Best evidence topic reports (BETS) summarise the evidence pertaining to particular clinical questions. They are not systematic reviews, but rather contain the best (highest level) evidence that can be practically obtained by busy practising clinicians. The search strategies used to find the best evidence are reported in detail in order to allow clinicians to update searches whenever necessary.

The BETS published below were first reported at the Critical Appraisal Journal Club at the Manchester Royal Infirmary. Each BET has been constructed in the four stages that have been described elsewhere. The four topics covered in this issue of the journal are:

1. Signs and symptoms of oesophageal coins
2. Immobilisation of suspected scaphoid fractures
3. Activated charcoal in tricyclic antidepressant overdose
4. Acute analgesia in non-traumatic abdominal pain

Table 1

<table>
<thead>
<tr>
<th>Author, date, and country</th>
<th>Patient group</th>
<th>Study type</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hodge et al, 1985, USA¹</td>
<td>92 children attending an emergency department with a history of coin ingestion. 25 oesophageal coins</td>
<td>Retrospective survey</td>
<td>Proportion of oesophageal coins that were asymptomatic</td>
<td>11 of 25 (44%) asymptomatic</td>
<td></td>
</tr>
<tr>
<td>Caravati et al, 1989, USA¹</td>
<td>66 children attending for chest x ray with a history of coin ingestion. 11 oesophageal coins</td>
<td>Prospective survey</td>
<td>Proportion of oesophageal coins that were asymptomatic</td>
<td>2 of 11 (18%) asymptomatic</td>
<td></td>
</tr>
<tr>
<td>Schunk et al, 1989, USA¹</td>
<td>52 children attending an emergency department with a history of coin ingestion. 30 oesophageal coins</td>
<td>Prospective survey</td>
<td>Proportion of oesophageal coins that were asymptomatic</td>
<td>9 of 30 (32%) asymptomatic</td>
<td></td>
</tr>
<tr>
<td>Suits et al, 1989, Japan¹</td>
<td>141 children attending an emergency department with a history of ingested foreign body. 11 oesophageal coins</td>
<td>Retrospective survey</td>
<td>Proportion of oesophageal coins that were asymptomatic</td>
<td>7 of 11 (64%) asymptomatic</td>
<td></td>
</tr>
<tr>
<td>Stringer et al, 1991, UK¹</td>
<td>50 children with a history of coin ingestion. 15 oesophageal coins</td>
<td>Retrospective survey</td>
<td>Proportion of oesophageal coins that were asymptomatic</td>
<td>9 of 15 (60%) asymptomatic</td>
<td></td>
</tr>
<tr>
<td>Conners et al, 1995, USA¹</td>
<td>73 children with oesophageal coins</td>
<td>Retrospective survey</td>
<td>Proportion of oesophageal coins that were asymptomatic</td>
<td>5 of 73 (7%) asymptomatic</td>
<td></td>
</tr>
<tr>
<td>Macpherson et al, 1996, USA¹</td>
<td>118 children with 123 episodes of retained oesophageal foreign bodies. 85 oesophageal coins</td>
<td>Retrospective survey</td>
<td>Proportion of oesophageal foreign bodies that were asymptomatic</td>
<td>20% asymptomatic</td>
<td>Not only coins studied and results for coins alone not clear</td>
</tr>
</tbody>
</table>

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Table 2

<table>
<thead>
<tr>
<th>Author, date, and country</th>
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<th>Outcomes</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Duncan and Thurston, 1985, UK'</td>
<td>108 patients with a diagnosis of clinical fracture of the scaphoid</td>
<td>Retrospective survey</td>
<td>Proportion of patients found to have a fracture</td>
<td>0 of 108 (0%)</td>
<td></td>
</tr>
<tr>
<td>DaCruz et al, 1988, UK'</td>
<td>150 wrists immobilised on plaster with suspected scaphoid fracture</td>
<td>Retrospective survey</td>
<td>Fracture rate</td>
<td>8 of 150 (5.33%)</td>
<td></td>
</tr>
<tr>
<td>Sjolin and Andersen, 1988, Denmark'</td>
<td>108 clinically suspected scaphoid fractures</td>
<td>PRCT</td>
<td>Fracture rate</td>
<td>7 of 108</td>
<td>Only 2 weeks follow up</td>
</tr>
<tr>
<td>Jacobsen et al, 1995, Denmark'</td>
<td>231 clinically suspected scaphoid fractures</td>
<td>Retrospective survey</td>
<td>Proportion of patients found to have a fracture</td>
<td>3 of 231 (1.3%)</td>
<td></td>
</tr>
</tbody>
</table>

PRCT = prospective randomised controlled trial.

Immobilisation of suspected scaphoid fractures
Report by Kathryn Gow, Medical Student
Search checked by Rob Williams, Clinical Fellow

Clinical scenario
A 25 year old man attends the emergency department with a one day old wrist injury caused by falling onto his outstretched hand. He is tender in his anatomical snuff box and also on longitudinal thumb compression, but he is in very little pain on normal everyday movements. You send him for a scaphoid series of x rays which reveal no fracture. You arrange for him to return to the department in two weeks time for a repeat radiological and clinical examination. You wonder whether his wrist should be immobilised in a plaster cast or whether a simple elastic support bandage will suffice.

Three part question
In [patients with clinical signs of scaphoid fracture but no fracture on first x ray] is [plaster casting] necessary for [immediate management and the prevention of long term complications]?

Search strategy
Medline 1966 to 12/99 using the OVID interface. [(exp fractures OR exp fractures, closed OR exp fractures, malunited OR exp fractures, ununited OR fractures$.$mp)] AND (scaphoid$.$mp)] AND [exp casts, surgical OR cast$.mp OR plaster.mp OR exp splints OR splint$.mp OR exp immobilisation OR immobilisation.mp)] LIMIT to human AND english.

Search outcome
Altogether 435 papers were found of which 428 were irrelevant or of insufficient quality. The remaining seven papers are shown in table 1.

Comments
All studies show that a significant number of children with oesophageal coins are asymptomatic.

Clinical bottom line
All children with a history of coin ingestion should have further investigation to exclude oesophageal impaction.

## Table 3

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Crome et al, 1977, UK¹</td>
<td>Health volunteers given 75 mg amitriptyline 10 g medicinal at 30 min</td>
<td>Experimental</td>
<td>Plasma nortriptyline concentration</td>
<td>No significant difference in rate of fall noted</td>
<td>Small dose of TCA</td>
</tr>
<tr>
<td>Crome et al, 1983, UK²</td>
<td>48 patients with suspected TCA overdose. All had gastric lavage 10 g medicinal = nothing</td>
<td>PRCT</td>
<td>Plasma TCA concentration</td>
<td>No significant difference</td>
<td>Small numbers with complications. Small charcoal dose. 18 patients excluded</td>
</tr>
<tr>
<td>Karkkainen and Neuvonin, Germany³</td>
<td>6 healthy volunteers. Each took 75 mg amitriptyline 50 g charcoal within 5 min</td>
<td>Experimental</td>
<td>Plasma TCA absorption</td>
<td>Decreased by 99%</td>
<td>Small dose of TCA</td>
</tr>
<tr>
<td>Hulten et al, 1988, Multinational⁴</td>
<td>77 patients over 14 years old with TCA overdose. All had gastric lavage 20 g charcoal = nothing</td>
<td>PRCT</td>
<td>Plasma TCA concentration Clinical signs</td>
<td>No significant difference in peak or half life</td>
<td>Unrealistic time to charcoal dose. Control group differed from charcoal group at baseline</td>
</tr>
</tbody>
</table>

PRCT = prospective randomised controlled trial.

### Activated charcoal in tricyclic antidepressant overdose

**Report by Claire Park, Medical Student**

**Search checked by Katrina Richell-Herren, Research Fellow**

**Clinical scenario**

A 25 year old woman attends the emergency department having taken an overdose of amitriptyline. You wonder whether she will benefit from treatment with activated charcoal.

**Three part question**

In [adults who have taken a tricyclic antidepressant (TCA) overdose] is [activated charcoal] effective at [reducing drug absorption and reducing complication rates]?

**Search strategy**


### Analgesia and assessment of abdominal pain

**Report by Kevin Mackway-Jones, Consultant**

**Search checked by Magnus Harrison, Research Fellow**

**Clinical scenario**

A 12 year old girl presents to the emergency department with “tummy ache”. The history and examination are suggestive of appendicitis. You call the surgical team but they are unable to attend for one hour as they are busy in theatre. You wonder if giving analgesia will affect the accuracy of the surgical diagnosis.

**Three part question**

In [patients with abdominal pain] does [analgesia prior to surgical consultation] affect [the accuracy of surgical diagnosis]?

**Search strategy**

Medline 1966 to 12/99 using the OVID interface. ([Exp abdominal pain OR abdominal pain$\text{.mp}$ OR exp peritonitis OR peritonitis$\text{.mp}$] OR [exp pain OR pain$\text{.mp}$] AND [abdom$\text{.mp}$ OR exp stomach OR stomach$\text{.mp}$ OR tummy$\text{.mp}$]) AND [exp analgesia OR exp morphine OR exp analgesia, opioid OR analgesia$\text{.mp}$] AND maximally sensitive RCT filter LIMIT to human and english.
Altogether 78 papers were found of which 73 were irrelevant or of insufficient quality for inclusion. The remaining five papers are shown in table 4.

### Comment
All the studies show considerable benefit to the patient from pain relief with either no change in diagnostic accuracy or an improvement.

### Clinical bottom line
Patients with acute, atraumatic abdominal pain should have analgesia administered without delay.

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**Table 4**

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<tr>
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</thead>
<tbody>
<tr>
<td>Zoltie and Cust, 1986, UK</td>
<td>288 patients with acute abdominal pain Buprenorphine 200 µg v buprenorphine 400 µg v placebo</td>
<td>PRCT</td>
<td>Pain relief</td>
<td>Proportional to dosage</td>
<td>Not affected</td>
</tr>
<tr>
<td>Attard et al, 1992, UK</td>
<td>100 consecutive patients admitted to a surgical firm Papaveretum 20 mg v normal saline</td>
<td>PRCT</td>
<td>Pain score</td>
<td>Significantly better with papaveretum (p&lt;0.0001)</td>
<td>Papaveretum no longer used</td>
</tr>
<tr>
<td>Pace and Burke, 1996, USA</td>
<td>71 adult patients with acute, atraumatic abdominal pain in an emergency department Morphine IV (35) v normal saline (36)</td>
<td>PRCT</td>
<td>Pain score</td>
<td>Significantly better with morphine (p=0.001)</td>
<td>No difference</td>
</tr>
<tr>
<td>LoVecchio et al, 1997, USA</td>
<td>48 patients with acute abdominal pain Morphine 10 mg v morphine 5 mg v placebo</td>
<td>PRCT</td>
<td>Accuracy of provisional diagnosis</td>
<td>No difference</td>
<td>Very small numbers</td>
</tr>
<tr>
<td>Vermeulen et al, 1999, Switzerland</td>
<td>340 patients aged 16 years or more with suspected appendicitis Morphine IV (175) v placebo (165)</td>
<td>PRCT</td>
<td>Pain relief</td>
<td>Greater in morphine group</td>
<td>No significant difference</td>
</tr>
</tbody>
</table>

**Search outcome**
Altogether 78 papers were found of which 73 were irrelevant or of insufficient quality for inclusion. The remaining five papers are shown in table 4.

**Comment**
All the studies show considerable benefit to the patient from pain relief with either no change in diagnostic accuracy or an improvement.

**Clinical bottom line**
Patients with acute, atraumatic abdominal pain should have analgesia administered without delay.

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The BMA library supplied the papers.