Table 1

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Tan LB <i>et al</i> , 1988, UK	11 patients (9 male; 2 female) with severe heart failure (New York Heart Association grade 4). Patients had invasive haemodynamic monitoring. All patients were given 50 mg intravenous cyclizine, monitored for 30 min, then given 10 mg intravenous diamorphine. Parameters were measured at baseline, and 10 min and 30 min after administration of cyclizine	Observational study	Heart rate (beats/min) Right atrial pressure (mm Hg) Mean pulmonary artery pressure (mm Hg) Pulmonary artery wedge pressure (mm Hg) Mean blood pressure (mm Hg) Cardiac output (l/min) Systemic vascular resistance (dyne/cm ²) Change in parameters after diamorphine	99.9 at baseline; 107 at 10 min (p<0.05); 107 at 30 min (p<0.01); 10.1 at baseline; 12.7 at 10 min (p<0.01); 13.1 at 30 min (p<0.01) 37.9 at baseline; 43.8 at 10 min (p<0.01); 43.1 at 30 min (p<0.01) 21.9 at baseline; 27.7 at 10 min (p<0.01); 27.0 at 30 min (p<0.01) 82.5 at baseline; 91.5 at 10 min (p<0.01); 90.9 at 30 min (p<0.01) 4.5 at baseline; 4.3 at 10 min; 4.1 at 30 min (p<0.01) 1352 at baseline; 1576 at 10 min (p<0.05); 1608 at 30 min All returned to within 1 SEM 10 min after diamorphine administration (except for persistent elevation of right atrial and mean pulmonary pressures)	Small study in a very specific group of patients

data are available, although cyclizine, as an antihistamine, is in a different group than most other commonly prescribed antiemetics. However, as it is often difficult to predict the clinical course of a patient when first assessed, it may be advisable to avoid cyclizine as a first line antiemetic.

► CLINICAL BOTTOM LINE

Cyclizine should be avoided in patients with acute coronary events.

Tan LB, Bryant S, Murray RG. Detrimental haemodynamic effects of cyclizine in heart failure. *Lancet* 1988;1:560-1.

Rapid sequence induction in the emergency department by emergency medicine personnel

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Abstract

A short cut review was carried out to establish whether there are significant differences in the performance of emergency physicians and anaesthetists when carrying out rapid sequence intubation (RSI) in the emergency department. A total of 407 papers were found of which 12 presented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant outcomes, results, and study weaknesses of these best papers are tabulated. The clinical bottom line is that there is little or no difference in the rates of success and complications between emergency department clinicians and anaesthetists performing RSI.

Three part question

[In an emergency department RSI] are [emergency medicine clinicians as effective as anaesthetists] with regard to [complications and success rates]?

Clinical scenario

You are in the resuscitation room and are faced with a combative head injury requiring a computed tomography (CT) scan. The patient needs to be intubated via RSI and you wonder whether you should do this, as you have previous

anaesthetic training, or whether you should call the anaesthetist and wait for them to do it for you.

Search strategy

Medline 1966–2 August 2005 via Ovid interface: {exp Intubation, Intratracheal/ OR (rapid sequence induction).mp OR rsi.mp OR intubation.mp OR (crash induction).mp OR airway management.mp} AND {exp Medical Staff, Hospital/ or exp Emergency Medical Services/ or exp Emergency Service, Hospital/ or (emergency department).mp OR A&E.mp OR (accident and emergency).mp OR casualty.mp} AND {safety.mp. or exp SAFETY/ OR efficacy.mp OR complications.mp OR success.mp}

Search outcome

Of 407 papers found, 304 were irrelevant and one of which was relevant was a review article. This left 12 papers for analysis (table 2).

Comment(s)

Although many papers looked only at the performance of emergency physicians, there appeared to be ample evidence that emergency physicians can perform RSI and endotracheal intubation at least as well as anaesthetists, and overall there is a high rate of success with a low rate of complications. Emergency physicians themselves must have had training in the field. Among the papers examined in this BET, several mention a trend to call an anaesthetist when a difficult airway is anticipated. In our experience, the use of anaesthetists is variable between departments and is often influenced by the skills available within the emergency department. It would appear that the absolute need for anaesthetists in the resuscitation room is diminishing. It is our belief that endotracheal intubation and RSI in the emergency department should be part of an emergency physician's core skill.

► CLINICAL BOTTOM LINE

There is little or no difference in the rates of success and complications seen between emergency department clinicians and anaesthetists performing RSI.

Addendum

An updated version of this Best evidence topic report is available at <http://emj.bmjournals.com/> supplemental

Table 2

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Tarley DA <i>et al</i> , 1979, USA	43 intubations in emergency department	Prospective observational study	Grade intubating Complications by specialty (prolonged attempt/aspiration/mainstem bronchus/pneumothorax)	EM = 23/A = 20 EM = 20/23 v A = 14/23 (p = NS)	Observational study, small numbers; no comparison of specific complications or attempts by specialty; numbers do not add up
Dufour DG <i>et al</i> , 1995, Canada	219 RSI, including children done in emergency department by emergency physicians	Retrospective observational study	Complications: Hypotension Aspiration Bradycardia Bigeminy	24 (10.96%) 3 (1.37%) 3 (1.37%) 2 (0.91%) (no failed intubations)	Observational study; no comparison by grade; no other specialty involved with which to compare; no mention of attempts made
Sakles JC <i>et al</i> , 1997, USA	610 intubations, including children, 515 (89.9%) had RSIs	Prospective observational study	Intubations by specialty Intubation by grade: EMR-1 (yr 1) EMR-2 (yr 2) EMR-3 (yr 3) Specialists Complications: Cardiac arrest Dental trauma Desaturation Hypotension Mainstem intubation Pneumothorax Vomiting Total	EM = 569 (93.3%)/A = 18 (3%)/Other = 23 (3.8%) 15 (2.6%) 101 (17.8%) 418 (73.5%) 35 (6.2%) 3 (0.5%) 3 (0.5%) 20 (3.3%) 3 (0.5%) 18 (3%) 10 (1.6%) 57 (9.3%)	Observational study; no mention of attempts made; no comparison by specialty of success or complications
Omert L <i>et al</i> , 2001, USA	200 trauma intubations, 101 anaesthetics in charge (A), 99 emergency medicine in charge (EM)	Prospective observational study	Demographics Intubation success within 3 attempts First attempt Complication rates (%): Hypoxia Aspiration Mainstem intubation Bradycardia Oesophageal intubation Dental trauma Surgical airway Total (no fatalities)	A = higher GCS and RTS p < 0.001) A = 98%/EM = 87.9%* A = 77.2%/EM = 73.7% A/EM 14.9/18.2 5/0.1 5.9/2 2/3 7.9/6.7 0/2 2/0 37.6/33.3	Observational study, no power study; many of the A group intubations were actually carried out by EM residents but no record of numbers; small numbers (*figures confusing for EM staff v EM residents (~SHO) "EM staff then intubated 6/7 that the EM residents failed"; anaesthetists intubated 6 of the EM group)
Butler JM <i>et al</i> , 2001, UK	60 RSIs in A&E, 4 aged under 10	Prospective observational study	Specialty of decision maker Specialty of RSI practitioner Complications: 3 cases = A, 3 unrecorded Desaturation Hypotension Cardiac arrest Mean speed to RSI RSI practitioner arrival within 5 min	A = 16 (26%)/EM = 44 (73%) A = 35 (58%)/EM = 16 (26%) 2 3 1 A = 5:42min/EM = 3:52min (p = 0.17) A = 51%/EM = 62%	Observational study; no power study; small numbers; no comparison of complications by group
Tam AY <i>et al</i> , 2001, Hong Kong	214 patients requiring intubation in the emergency department (87 in cardiac arrest) including 5 children	Prospective observational study	Success rate: Emergency physicians Anaesthetists (after failed by EM) RSI complications (none fatal): Detected oesophageal intubation Dental trauma Soft tissue injury Bronchial intubation Desaturation <90%, Hypotension <90 mmHg Arrhythmia	207/214 (97%) 90% on first attempt 7/214 (3.3%) 8/66 (12%) 6/66 (9%) 1/66 (1.5%) 2/66 (3%) 2/66 (3%) 1/66 (1.5%)	Observational study; no power study; no direct comparison between specialties; included paediatric patients; also included non-RSI cardiac arrest patients; small numbers
Wong E <i>et al</i> , 2003, Singapore	142 trauma cases	Retrospective observational study	Number of attempts (10 not attempted) Anaesthetist called (potentially difficult airway) Complications: Nil Hypotension Other	113/132 (85.6%) first attempt 129 (97.7%) successful 13 (9.2%) 109 (76.8%) 27 (19%) 6 (4.2%)	Retrospective observational study; no direct comparison between specialties; small numbers
Wong E <i>et al</i> , 2003, Southeast Asia	1068 emergency department patients requiring advanced airway management (including cardiac arrests)	Prospective observational study	Specialty v success rate, anaesthetist (A) 16, emergency physician (EP)(equivalent SpR grade or above) 658, medical officer (MO) 392 First attempt Final success rate	A = 87.5% EP = 93.1% MO = 85.2% A = 100% EP = 97.3% MO = 90.5%	Observational study; no power study; no breakdown of complications by clinician; not primarily comparing clinician types; large difference in numbers between groups; also included non-RSI cardiac arrest patients

Table 2 Continued

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Levitan RM <i>et al</i> , 2004, USA	658 trauma patients	Prospective observational study	Number of laryngoscopy attempts: 1 2 3 Success Cricothyrotomy (No failed intubations in any groups)	EM = 394/456 (86.4%) A = 174/194 (89.7%) EM = 50 (11%) A = 13 (6.7%) EM = 12 (2.6%) A = 7 (3.6%) EM = 454/456 (99.6%) A = 194/194 (100%) EM = 2/456 (0.4%) A = 0 NA 34.2% M 49.3% (p = 0.23) A = 442/467 (94.6%) EM = 196 (95.1%), odds ratio 1.109 A = 16/467 (3.4%) EM = 4 (1.9%), odds ratio 0.558	Observational study; no power study; only major complications; self reported; More numbers in EM groups
Bushra JS <i>et al</i> , 2004, USA	673 trauma patients emergency department, 467 anaesthesia supervised intubations (A), 206 emergency medicine supervised (EM)	Prospective observational study	Successful intubations within 2 attempts Intubation failure		Observational study; no power study; no mention of complications; different numbers between groups (EM performed most of the intubations and reported EM intubated in 81% of anaesthesia supervised groups and in 98% of EM supervised groups)
Graham CA <i>et al</i> , 2004, UK	396 trauma patients in emergency department	Prospective observational study	Complications (oesophageal intubation, endobronchial intubation, aspiration, vomit, critical desaturation, cardiac arrest, hypotensive episode)	EP 11/110 (10.0%) A = 13/123 (10.6%) p = 1.0 A 33.3%	Observational study; no power study
Reid C <i>et al</i> , 2004, UK	208 RSIs outside theatre, 51 by anaesthetists (A), 82 by non-anaesthetists (NA), 75 by non-anaesthetists supervised by anaesthetists (M)	Prospective observational study	Complications (hypotension, arrhythmias, and hypoxia) (No failed intubations in any groups)	NA 34.2% M 49.3% (p = 0.23)	Observational study; no power study; no record of duration of hypoxia/hypotension; no comparison of seniority of operator; other complications not included. (When compared with conditions and expected complication rates, no statistical differences between groups)

EM, emergency medicine (physician); A, anaesthetist.

Tarley DA, Chandler JE, Good JT Jr, *et al*. Room intubations—complications and survival. *Chest* 1979;**75**:541–3.

Dufour DG, Larose DL, Clement SC. Rapid sequence intubation in the emergency department. *J Emerg Med* 1995;**13**:705–10.

Sakles JC, Laurin EG, Rantapaa AA, *et al*. Management in the emergency department: a one-year study of 610 tracheal intubations. *Ann Emerg Med* 1998;**31**:325–32.

Omert L, Yeaney W, Mizikowski S, *et al*. Role of emergency medicine physician in airway management of the trauma patient. *J Trauma* 2001;**51**:1065–8.

Butler JM, Clancy M, Robinson N, *et al*. An observational survey of emergency department rapid sequence intubation. *Emerg Med J* 2001;**18**:343–8.

Tam AY, Lau FL. A prospective study of tracheal intubation in an emergency department in Hong Kong. *Eur J Emerg Med* 2001;**8**:305–10.

Wong E, Fong YT. Trauma airway experience by emergency physicians. *Eur J Emerg Med* 2003;**10**:209–12.

Wong E, Fong YT, Ho KK. Emergency airway management—experience of a tertiary hospital in South-East Asia. *Resuscitation* 2004;**61**:349–55.

Levitan RM, Rosenblatt B, Meiner EM, *et al*. Alternating day emergency medicine and anesthesia resident responsibility for management of the trauma airway: a study of laryngoscopy performance and intubation success. *Ann Emerg Med* 2004;**43**:48–53.

Bushra JS, McNeil B, Wald DA, *et al*. A comparison of trauma intubations managed by anesthesiologists and emergency physicians. *Acad Emerg Med* 2004;**11**:66–70.

Graham CA, Beard D, Henry JM, *et al*. Rapid sequence intubation of trauma patients in Scotland. *J Trauma* 2004;**56**:1123–6.

Reid C, Chan L, Tweeddale M. The who, where, and what of rapid sequence intubation: prospective observational study of emergency RSI outside the operating theatre. *Emerg Med J* 2004;**21**:296–301.

Absorbable sutures in paediatric lacerations

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Abstract

A short cut review was carried out to establish whether absorbable sutures offered any benefits over non-absorbable

sutures in the treatment of childhood facial lacerations. A total of 31 papers were found, of which one presented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant outcomes, results, and study weaknesses of this best paper are tabulated. We conclude that absorbable sutures appear to be as good as and show a trend towards benefit in the treatment of paediatric lacerations.

Three part question

In [paediatric patients with traumatic lacerations], does [the use of absorbable sutures compared with non-absorbable sutures] [increase the rates of complications and long term cosmesis]?

Clinical scenario

A 10 year old boy presents after a suffering a laceration on his lower leg from a snow skiing accident. It cannot be closed using glue. You would like to save the child the pain and discomfort of suture removal. You wonder if absorbable sutures would increase the rate of complications or scarring.

Search strategy

Medline 1966–November 2005 using the OVID interface; *Cochrane Library*, 2005: [(exp lacerations or laceration.mp) AND (exp sutures/or suture.mp) AND (exp treatment outcome/ OR exp cosmetic techniques/ OR exp wound infection/)]. LIMIT to human AND English AND “all child (0 to 18 years)”. *Cochrane Database of Systematic Reviews*: [Suture and absorbable]

Search outcome

Medline: 31 papers found of which 30 were irrelevant or of insufficient quality (see table 3 for the single best paper). *Cochrane*: 23 papers found, no new additional references found.