

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.¹ Each BET has been constructed in the four stages that have been described elsewhere.² The four topics covered in this issue of the journal are:

- Needle aspiration or chest drain for spontaneous pneumothorax
- Oral or intravenous steroids in acute severe asthma
- The role of therapeutic needle aspiration in radial head fractures
- The role of diagnostic needle aspiration in olecranon bursitis

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.

Needle aspiration or chest drain for spontaneous pneumothorax

Report by Ashes Mukerjee, *Research Fellow*
Search checked by Kevin Mackway-Jones, *Consultant*

Clinical scenario

A 25 year old patient with no history of respiratory disease attends the emergency department with acute onset of shortness of breath. A chest radiograph reveals a left sided pneumothorax of approximately 50% the volume of the left lung; there is no tension. You wonder whether needle aspiration or chest drain insertion is the treatment of choice.

Three part question

In [a young patient with a spontaneous pneumothorax without tension] is [needle aspiration or chest drainage] better at [reinflating the lung, reducing hospital stay and preventing recurrence]?

Search strategy

Medline 1966 to 3/99 using the OVID interface. ({exp pneumothorax OR pneumothorax\$} AND {exp aspiration OR aspiration.mp OR thoracocentesis.mp} AND {exp chest tubes OR drainage OR exp thoracostomy OR chest drain\$.mp}) LIMIT to human and english language.

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Table 1

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Harvey and Prescott, 1995, UK ¹	73 patients with spontaneous pneumothorax Needle aspiration (35) v intercostal drain (38)	PRCT	Success rate Pain score during procedure Hospital stay Recurrence rate	80% v 100% No significant difference 3.2 v 5.3 days (p=0.005) No significant difference	Small numbers Large differences in groups at baseline in terms of size of pneumothorax (34% v 58% complete collapse)
Andrivet <i>et al</i> , 1995, France ²	61 patients with first or second episode of spontaneous pneumothorax Needle aspiration (33) v thoracic drainage (28)	RCT	Success rate Hospital stay Recurrence rate by 3 months	61% v 93% (p=0.01) No significant difference No significant difference	Small numbers Hospital stay prolonged in needle aspiration group as procedure not carried out for 72 h in most patients

(P)RCT = (prospective) randomised controlled trial.

Search outcome

Eighty three papers were found of which 81 were irrelevant; the remaining papers are shown in table 1.

Comment

In these flawed, small studies needle aspiration is shown to be useful in some cases. However the failure rate is high and aspiration cannot therefore be thought of as a single complete treatment for this condition. Further studies are required to confirm the decrease in length of stay in the aspiration group.

Clinical bottom line

Needle aspiration may be carried out as the first treatment of spontaneous pneumothoraces without tension. Patients must then be observed as subsequent intercostal drainage may be necessary.

- 1 Harvey J, Prescott RJ. Simple aspiration versus intercostal tube drainage for spontaneous pneumothorax in patients with normal lungs. *BMJ* 1994;309:1338-9.
- 2 Andrivet P, Djedaini K, Teboul JL, et al. Spontaneous pneumothorax. Comparison of thoracic drainage vs immediate or delayed needle aspiration. *Chest* 1995;108:335-9.

Oral or intravenous steroids in acute severe asthma

Report by Martin Smith, *Specialist Registrar*
 Search checked by Terry Gilpin, *Specialist Registrar*

Clinical scenario

A 24 year old male with asthma presents to the emergency department with severe wheeze and dyspnoea. While nebulised bronchodilators are being administered you wonder whether it is better to prescribe oral or intravenous steroids.

Three part question

In [patients with acute severe asthma] are [oral prednisolone as good as intravenous hydrocortisone] in [improving respiratory symptoms]?

Search strategy

Medline 1966 to 3/99 using the OVID interface. {exp asthma OR asthma.mp} AND ([{exp steroids OR steroid\$.mp OR exp prednisolone OR prednisolone.mp} AND {exp administration, oral OR oral.mp}] AND [{exp steroids OR steroid\$.mp OR hydrocortisone.mp} AND {exp infusions, intravenous OR exp injections, intravenous OR intrave-

nous.mp}]) LIMIT to human and english language.

Search outcome

Sixty six papers were found of which 60 were irrelevant to the study question and one of insufficient quality for inclusion; of the five remaining, three were included in a meta-analysis. The remaining two papers are shown in table 2.

Comment

There is no good evidence for the superiority of either route of administration but all studies to date have been on very small numbers of patients. These studies may well have been of insufficient power to detect real differences (type II error).

Clinical bottom line

Steroids should continue to be given intravenously if intravenous access is necessary for other drugs or if the patient cannot take drugs by mouth. In other cases oral administration is acceptable.

- 1 Rowe BH, Keller JL, Oxman AD, et al. Effectiveness of steroid therapy in acute exacerbations of asthma: a meta-analysis. *Am J Emerg Med* 1992;10:301-10.
- 2 Barnett PL, Caputo GL, Baskin M, et al. Intravenous versus oral corticosteroids in the management of acute asthma in children. *Ann Emerg Med* 1997;29:212-17.

Table 2

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Rowe et al, 1992, Canada ¹	30 PRCTs of which 6 addressed the issue of oral v intravenous therapy	Meta-analysis	Effectiveness in acute exacerbations	No significant difference	
Barnett et al, 1997, USA ²	49 children with moderate to severe asthma 2 mg/kg oral methylprednisolone (23) v 2 mg/kg intravenous prednisolone (26)	PRCT	Respiratory rate, FEV ₁ , oxygen saturation Admission rate	No significant difference No significant difference	Follow up only 4 hours No power study

FEV₁ = forced expiratory volume in one second; PRCT = prospective randomised controlled trial.