

## BEST EVIDENCE TOPIC REPORTS

## Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary

Edited by K Mackway-Jones

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.<sup>1</sup> Each BET has been constructed in the four stages that have been described elsewhere.<sup>2</sup> Four positive and two negative BETs are reported in this issue of the journal. The six topics covered in this issue of the journal are:

*Positive BETs*

- Ingested coins and metal detection
- Regional anaesthesia for femoral shaft fractures in children
- Activated charcoal in paracetamol overdose
- Management of uncomplicated soft tissue gunshot wounds

*Negative BETs*

- Repair of partial lacerations of the extensor tendons of the hand
- Early management of displaced nasal fractures

For the first time "Guest BETs" are also included. The four BETs shown below were first presented at the monthly Academic Specialty Training in Emergency Medicine (STEM) meetings of the Specialty Registrars on the North Western training scheme.

*Guest BETs*

- Antibiotics in base of skull fractures
- Glucose or glucagon for hypoglycaemia
- Closure of pretibial lacerations
- Digital or metacarpal block for finger injuries

1 Carley SD, Mackway-Jones K, Jones A, *et al.* Moving towards evidence based emergency medicine: use of a structured critical appraisal journal club. *J Accid Emerg Med* 1998;15:220-2.

2 Mackway-Jones K, Carley SD, Morton RJ, *et al.* The best evidence topic report: a modified CAT for summarising the available evidence in emergency medicine. *J Accid Emerg Med* 1998;15:222-6.

**Ingested coins and metal detection**

Report by Sue Maurice, *Consultant*  
Search checked by Kevin Mackway-Jones, *Consultant*

*Clinical scenario*

A 3 year old boy is brought into the emergency department by his mother. She says that he swallowed a coin two hours earlier. The boy is asymptomatic. You know it is important to rule out oesophageal impaction and wonder whether a metal detector can accurately show whether the coin is above or below the diaphragm.

*Three part question*

In [children who have swallowed coins] is [a metal detector] accurate at [ruling out oesophageal impaction]?

*Search strategy*

Medline 1966-03/00 using the OVID interface. ({exp numismatics OR coin\$.mp OR exp foreign bodies OR foreign body.mp OR foreign bodies.mp} AND {exp pediatrics OR pediatric\$.mp OR paediatric\$.mp OR child\$.mp} AND {ingest\$.mp OR swallow\$.mp OR exp esophagus OR esophagus.mp OR esophageal.mp OR oesophagus.mp OR oesophageal.mp}) LIMIT to human AND english.

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Table 1

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Bassett KE <i>et al</i> , 1999, USA <sup>1</sup>	176 children attending an emergency department with a known or suspected metallic foreign body. Age range 6 months to 15 years.	Diagnostic	Experienced operators	Sensitivity 100% Specificity 92.4%	Sample size limits power
	Hand held metal detector in experienced and inexperienced hands. Radiographic gold standard		Inexperienced operators	Sensitivity 95.75% Specificity 81% 3 false negatives	
Seikel K <i>et al</i> , 1999, USA <sup>2</sup>	91 children with suspected coin ingestion. Age range 9 months to 17 years. Radiographic gold standard	Diagnostic	Inexperienced operators	Sensitivity 100%	Sample size limits power

*Search outcome*

Altogether 435 papers were found of which 433 were irrelevant or of insufficient quality. The remaining two papers are shown in table 1.

*Clinical bottom line*

Hand held metal detectors are sensitive enough to be used to SnNout the presence of oesophageal metallic foreign bodies in children.

*Comments*

These studies are small scale and apply only to children. The accuracy in obese children is not established.

- 1 Bassett KE, Schunk JE, Logan L. Localizing ingested coins with a metal detector. *Am J Emerg Med* 1999;17:338–41.
- 2 Seikel K Primm PA, Elizondo BJ, *et al*. Handheld metal detector localization of ingested metallic foreign bodies. Accuracy in any hands? *Arch Pediatr Adolesc Med* 1999;153:853–7.

### Regional anaesthesia for femoral shaft fractures in children

Report by Rob Williams, *Clinical Fellow*

Search checked by Paul Wallman, *Clinical Fellow*

*Clinical scenario*

A 6 year old child presents to the emergency department with an undisplaced fracture of the mid-femur. You have used femoral nerve blocks in adult patients with similar fractures and wonder whether this block is useful in children.

*Three part question*

In [children with femoral shaft fractures] is [femoral nerve block] effective in [reducing pain and distress and reducing the need for supplemental analgesia]?

*Search strategy*

Medline 1966–03/00 using the OVID interface. [(exp femur OR femur.mp OR femoral.mp) AND {exp fractures OR exp fractures-,closed OR exp fractures, open OR fracture\$.mp}) OR exp femoral fractures OR femoral fracture\$.mp] AND {exp anaesthesia, local OR local anaesthesi\$ OR exp nerve block OR regional anesthetic.mp OR nerve block.mp OR femoral block.mp} LIMIT to human AND english.

*Search outcome*

Altogether 39 papers were found of which 36 were irrelevant or of insufficient quality. The remaining three papers are shown in table 2.

Table 2

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Tondare AS and Nadkarni AV, 1982, India <sup>1</sup>	25 patients with fractured shaft of femur aged 5–35 years. Lignocaine blocks	Observational	Pain	Reduced	Not controlled. Pain scores not reported. No statistical analysis.
	Subjective and objective measures of pain before and after the block		Need for supplemental analgesia	5 of 25	
McGlone R <i>et al</i> , 1987, UK <sup>2</sup>	27 consecutive patients with femoral shaft fractures. 3 children. Lignocaine blocks.	Observational	Pain score	Falls noted	Not controlled. No statistical analysis.
	Pain assessed pre and post block				
Ronchi L <i>et al</i> , 1989, France <sup>3</sup>	14 children with fractures of the femoral shaft aged 2–10 years. Bupivacaine blocks.	Observational	Pain scale	Marked falls in 13 of 14 children	Not controlled. No statistical analysis.
	Pain assessed pre and post block		Need for supplemental analgesia	None in 13 of 14 children	
			Time to onset of pain	8 +/- 3.5 min	

*Comments*

None of the studies are of high quality in that none had a control group. Nevertheless the evidence suggests that femoral nerve block is effective in children.

*Clinical bottom line*

Femoral nerve block is effective in reducing the

pain of femoral shaft fractures in children.

- 1 Tondare A, Nadkarni AV. Femoral nerve block for fractured shaft of femur. *Can Anaest Soc J* 1982;29:270-1.
- 2 McGlone R, Sadhra K, Hamer DW, *et al.* Femoral nerve block in the initial management of femoral shaft fractures. *Arch Emerg Med* 1987;4:163-8.
- 3 Ronchi L, Rosenbaum D, Athouel A, *et al.* Femoral nerve blockade in children using bupivacaine. *Anesthesiology* 1989;70:622-4.

### Activated charcoal in paracetamol overdose

Report by Katrina Richell-Herren, *Research Fellow*

Search checked by Magnus Harrison, *Research Fellow*

*Clinical scenario*

A 23 year old woman attends the emergency department having taken 60 500 mg paracetamol tablets two hours before presentation. You wonder whether she should receive activated charcoal.

*Three part question*

In [patients poisoned with paracetamol] does [activated charcoal alone or in combination with other treatments] reduce [hepatotoxicity]?

*Search strategy*

Medline 1966-03/00 using the OVID interface. [(acetaminophen.mp OR paracetamol.mp) AND (exp poisoning OR poisoning.mp OR exp overdose OR overdose.mp)] AND (exp charcoal OR charcoal.mp) LIMIT

to human AND english.

*Search outcome*

Altogether 71 papers found of which 68 were irrelevant or of insufficient quality. The remaining three papers are shown in table 3.

*Comments*

There are no high quality studies in this area. In particular there are no data to indicate how long after poisoning activated charcoal remains effective.

*Clinical bottom line*

Activated charcoal should be given to all patients with significant paracetamol poisoning who present acutely.

- 1 Underhill TJ, Greene MK, Dove AF. A comparison of the efficacy of gastric lavage, ipecacuana and activated charcoal in the emergency management of paracetamol overdose. *Arch Emerg Med* 1990;7:148-54.
- 2 Spiller HA, Krenzelok EP, Grande GA, *et al.* A prospective evaluation of the effect of activated charcoal before oral N acetylcysteine in acetaminophen overdose. *Ann Emerg Med* 1994;24:519-23.
- 3 Buckley NA, Whyte IM, O'Connell DL, *et al.* Activated charcoal reduces the need for N-acetylcysteine treatment after acetaminophen (paracetamol) overdose. *J Toxicol Clin Toxicol* 1999;37:753-7.

Table 3

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Underhill TJ <i>et al</i> , 1990, UK <sup>1</sup>	60 patients who had taken 5 g or more of paracetamol within 4 hours of attendance. Gastric lavage (14) <i>v</i> ipecacuana (21) <i>v</i> activated charcoal (20) <i>v</i> nothing (5)	RCT	Plasma concentrations at 0, 60, 90 and 150 minutes post treatment	Activated charcoal group had significantly better fall in paracetamol concentration at 150 min	Small study
Spiller HA <i>et al</i> , 1994, USA <sup>2</sup>	122 patients with paracetamol overdose within the previous 12 hours. Activated charcoal (40) <i>v</i> activated charcoal and N acetylcysteine (57) <i>v</i> activated charcoal and high dose N acetyl cysteine (25)	Observational study	Hepatotoxicity (defined as SGOT over 125 units/l)	Significantly less (5% <i>v</i> 20%) in groups receiving activated charcoal	Spectrum is of patients contacting a poisons centre. No power study.
Buckley NA <i>et al</i> , 1999, Australia <sup>3</sup>	981 consecutive paracetamol poisonings. Gastric lavage and charcoal <i>v</i> charcoal alone <i>v</i> nothing	Observational study	Risk of "high risk" concentration	Significantly less change of toxic level if activated charcoal given (odds ratio 0.36 {0.23-0.58})	

### Management of uncomplicated soft tissue gunshot wounds

Report by Kevin Mackway-Jones, *Consultant*

Search checked by Magnus Harrison, *Research Fellow*

*Clinical scenario*

A 24 year old man is brought to the emergency department by his friends having been shot in the leg. Examination of the thigh reveals a through and through wound with no bone,

Table 4

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Ritchie AJ and Harvey CF, 1990, UK <sup>1</sup>	64 patients (116 wounds) with gunshot and blast injuries GA for exploration and pull through (61) v minimum debridement under LA and saline wash (55). Both groups had antibiotics for 3 days.	Controlled clinical trial	Infection rate Hospital stay	No significant difference 8.5 days v 3.6 days.	Not randomised
Ordog GJ <i>et al</i> , 1993, USA <sup>2</sup>	3390 of 3684 patients with minor gunshot wounds.	Cohort	Overall infection rate Infection rate by antibiotic prescription Complicating factors	1.8% 40% of patients were given antibiotics. 56% of infections were in patients with antibiotics, 44% in patients without. Multiple injuries Delay to presentation Gross wound contamination Significant tissue devitalisation Large wounds	

nerve or major vessel involvement. You wonder whether simple entry and exit wound cleaning with or without antibiotics or surgical debridement is the best treatment.

#### Three part question

In [a young adult with an uncomplicated gunshot to soft tissue only] is [entry and exit wound care better than formal surgical debridement] in [preventing wound infection]?

#### Search strategy

Medline 1966–03/00 using the OVID interface. [(exp firearms OR gun\$.mp) AND (exp wounds and injuries OR wound\$.mp)] OR exp wounds, gunshot OR gunshot\$.mp] AND {exp irrigation OR lavage.mp OR exp debridement OR debridement.mp OR debride\$.mp} AND {exp antibiotics OR antibiotic\$.mp}] LIMIT to human AND english.

#### Search outcome

Altogether 77 papers found of which 75 were irrelevant or of insufficient quality for inclusion. The two remaining papers are shown in table 4.

#### Comment

There are no randomised trials in this area. The largest study has identified complicating factors but does not directly answer the question posed.

#### Clinical bottom line

Simple soft tissue gunshot wounds without complicating factors can be managed with minimum wound debridement and antibiotics.

- 1 Ritchie AJ, Harvey CF. Experience of low velocity gunshot injuries: a more conservative approach in selected cases *J R Coll Surg Edinb* 1990;35:302–4.
- 2 Ordog GJ, Sheppard GF, Wasserberger JS, *et al*. Infection in minor gunshot wounds. *J Trauma* 1993;34:358–65.

### Repair of partial lacerations of the extensor tendons of the hand

Report by Martin Smith, *Specialist Registrar*  
Search checked by Bruce Martin, *Clinical Fellow*

#### Clinical scenario

A 24 year old man is brought into the emergency department having sustained a laceration over the dorsal aspect of the metacarpophalangeal joint of the left index finger. You explore the wound and find that there is a 50% laceration of the extensor tendon. You wonder whether this requires repair.

#### Three part question

In [patients with partial extensor tendon lacerations] does [surgical repair or conservative management] result in [the quickest and fullest recovery]?

#### Search strategy

Medline 1966–03/00 using the OVID interface. [(exp tendon injuries OR tendon injuries.mp OR exp tendons OR extensor ten-

don\$.mp OR partial tendon laceration\$.mp] AND {extensor\$ OR dorsal\$}) AND {exp casts, surgical OR exp splints OR splint\$.mp OR exp surgical procedures, operative OR exp suture techniques OR conservative treatment\$.mp OR surgical repair\$.mp OR tendon repair.mp}] AND maximally sensitive RCT filter LIMIT to human AND english.

#### Search outcome

Altogether 141 papers were found of which none were relevant.

#### Comments

There is no direct evidence that can assist in answering this question. The trials of partial tendon repair that have been reported all involved flexor tendons. These results cannot be extrapolated to the extensor tendon.

#### Clinical bottom line

Local advice should be followed.

### Early management of displaced nasal fractures

Report by Terry Gilpin, *Specialist Registrar*  
Search checked by Simon Carley, *Specialist Registrar*

#### Clinical scenario

A 27 year old man attends the emergency department having been involved in a fight. He had been hit on the nose and has an obvious displaced nasal fracture without septal haematoma. As yet there is no gross swelling. You wonder whether immediate reduction would be better than delayed reduction.

#### Three part question

In [adults with displaced nasal fractures without gross swelling] is [early reduction better than late reduction] at [optimising functional and cosmetic recovery]?

#### Search strategy

Medline 1966–03/00 using the OVID interface. ({exp nose OR exp nose deformities, acquired OR nose.mp} AND {exp fractures OR fracture.mp}) AND maximally sensitive RCT filter LIMIT to human AND english.

#### Search outcome

Altogether 104 papers were found of which none were relevant.

#### Comments

There is no direct evidence that can assist in answering this question.

#### Clinical bottom line

Local advice should be followed.

### Antibiotics in base of skull fractures

Report by John Butler, *Specialist Registrar*  
Search checked by Simon Carley, *Specialist Registrar*

#### Clinical scenario

A 19 year old man attends the emergency department having been assaulted in a night club. He has sustained an isolated head injury with no loss of consciousness and is fully alert and orientated. He has CSF rhinorrhoea secondary to base of skull fracture. You wonder whether the administration of antibiotics will reduce the chances of meningitis developing.

#### Three part question

In [adults with isolated base of skull fractures] does [the administration of antibiotics] reduce [the incidence of meningitis]?

#### Search strategy

Medline 1966–03/00 using the OVID interface. [{exp skull fractures OR skull fracture\$.mp} OR ({exp fractures OR fracture\$.mp} AND {exp skull OR skull.mp})

AND {base.mp OR basilar.mp} AND {exp antibiotics OR antibiotic\$.mp}.

#### Search outcome

Altogether 27 papers were found of which 25 irrelevant or of insufficient quality for inclusion. The remaining two meta-analyses are shown in table 5.

#### Comment

There are two meta-analyses in this area. One is of high quality<sup>1</sup> while the other is not.<sup>2</sup> Whatever the quality of the meta-analysis the studies that they analyse are poor. A well designed randomised controlled trial is still needed to answer this question properly.

#### Clinical bottom line

Antibiotics have not been shown to decrease the risk of meningitis in patients with base of skull fractures with or without CSF leaks.

1 Villalobos T, Arango C, Kubilis P. Antibiotic prophylaxis after basilar skull fractures: a meta-analysis. *Clin Infect Dis* 1998;27:364–9.

2 Brodie HA. Prophylactic antibiotics for posttraumatic cerebrospinal fluid fistula. *Arch Otolaryngol Head Neck Surg* 1997;123:749–52.

Table 5

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Villalobos T <i>et al</i> , 1998, USA <sup>1</sup>	12 studies with data allowing analysis of the effectiveness of antibiotic use in preventing meningitis in basal skull fracture. 1241 patients of whom 719 received antibiotics and 522 did not.	Meta-analysis	Exact odds ratio of meningitis risk (odds of developing meningitis in the untreated <i>v</i> treated group) in all patients Exact odds ratio of meningitis risk in patients with CSF leak	1.15 (95% CI 0.68, 1.94) 1.34 (95% CI 0.75, 2.41)	
Brodie H, 1997, USA <sup>2</sup>	6 studies with data allowing analysis of the incidence of meningitis resulting from posttraumatic CSF fistula. 324 patients of whom 237 received antibiotics and 87 did not.	Meta-analysis	Meningitis rate	2.5% of those receiving antibiotics <i>v</i> 10% of those that did not	Only 15 cases of meningitis. No formal review of paper quality. No odds ratios or confidence intervals calculated

Table 6

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Collier A <i>et al</i> , 1987, UK <sup>1</sup>	52 consecutive insulin dependent diabetic patients with hypoglycaemic coma. IV glucagon 1 mg <i>v</i> IV glucose 25 g	Controlled clinical trial	Recovery time to "full orientation"	6.5 min <i>v</i> 4 min	Not randomised. Not blinded.
Patrick AW <i>et al</i> , 1990, UK <sup>2</sup>	29 consecutive insulin dependent diabetic patients with hypoglycaemic coma. IM glucagon 1 mg <i>v</i> IV glucose 25 g	PRCT	Recovery time to "full conscious level"  Failures	9 min <i>v</i> 3 min  2 glucagon failures	Not blinded. Small numbers.
Hvidberg A <i>et al</i> , 1992, Denmark <sup>3</sup>	10 healthy non-diabetic subjects with experimental insulin induced hypoglycaemia. IM glucagon 1 mg <i>v</i> IV glucose 25 g	Controlled experiment	Time to normoglycaemia	No significant difference	Non-diabetic subjects
Howell MA and Guly HR, 1997, UK <sup>4</sup>	28 insulin dependent diabetic patients with hypoglycaemic coma in the prehospital environment. IM glucagon 1 mg <i>v</i> IV glucose 25 g	Controlled clinical trial	Time to Glasgow Coma Scale score of 15	Significantly longer after glucagon	Block randomised. Not blinded. Small numbers.

### Glucose or glucagon for hypoglycaemia

Report by Russell Boyd, *Specialist Registrar*  
Search checked by Bernard Foëx, *Specialist Registrar*

#### Clinical scenario

An insulin dependent diabetic adult is brought into the emergency department uncooperative and acutely confused. A blood glucose stick test confirms hypoglycaemia. You wonder whether parenteral glucose or glucagon is the drug of first choice.

#### Three part question

In [insulin dependent diabetic adults with accidental hypoglycaemia] does [intravenous glucose or intramuscular glucagon] provide [faster, more reliable restoration of normoglycaemia]?

#### Search strategy

Medline 1966–03/00 using the OVID interface. [(exp glucose OR glucose.mp OR dextrose.mp) AND {IV.mp OR exp injections, intravenous OR intravenous.mp}) AND {exp glucagon OR glucagon.mp} AND {exp hypoglycaemia OR hypoglycaemia.mp OR hypoglycemia.mp}] LIMIT to human AND english.

### Closure of pretibial lacerations

Report by Muhammad Ahmad, *Specialist Registrar*  
Search checked by Bruce Martin, *Specialist Registrar*

#### Clinical scenario

A 70 year old woman presents to the emergency department with a pretibial flap laceration. The wound will need cleaning and then closing. You wonder whether adhesive strips or sutures should be used to achieve closure.

#### Three part question

In [elderly patients with pretibial lacerations] are [adhesive strips or sutures] better at

#### Search outcome

Altogether 166 papers were found of which 162 irrelevant or of insufficient quality for inclusion. The four remaining papers are shown in table 6.

#### Comment

Although no high quality evidence exists in this area it is clear that intravenous glucose works faster than intramuscular glucagon once the treatment has been given. The time to establish access has not, however, been accounted for. Glucagon "failures" have been reported.

#### Clinical bottom line

Intravenous glucose is the most reliable treatment for accidental hypoglycaemia. Once venous access is established it is also has the fastest effect.

- 1 Collier A, Steedman DJ, Patrick AW, *et al*. Comparison of intravenous glucagon and dextrose in treatment of severe hypoglycaemia in an accident and emergency department. *Diabetes Care* 1987;10:712–15.
- 2 Patrick AW, Collier A, Hepburn DA, *et al*. Comparison of intramuscular glucagon and intravenous dextrose in the treatment of hypoglycaemic coma in an accident and emergency department. *Arch Emerg Med* 1990;7:73–7.
- 3 Hvidberg A, Jorgensen S, Hilsted J. The effect of genetically engineered glucagon on glucose recovery after hypoglycaemia in man. *Br J Clin Pharmacol* 1992;34:547–50.
- 4 Howell MA, Guly H. A comparison of glucagon and glucose in prehospital hypoglycaemia. *J Accid Emerg Med* 1997;14:30–2.

[promoting rapid healing and minimising necrosis and infection]?

#### Search strategy

Medline 1966–03/00 using the OVID interface. {exp tibia OR tibia\$.mp OR pretibial.mp OR pre tibial.mp OR shin\$.mp} AND [(tape\$.mp OR strip\$.mp) AND {exp adhesives OR adhesive\$.mp}) OR steristrip\$.mp] LIMIT to human AND english.

#### Search outcome

Altogether five papers were found of which four were irrelevant or of insufficient quality for inclusion. The one remaining paper is shown in table 7.

Table 7

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Sutton R and Pritty P, 1985, UK <sup>1</sup>	45 patients with pretibial flap lacerations. Sutures (22) v steristrips (23)	PRCT	Healing time	53 days v 39 days	Small numbers
			Number of wounds with necrosis	16 v 8	
			Number of infected wounds	7 v 7	
			Number requiring rescue grafting	3 v 3	
			Healing time	25 days v 23 days	
	31 patients with pretibial linear lacerations. Sutures (15) v steristrips (16)		Number of wounds with necrosis	3 v 0	
			Number of infected wounds	2 v 2	
			Number requiring rescue grafting	none	

*Comment*

This study shows that pretibial lacerations heal faster with steristrips and exhibit less necrosis. This effect is more marked for flap lacerations. The study does not address the question of primary grafting of these injuries.

*Clinical bottom line*

Pretibial lacerations should be steristripped rather than sutured.

<sup>1</sup> Sutton R, Pritty P. The use of sutures or adhesive tapes for primary closure of pretibial lacerations. *BMJ* 1985;290:1627.

### Digital or metacarpal block for finger injuries

Report by Stuart McKirdy, *Senior House Officer*  
Search checked by Simon Carley, *Specialist Registrar*

jur\$.mp} AND {exp fingers OR finger\$.mp OR digit\$.mp}) AND {exp nerve block OR nerve block.mp OR exp anaesthesia,local OR local anaesthesia.mp OR ring block.mp] LIMIT to human AND english.

*Clinical scenario*

A 25 year old man presents to the emergency department after a crush injury to the left middle finger. There is a laceration over the distal phalanx involving the nail bed, which is disrupted. You wish to achieve local anaesthesia to allow wound exploration and repair and wonder whether ring block or metacarpal block is the best approach.

*Search outcome*

Altogether 66 papers were found of which 65 were irrelevant or of insufficient quality for inclusion. The one remaining paper is shown in table 8.

*Three part question*

In [patients requiring local anaesthesia to the finger] is [metacarpal block better than ring block] at [minimising pain during infiltration, achieving adequate anaesthesia and achieving rapid onset]?

*Comment*

The results of a single study must be interpreted with caution especially as practical procedures are operator dependent and high failure rates may reflect operator error rather than intrinsic problems. Metacarpal blocks may still have a role when anaesthesia is required in more than one finger, when proximal anaesthesia is needed or when the circulation to the finger is suspect.

*Search strategy*

Medline 1966–03/00 using the OVID interface. [(exp wounds and injuries OR in-

*Clinical bottom line*

Digital nerve (ring) block is the technique of choice for emergency digital anaesthesia.

<sup>1</sup> Knoop K, Trott A, Syverud S. Comparison of digital versus metacarpal blocks for repair of finger injuries. *Ann Emerg Med* 1994;23:1296–300.

Table 8

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Knoop K <i>et al</i> , 1994, USA <sup>1</sup>	Convenience sample of 30 adult patients with middle or ring finger injuries distal to the proximal interphalangeal joint requiring anaesthesia.	PRCT	Time of onset of anaesthesia	6.35 min v 2.82 min (p<0.001)	Parametric analysis for non-normally distributed pain scores. No power study.
			Adequacy of analgesia (% needing rescue anaesthesia)	23% v 3% (p=0.227)	
	Metacarpal block (one side of finger) v digital block (other side of finger). Both blocks with 2% lignocaine. Order of blocks was randomised.		Pain during administration (10 point VAS)	3.38 v 2.53 (NS)	