BEST EVIDENCE TOPIC REPORTS

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

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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 practicing clinicians. The search strategies used to find the best evidence are reported in detail in order to allow clinicians to update searches whenever necessary. Each BET is based on a clinical scenario and ends with a clinical bottom line which indicates, in the light of the evidence found, what the reporting clinician would do if faced with the same scenario again.

The BETs published below were first reported at the Critical Appraisal Journal Club at the Manchester Royal Infirmary[1] or placed on the BestBETs website. Each BET has been constructed in the four stages that have been described elsewhere.[2] The BETs shown here together with those published previously and those currently under construction can be seen at http://www.bestbets.org.[3] 5 BETs are included in this issue of the journal, the last two of which are negative.

- Glucagon infusion in refractory anaphylactic shock in patients on beta-blockers
- Topical analgesia for pain reduction in arterial puncture
- Antifibrinolytics for the initial management of sub arachnoid haemorrhage
- Anticoagulation before cardioversion of acute atrial fibrillation in the emergency department
- Anticoagulation post-cardioversion of acute atrial fibrillation in the emergency department

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**:220–222.
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**:222–226.
3 **Mackway-Jones K,** Carley SD. bestbets.org: Odds on favourite for evidence in emergency medicine reaches the worldwide web. *J Accid Emerg Med* 2000;**17**:235–6.

Glucagon infusion in refractory anaphylactic shock in patients on beta-blockers

Report by Martin Thomas, *Specialist Registrar*
Checked by Ian Crawford, *Senior Clinical Fellow*

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Abstract

A short cut review was carried out to establish whether a glucagon infusion is of benefit in patients with refractory anaphylaxis. 62 papers were found using the reported search, of which two 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. A clinical bottom line is stated.

Clinical scenario

A 53 year old man attends the emergency department with a severe allergic reaction, having been stung by a wasp. You note that he takes atenolol for angina. Despite adequate treatment with adrenaline and intravenous fluids, he remains hypotensive and subsequently dies. Afterwards, you hear that a glucagon infusion may have been of benefit and wonder if there is any evidence for this.

Three part question

In [anaphylactic shock for patients on regular beta-blockers] does [the use of a glucagon infusion] improve [outcome]?

Search strategy

Medline 1966-12/04 using the OVID interface. ([exp Glucagon OR glucagon.af] AND [exp Hypersensitivity OR anaphyla$.af. OR allerg$.af]) LIMIT to human AND English language.

Author, date, and country	Patient group	Study type (level of evidence)	Key results	Outcomes	Study weaknesses
Zaloga GP *et al*, 1986, USA	A 75 year old white male with refractory anaphylactic shock following injection of a radiocontrast dye. Daily medications included atenolol 50 mg daily.	Case report	Improvement in BP following administration of glucagon.	Resolution	Case report
Javeed N *et al*, 1996, USA	A 52 year old white male with refractory anaphylactic shock following injection of a radiocontrast dye. Daily medications included atenolol 50 mg daily.	Case report	Improvement in BP following administration of glucagon.	Resolution	Case report

Search outcome
Altogether 62 papers were found, of which two were directly relevant to the three part question.

Comment(s)
Although there is a pathophysiological rationale for the use of glucagon in anaphylactic patients on beta-blockers the clinical evidence is limited to case reports only. This is not surprising as the situation rarely arises and it is probably unlikely that large series will be published. Although the two reports indicate success, such reports are subject to publication bias and as such should be interpreted with caution.

► CLINICAL BOTTOM LINE
Although the evidence is of limited quality, a glucagon infusion may be of benefit in anaphylactic shock for patients on regular beta-blockers when all other, more well-recognised, treatments have failed.

Zaloga GP, Delacey W, Holmboe E, *et al*. Glucagon reversal of hypotension in a case of anaphylactoid shock. *Ann Intern Med* 1986;**105**(1):65–6.
Javeed N, Javeed H, Javeed S, *et al*. Refractory anaphylactoid shock potentiated by beta-blockers. *Cathet Cardiovasc Diagn* 1996;**39**(4):383–4.

Topical analgesia for pain reduction in arterial puncture

Report by Debbie Dawson, *Clinical Research Nurse*
Checked by Kerstin Hogg, *Clinical Research Fellow*
doi: 10.1136/emj.2005.023515

Abstract
A short cut review was carried out to establish whether topical local anaesthetic reduces the pain of arterial puncture. 431 papers were found using the reported search, of which two 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. A clinical bottom line is stated.

Clinical scenario
A 56 year old man presents to the emergency department with a 2 day history of pleuritic chest pain and shortness of breath. Pulse oximetry reveals oxygen saturations of 92%, although he does not appear to be acutely short of breath. The patient has had routine blood samples sent to the laboratory but is hesitant to agree to any other blood tests. You wonder therefore, if prior to taking an arterial blood gas sample, application of a topical local anesthetic, would reduce pain and discomfort.

Three part question
In [patients who require non-urgent arterial blood gas analysis] does [topical anesthetic] reduce [pain and discomfort]?

Search strategy
Medline 1966-12/04 using the OVID interface. [(exp lidocaine OR lidocaine.mp OR exp topical, administration OR exp anesthetics, local OR exp anesthesia, local OR emla.mp OR ametop.mp OR tetracaine OR lignocaine.mp OR prilocaine OR amethocaine.mp) AND (exp arterial puncture.mp OR exp

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Tran NQ *et al*, 2002, Australia	Topical use of 4% amethocaine gel applied for 30 mins prior to arterial puncture for blood gas analysis	RCT	Primary outcome was pain experienced (measured on a visual analogue scale, 0–100)	Amethocaine group-mean score 16.0 (SD 23.3). Placebo group-mean score 20.7 (SD 18.5)	Amethocaine can cause blanching to the skin, which may affect blinding by introducing bias, though this was not commented on in the paper as one of the reported side effects
			Number of passes through the skin	These differences were not statistically significant	Women of ''child bearing potential'' were excluded from the study. Does this mean that all pre-menopausal women were not included, and if so why?
	81 adult patients. 42 received amethocaine gel and 39 received a placebo gel		Heart rate before, during and after arterial puncture	These differences were not statistically significant	
			Side effects of the gel	Small number of minor irritations reported in both groups	
Aaron AD, *et al*, 2003, Canada	Fifty patients randomised, 24 to receive tetracaine and 26 placebo, 45 minutes prior to elective radial arterial puncture	RCT	Patient's perception of pain (visual analogue scale, 0–100)	Tetracaine group-mean score 26.2+/−32.6 The placebo group-mean score 23.8+/−27.4 (p=0.78)	
			Mean time from skin puncture to procurement of 1 ml of arterial blood	Tetracaine group-mean time 70+/−103 seconds. Placebo group-mean time 49+/−48 seconds. (p=0.40)	
			Difficulty performing the test (graded scale)	Identical for both groups (p=0.86)	