrest classification: Stigmata of recent haemorrhage in peptic ulcer bleeding

- **Acute haemorrhage**
  - Forrest I a (Spurting haemorrhage) – treat; very high-risk re-bleed (90%)
  - Forrest I b (Oozing haemorrhage) – treat & high-risk re-bleed (55%)

- **Signs of recent haemorrhage**
  - Forrest II a (Visible vessel) – treat; high-risk re-bleed (43%)
  - Forrest II b (Adherent clot) – Controversy; risk re-bleed (22%)
  - Forrest II c (Flat pigmented haematin on ulcer base) - risk re-bleed (10%)

- **Lesions without active bleeding**
  - Forrest III (Lesions without signs of recent haemorrhage or fibrin-covered clean ulcer base) - risk re-bleed (5%)

### “Rockall” risk scoring system

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score 0: &lt; 60 years</th>
<th>Score 1: 60-79 years</th>
<th>Score 2: ≥ 80 years</th>
<th>Initial score criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 60 years</td>
<td>60-79 years</td>
<td>≥ 80 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>‘no shock’, SBP ≥ 100 mm Hg, pulse &lt; 100 beats per minute</td>
<td>‘tachycardia’, SBP ≥ 100 mm Hg, pulse ≥ 100 beats per minute</td>
<td>‘hypotension’, SBP &lt; 100 mm Hg,</td>
<td>renal failure, liver failure, disseminated malignancy</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>no major comorbidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Mallory-Weiss tear, no lesion identified and no SRH</td>
<td>all other diagnoses</td>
<td>malignancy of upper GI tract</td>
<td></td>
</tr>
<tr>
<td>Major stigmata of recent haemorrhage (SRH)</td>
<td>none, or dark spot only</td>
<td>blood in upper GI tract, adherent clot, visible or spurring vessel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Initial score criteria:

- Renal failure
- Liver failure
- Disseminated malignancy

*Additional criteria for full score:

- Asymptomatic patients should not receive mini-Rockall score

*References:

Endoscopy – Non-Variceal bleeding (4)

**Mortality by post-endoscopy (Full)**
Rockall risk score ( /11)

<table>
<thead>
<tr>
<th>Score</th>
<th>Mortality No rebleed</th>
<th>Mortality Rebleed</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2%</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>4%</td>
<td>16%</td>
</tr>
<tr>
<td>5</td>
<td>8%</td>
<td>23%</td>
</tr>
<tr>
<td>6</td>
<td>10%</td>
<td>33%</td>
</tr>
<tr>
<td>7</td>
<td>15%</td>
<td>43%</td>
</tr>
<tr>
<td>8+</td>
<td>28%</td>
<td>53%</td>
</tr>
</tbody>
</table>

Endoscopy – Non-Variceal bleeding (5)

What interventions are available?
Standard

- Injection – Adrenaline (1:10,000), Fibrin, Sclerosants
- Thermal - Heater probe, Gold probe, diathermy
- Mechanical devices - clips
Endoscopy – Non-Variceal bleeding (6)

**Novel**

- **Barrier methods**
  - Hemospray, Endoclot & Ankaferd
- **New “bear claw” clips**
  - Ovesco, Padlock
Landmarks in Interventional outcomes

• **Adrenaline Injection – 1988**
  – 1:10,000 – 100% haemostasis with 24% re-bleed

• **Volume of Adrenaline – 2002**
  – 16 ml (15%) vs 8ml (30%) re-bleed after peptic ulcer injection
  – RCT evidence for >13ml (increased pain & perforation risk >40ml)

• **Combination therapy – 1997**
  – Combined treatment significantly reduced re-bleeding and emergency surgery in those with spurting vessels
  – Heater probe produces coaptive coagulation in addition to the vasoconstriction and tamponade effect of adrenaline injection

• **Combination therapy – 2004**
  – Adrenaline + Thermal / clips in high-risk bleeding ulcers
  – Reduced re-bleeding (18.4 to 10.6%), Emergency surgery (11.3 to 7.6%) and mortality (5.1 to 2.6%)

Outcomes of Endoscopic Management

- Haemostasis @ 95%
- Re-bleeding @ 15%
- Death @ 6-8% - irrespective of any optimal endoscopic & medical treatment
  - Prospective cohort study >10,000 cases
  - “Majority of patients died from non-bleeding-related causes” – Responsible for @80% of deaths
  - “Optimisation of management should aim at reducing the risk of multi-organ failure and cardio-pulmonary death instead of focusing merely on successful hemostasis”

Endoscopic failure (1)

**Following index endoscopy**
- Consider “second-look” Endoscopy - better / additional kit or personnel

**Re-bleeding**
- Associated with increased mortality & law of “diminishing returns”
  - NVUGB
    - Re-bleed endoscopic review – Lau et al 1999
    - Main study finding – no better than surgery
    - BUT Less complications
    - Endoscopy is 1\textsuperscript{st} and 2\textsuperscript{nd} choice in non-variceal upper GI bleeding
    - Subsequent recurrent severe bleeding can be treated by Interventional Radiology or Surgery – former preferable when available

- Variceal bleeding
  - Minnestota tube, Self Expandable Metal Stents (SEMS) or Trans-jugular Intrahepatic Porto-Systemic Shunt (TIPSS)

Conclusions

- Prompt recognition, resuscitation, risk assessment crucial
- Pay attention to co-morbidities and unwanted drug Rx
- Involve critical care early for suspected variceal bleeds, high risk or unstable patients
- Use the Cirrhosis care bundle and give Terlipressin & Abs
- Endoscopy only when stable (2-24 hours)
- Strive to treat patient in the right place
- We often need help – other endoscopists / kit, Interventional radiologists or surgeons
- Deaths still happen – review and learn