Common ED Presentations

Dr Ben McKenzie
Emergency Physician
Co-Director Emergency Medicine Training
Bendigo Health
Chest Pain
# Chest Pain

<table>
<thead>
<tr>
<th>Common but won’t die on discharge</th>
<th>May die on discharge or in the department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflux Oesophagitis</td>
<td>Acute Coronary Syndromes</td>
</tr>
<tr>
<td>Musculoskeletal chest Pain</td>
<td>Aortic Dissection</td>
</tr>
<tr>
<td></td>
<td>Pulmonary Embolism</td>
</tr>
</tbody>
</table>
Benign causes

• Musculoskeletal
  – Might be very focal
  – Might be worse on movement
  – Might be a precipitant
  – Might be indistinguishable from a coronary syndrome
  – Might be a case where an experienced clinician will diagnose this as benign.

• Reflux
  – Might be worse at night
  – Might be a history of the reflux
  – Might be indistinguishable from a more serious cause
  – But angina gets better with mylanta fairly frequently.
• Some experienced clinicians might feel comfortable diagnosing a benign chest pain clinically (ie no blood tests) but this is the minority of cases.

• “atypical chest pain” is typical.
How Useful Are Clinical Features in the Diagnosis of Acute, Undifferentiated Chest Pain?

STEVE GOODACRE, MB, CHB, MRCP, FFAEM, MSc,
TOM LOCKER, MB, CHB, FRANCIS MORRIS, MRCP, FRCS,
STEPHEN CAMPBELL, BSc, MD, FRCP

<table>
<thead>
<tr>
<th>Clinical Feature</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain site</td>
<td>—</td>
<td>—</td>
<td>0.79</td>
</tr>
<tr>
<td>Radiation to shoulder</td>
<td>6.0</td>
<td>2.0, 17.6</td>
<td>0.0012</td>
</tr>
<tr>
<td>Radiation to left arm</td>
<td>1.5</td>
<td>0.6, 4.0</td>
<td>0.38</td>
</tr>
<tr>
<td>Radiation to right arm</td>
<td>3.2</td>
<td>0.4, 27.4</td>
<td>0.28</td>
</tr>
<tr>
<td>Radiation to throat</td>
<td>2.6</td>
<td>0.3, 21.9</td>
<td>0.37</td>
</tr>
<tr>
<td>Radiation to neck</td>
<td>—</td>
<td>—</td>
<td>0.72</td>
</tr>
<tr>
<td>Radiation to back</td>
<td>1.1</td>
<td>0.2, 5.3</td>
<td>0.86</td>
</tr>
<tr>
<td>Radiation to both arms</td>
<td>7.7</td>
<td>2.7, 21.9</td>
<td>0.0001</td>
</tr>
<tr>
<td>Sharp/stabbing pain</td>
<td>0.5</td>
<td>0.1, 2.8</td>
<td>0.41</td>
</tr>
<tr>
<td>Burning/indigestion pain</td>
<td>4.0</td>
<td>0.8, 20.1</td>
<td>0.09</td>
</tr>
<tr>
<td>Ache</td>
<td>1.9</td>
<td>0.4, 9.4</td>
<td>0.41</td>
</tr>
<tr>
<td>Crushing/gripping pain</td>
<td>0.9</td>
<td>0.1, 6.5</td>
<td>0.91</td>
</tr>
<tr>
<td>Heavy/pressing pain</td>
<td>1.1</td>
<td>0.2, 5.1</td>
<td>0.90</td>
</tr>
<tr>
<td>Pain duration</td>
<td>1.0</td>
<td>0.995, 1.005</td>
<td>0.94</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>1.8</td>
<td>0.9, 3.6</td>
<td>0.10</td>
</tr>
<tr>
<td>Diaphoresis</td>
<td>1.4</td>
<td>0.7, 2.9</td>
<td>0.29</td>
</tr>
<tr>
<td>Exertional pain</td>
<td>3.1</td>
<td>1.5, 6.4</td>
<td>0.0025</td>
</tr>
<tr>
<td>Pleuritic pain</td>
<td>0.5</td>
<td>0.1, 2.1</td>
<td>0.34</td>
</tr>
<tr>
<td>Relief after taking glyceryl trinitrate</td>
<td>2.1</td>
<td>0.4, 10.9</td>
<td>0.38</td>
</tr>
<tr>
<td>Tender chest wall</td>
<td>0.2</td>
<td>0.1, 1.0</td>
<td>0.05</td>
</tr>
<tr>
<td>Clinical Feature</td>
<td>Odds Ratio</td>
<td>95% Confidence Interval</td>
<td>p-value</td>
</tr>
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<td>----------------------------------</td>
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</tr>
<tr>
<td>Radiation to shoulder</td>
<td>5.7</td>
<td>1.5, 21.4</td>
<td>0.009</td>
</tr>
<tr>
<td>Radiation to both arms</td>
<td>4.9</td>
<td>1.3, 19.4</td>
<td>0.02</td>
</tr>
<tr>
<td>Burning/indigestion pain</td>
<td>3.4</td>
<td>0.4, 31.0</td>
<td>0.27</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>1.3</td>
<td>0.5, 3.3</td>
<td>0.54</td>
</tr>
<tr>
<td>Exertional pain</td>
<td>3.3</td>
<td>1.3, 8.4</td>
<td>0.014</td>
</tr>
<tr>
<td>Tender chest wall</td>
<td>0.2</td>
<td>0.05, 0.97</td>
<td>0.045</td>
</tr>
</tbody>
</table>
IHD - How do we diagnose/risk stratify?

• ECG
  – This is why we give Category 2 to all chest pains.
  – Only test needed to determine need for reperfusion.
  – Only 50% sensitive overall for ACS
• Door to needle time should be 30 minutes

• Should much less with prehospital notification.

• If pain been present for longer than 1 hour and cath lab is achievable within 90 minutes, then cath lab option better than thrombolysis.
Some ECGs are ischaemic but don’t need reperfusion – risk stratify high

- Eg Dynamic changes
  - ST changes
  - T wave inversion
ECGs only pick up 50% of acute coronary syndromes

• That’s why we need troponins!!

• Troponins help us risk stratify people into a high risk group (get admitted) vs a low risk group (get to go home).
Why do troponins?

- If your troponin is up then you are more likely to die in the next 28 days.
- If it is negative, in Australia, we think it is safe to upgrade medical therapy and follow up as an outpatient.
- There are a few patients that the ED must advocate to the cardiologist for....
Why we wait for troponins
NHF Risk Stratification
Don’t forget

• There are many causes of troponin rises....
Aortic Dissection
Intima tear allows blood to enter true lumen narrowed.

Adventitia

Media

High pressure blood in lumen

Intimal flap

False lumen (blood or clot)
When should we think about dissection?

• Someone who has risk factors – HT and Connective tissue disorders.
• Sudden pain
• Associated leg or arm symptoms
• Pain moving
• Pain won’t go away
What is the right test?

CT!

What is the treatment?

BP Control with B blocker and vasodilator
+ Time critical surgery for those involving the ascending aorta
PE
Shortness of breath is a more significant symptom than chest pain.

Chest pain is usually pleuritic but may be central chest tightness.

Symptoms often persist in the cubicle.

The mortality rate has not changed in decades.
How to diagnose it

If the diagnosis is likely, then the CTPA or VQ gets ordered without D-Dimers or further thought!

Patients vary in their presentations
PERC Rule

PERC = Pulmonary Embolism Rule-out Criteria

Journal of Thrombosis and Haemostasis, 6: 772–780

DOI: 10.1111/j.1538-7836.2008.02944.x

ORIGINAL ARTICLE

Prospective multicenter evaluation of the pulmonary embolism rule-out criteria

J. A. KLINE,* D. M. COURTNEY,† C. KABRHEL,‡ C. L. MOORE,§, H. A SMITHLINE,¶
M. C. PLEWA,** P. B. RICHMAN,†† B. J. O’NEIL‡‡ and K. NORDENHOLZ§§
All PERC Criteria must be met and “gestalt –ve”

- age < 50 years
- pulse < 100 beats min
- SaO2 >or= 95%
- no hemoptysis
- no estrogen use
- no surgery/trauma requiring hospitalization within 4 weeks
- no prior venous thromboembolism (VTE)
- no unilateral leg swelling
### PERC Rule for Pulmonary Embolism
Shows the PERC criteria, which can rule out PE if all criteria are present and pre-test probability is ≤15%.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 50?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>HR &lt; 100?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>O2 Sat on Room Air &gt; 94%?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>No Prior History of DVT/PE?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>No Recent Trauma or Surgery?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>No Hemoptysis?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>No Exogenous Estrogen?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>No Clinical Signs Suggesting DVT?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>Patient has none of these</td>
<td>None Present</td>
</tr>
</tbody>
</table>

**Score:**

[Click!](#) points
D-Dimers

If you can’t use the PERC rule and you are worried then:

Consider Wells criteria and D-Dimer

Can I apply a D-Dimer to get me out of the CT?
### Wells’ Criteria for Pulmonary Embolism / PE

Calculates Wells’ Score for risk of PE.

<table>
<thead>
<tr>
<th>Clinical Signs and Symptoms of DVT?</th>
<th>Yes +3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE Is #1 Diagnosis, or Equally Likely</td>
<td>Yes +3</td>
</tr>
<tr>
<td>Heart Rate &gt; 100?</td>
<td>Yes +1.5</td>
</tr>
<tr>
<td>Immobilization at least 3 days, or Surgery in the Previous 4 weeks</td>
<td>Yes +1.5</td>
</tr>
<tr>
<td>Previous, objectively diagnosed PE or DVT?</td>
<td>Yes +1.5</td>
</tr>
<tr>
<td>Hemoptysis?</td>
<td>Yes +1</td>
</tr>
<tr>
<td>Malignancy w/ Treatment within 6 mo, or palliative?</td>
<td>Yes +1</td>
</tr>
<tr>
<td>Patient has none of these</td>
<td>None Present</td>
</tr>
</tbody>
</table>

#### Score

6

**Moderate risk group:** 16.2% chance of PE in an ED population. Another study assigned scores > 4 as 'PE Likely' and had a 28% incidence of PE.


Treatment in the cubicle

Chest Pain

- ECG
- Aspirin
- Treat pain so that patients are pain free.
- CXR
- Bloods
Abdominal Pain Pearls
Woman of child bearing age

• Will kill patient:
  – Ruptured Ectopic Pregnancy

• Will cause patient significant morbidity
  - Appendicitis
  - Torted ovary

• Will cause patient long term problems and patient may get quite sick:
  Pelvic Inflammatory Disease
Child

Will kill patient: Malrotation with volvulus

Will cause significant morbidity:
  Intussusception
  Appendicitis

May get sicker:
  UTI
Approach to child with abdominal Pain

• If not sick
  – Analgesia
  – Urine if possible
  – Reassess.

  – Many presentations of children with abdominal pain will be benign viral adenitis or intestinal cramps. Most of these are significantly better and symptom free after analgesia.
Epigastric Pain

- Pancreatitis
- Biliary Colic
- Peptic Ulcers
- AAA (>50 years)

- FBC
- U+E
- LFTS
- Lipase
- Bedside US
Renal Colic
Constipation in Adults

• Is a symptom not a diagnosis
• We should be experts at differentiating between constipation as a presenting symptom and sorting that out vs a doctor trying to give a terrible and dangerous “diagnosis” when they don’t know what is causing the patient's abdominal pain.
Warfarin in the ED

• Warfarin indications
  – To prevent stroke in AF or mechanical heart valves
  – DVT/PE

  – Stops the liver re-using Vit K to make clotting factors 2,7,9&10
  – Measured by INR
Causes of an increased INR

• Intercurrent illness
• New medications
• Poor compliance
• Change in diet

• Patients on warfarin may need more or less

• Every patient coming through ED needs an INR
Other indications for a blue tube

- Snake bites
- Sick ICU type patient who may have DIC
- Liver disease patients
- Patients on warfarin
- D-Dimer for rule out PE

- Other patients don’t need a blue tube and plenty of doctors need education about this.
Warfarin Reversal

• Prothrombinex is instant and the effect is on the end of the needle.

• FFP is also instant – we give one bag on top of prothrombinex because PTX is low in factor 7. But it takes 30 minutes to thaw.

• Vit K takes hours to work – the liver needs to make more clotting factors
Prothrombinex

• Is a slow push over 20-30 seconds for each 20ml vial.
• Connect the blue side of the connector to the blue top of the water.