

## BEST EVIDENCE TOPIC REPORTS

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

Edited by K Mackway-Jones

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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 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. Each BET is based on a clinical scenario and ends with a clinical bottom line that 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<sup>1</sup> or placed on the BestBETs web site. Each BET has been constructed in the four stages that have been described elsewhere.<sup>2</sup> The BETs shown here together with those published previously and those currently under construction can be seen at <http://www.bestbets.org>.<sup>3</sup> Six BETs are included in this issue of the journal.

- ▶ Which facial views for facial trauma?
- ▶ Low molecular weight heparin for intravenous drug users with deep vein thrombosis
- ▶ Two thumb compared with two finger cardiopulmonary resuscitation in infants
- ▶ Non-steroidal anti-inflammatory drugs and exacerbations of asthma in children
- ▶ Thrombotic complications of a femoral central venous catheter
- ▶ Suicide at Christmas

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- 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.
- 3 Mackway-Jones K, Carley SD. [bestbets.org](http://www.bestbets.org): Odds on favourite for evidence in emergency medicine reaches the worldwide web. *J Accid Emerg Med* 2000;17:235–6.

## Which facial views for facial trauma?

Report by Kerstin Hogg, *Clinical Research Fellow*  
Checked by Margaret Maloba, *Specialist Registrar*

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### Abstract

A short cut review was carried out to establish whether a reduced number of facial radiographs had acceptable clinical

utility at detecting facial fractures after trauma. Altogether 614 papers were found using the reported search, of which five 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

An 18 year old man has been assaulted and presents to the emergency department. He has a swollen, tender left zygoma and you would like to exclude an underlying fracture. The radiology department produce three views—the OM, OM30, and lateral. You wonder whether all three views are necessary to exclude a fracture.

### Three part question

In a [patient with facial trauma] which [facial views] are necessary for [diagnosing facial fractures]?

### Search strategy

Medline 1966-07/04 using the OVID interface. ([Exp Facial bones OR facial.mp OR exp Facial injuries] AND [exp Zygomatic fractures OR exp Fractures OR exp Maxillary fractures OR fracture\$.mp] AND [exp X-Rays OR radiograph\$.mp OR X ray.mp]) LIMIT to human AND English language.

### Search outcome

Altogether 614 papers were found of which five were of some relevance to the clinical question. These five papers are shown in table 1.

### Comment(s)

These studies vary in quality.

### ▶ CLINICAL BOTTOM LINE

Requesting one OM view in the emergency department will save cost, time, and radiation, however the evidence to date suggests that the emergency doctor may miss an occasional midfacial fracture. At least two views should be taken.

**Rogers SN**, Bradley S, Michael SP. The diagnostic yield of only one occipito-mental radiograph in cases of suspected medfacial trauma—or is one enough? *Br J Oral Maxillofac Surg* 1995;33:90–2.

**Sidebottom AJ**, Cornelius P, Allen PE, *et al*. Routine post-traumatic radiographic screening of midfacial injuries: is one view sufficient? *Injury* 1996;27:311–13.

**Raby N**, Moore D. Radiography of facial trauma, the lateral view is not required. *Clin Radiol* 1998;53:218–20.

**Sidebottom AJ**, Lord TC. Single view radiographic screening of midfacial trauma. *Int J Oral Maxillofac Surg* 1998;27:356–7.

**McGhee A**, Guse J. Radiography for midfacial trauma: is a single OM 15 radiograph as sensitive as OM15 and OM 30 combined? *Br J Radiol* 2000;73:883–5.

Table 1

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Rogers SN <i>et al</i> , 1995, UK	All patients referred for facial radiographs over a month.  60 of 65 standard OM views taken during one month, viewed by maxillofacial doctors, emergency doctors and radiology staff	Retrospective cohort.	Missed fractures	One facial fracture was missed by the radiology consultant, 1/2 maxillofacial doctors, 3/3 emergency doctors and 2/2 PRHOs	Small number of radiographs with only 7 fractures total.  In 6 of 65 cases, the gold standard used remained undecided whether a fracture existed
Sidebottom AJ <i>et al</i> , 1996, UK	137 patients referred for facial radiographs between Nov 1994 and Apr 1995.  Emergency department SHOs opinion	Prospective cohort	OM15 view only  OM15 OM30 and lateral view	Sensitivity 87.5%  Sensitivity 83%  Sensitivity 87.5%  Specificity 97%	Inherent bias in the study design. The same doctor was relied upon to truthfully comment on the OM15 view before looking at the two additional views.  Blinding questionable.  Insufficient information given as to how sensitivity and specificity worked out—calculations from the same data do not agree
Raby N and Moore D, 1998, UK	Facial radiographs of 50 patients with a facial fracture and 50 without.  Films viewed by 3 radiology doctors, with and without the lateral views	Retrospective cohort	Sensitivity for diagnosis of facial fracture	Sensitivity with and without lateral view remained 90%	Radiology doctors used in study, not emergency doctors.  Gold standard not described
Sidebottom AJ and Lord TC, 1998, UK	All patients referred for facial radiographs over a year. All patients had only one OM15 view	Prospective cohort	Patient referral to maxillofacial surgeon  Number of maxillofacial referrals the previous 12 months	130 referrals, 36 had midfacial fractures  131 referrals. Number of fractures unclear	No gold standard used—if a fracture was not spotted on single film, it would have been missed by the study  This makes for a fundamentally flawed study
McGhee A and Guse J, 2000, UK	Selection of facial radiographs for 44 patients with a fracture, and 49 patients without a fracture Emergency doctors asked to report	Retrospective cohort	Clinical utility for detection of fractures  OM15 films only  OM 30 films only  Both films together	Sensitivity 89.4% Specificity 82.1%  Sensitivity 88.6% Specificity 84.8% Sensitivity 90.9% Specificity 94.8% No statistical significance between values	Same cohort of doctors reported all three combinations of radiographs, which introduces bias

# Low molecular weight heparin for intravenous drug users with deep vein thrombosis

Report by Michael Russell, *Medical Student*  
Checked by Deborah Dawson, *Clinical Research Nurse*

doi: 10.1136/emj.2004.019653

### Abstract

A short cut review was carried out to establish whether low molecular weight heparins were safer and more effective anticoagulants than coumarins in injecting drug users (IDUs) with deep venous thrombosis (DVT). Altogether 276 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 26 year old IDU with proximal DVT caused by injecting into the groin is showing poor control of their INR (and poor compliance with blood testing) while being prescribed standard warfarin. You wonder if the patient would be better managed using subcutaneous injections of low molecular weight heparin (LMWH) to take away the need for monitoring.

### Three part question

In [IV drug users with DVT] are [low molecular weight heparins better than coumarins] at [safe and effective anticoagulation]?

### Search strategy

Medline 1966-07/04 and Journals@OVID using the OVID interface. [exp Substance abuse, intravenous OR intravenous drug use\$.mp OR exp Substance-Related disorders OR exp Injections, intravenous OR drug abuse.mp OR exp Heroin Dependence OR exp Heroin OR heroin.mp OR illicit drug\$.mp OR exp street drugs OR injecting drug use\$.mp OR drug depend\$.mp OR drug addiction.mp] AND [exp deep vein thrombosis OR deep vein thromb\$.mp OR deep venous throm\$.mp OR DVT.mp] AND [exp Heparin OR Heparin.mp OR exp Heparin, Low molecular weight OR low molecular weight heparin.mp OR fractionated heparin.mp OR bemiparin.mp OR certoparin.mp OR dalteparin.mp OR enoxaparin.mp OR reviparin.mp OR tinzaparin.mp OR

fragmin.mp OR clexane.mp OR exp warfarin OR warfarin.mp OR exp coumarins OR coumarins.mp] Limit to human AND English language.

### Search outcome

Altogether 276 papers were identified of which 274 were irrelevant or insufficient quality for inclusion. The remaining two papers are shown in table 2.

### Comment(s)

There is evidence that LMWHs are a safe and effective treatment for DVT. The drug is a recognised alternative to warfarin in certain patient groups such as pregnant women. Supervision of the INR with warfarin allows clinicians to monitor the effectiveness of the anticoagulant. With LMWHs there is no way of knowing if the patient is taking the drug, and as IDUs are traditionally seen as a chaotic patient group, then this would be a concern. There are no RCTs comparing LMWHs with coumarins in the management of intravenous drug users. Thus there is currently very limited evidence on the best ways to manage this patient group.

### ► CLINICAL BOTTOM LINE

Low molecular weight heparin seems to be a safe method of anticoagulation and may be considered as an alternative to warfarin in the anticoagulation of IDUs because it does not require ongoing monitoring. However, the evidence is very limited. Local guidelines should be followed.

**Mackenzie AR**, Laing RB, Douglas JG, *et al*. High prevalence of iliofemoral venous thrombosis with severe groin infection among injecting drug users in north east Scotland: successful use of low molecular weight heparin with antibiotics. *Postgrad Med J* 2000;**76**:561-5.

**Lawson WL**, Robertson LT, Tait RC. Management of intravenous drug users with venous thromboembolism. *Br J Haematol* 2003;**121**(suppl 1):19.

**Lane B**, Harrison M. Low molecular weight heparin or unfractionated heparin in the treatment of patients with uncomplicated deep vein thrombosis. *J Accid Emerg Med* 2000;**17**:402-3.

# Two thumb compared with two finger cardiopulmonary resuscitation in infants

Report by Bruce Martin, *Specialist Registrar*  
Checked by John Butler, *Consultant*

doi: 10.1136/emj.2004.019679

### Abstract

A short cut review was carried out to establish whether the two thumb technique was superior to the two finger

Table 2

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
McKenzie AR <i>et al</i> , 2000, Scotland	20 consecutive IDUs presenting with iliofemoral DVT.  LMWH given for median of seven weeks	Cohort, retrospective case reports	Incidence of recurrent DVT after three months. Incidence of symptomatic PE	8 patients asymptomatic, 7 persistent DVT (1 declined treatment), 5 lost to follow up. None with PE after starting treatment.	Very small number of patients.  Retrospective
Lawson WL <i>et al</i> , 2003, Scotland	130 IDUs over 1 year presenting with DVT.  98% had at least one dose of LMWH	Cohort, retrospective audit	Incidence of recurrent DVT and symptomatic PE	Low rate of symptomatic PE	Small number of patients Retrospective

technique in delivering effective chest compressions in infants with cardiac arrest. Altogether 175 papers were found using the reported search, of which four 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

You are put on standby by the paramedic emergency service for a cardiac arrest in an 8 week old baby. While you are assembling your equipment in the emergency department, you recall that APLS suggests a two thumb, hand encircling technique may be better when more than one rescuer is present, but rarely do you see this being used. You wonder whether current evidence supports this or not.

### Three part question

In [infants in cardiac arrest] is [two thumb CPR better than two finger CPR] at [delivering effective chest compressions]?

### Search strategy

Medline 1966-07/04 using the OVID interface.{{(exp Cardiopulmonary Resuscitation OR exp Heart Arrest/ OR cardiopulmonary resuscitation.mp OR heart arrest.mp OR CPR.mp) AND (chest compression\$.mp OR exp Heart Massage)}OR cardiac compression\$.mp] AND (BestBETs paediatric search filter) LIMIT to English language.

### Search outcome

Altogether 175 papers found of which four helped to answer the question posed. These are summarised in table 3.

### Comment(s)

In addition to these papers, the International Consensus on Science published revised guidelines in 2000, which, among other things advocated the use of two thumb technique where possible. Whether this leads to improvement in overall survival rates needs further evaluation.

**Table 3**

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Menegazzi JJ <i>et al</i> , 1993, USA	5 rescuers performing CPR on 7 swine with induced cardiac arrest. CPR performed with two fingers (TF) or two thumbs (TT)	Randomised crossover trial	Diastolic blood pressure  Systolic blood pressure  Mean arterial blood pressure  Coronary perfusion pressure	Higher in TT group (21.8 v 18.5; p <0.001)  Higher in TT group (59.4 v 41.6; p <0.001)  Higher in TT group (34.2 v 26.1; p <0.001)  Higher in TT group (15.1 v 12.2; p <0.001)	No measure of force applied during techniques Differences statistically relevant, ?not clinically
Houri PK <i>et al</i> , 1997, USA	Swine with induced cardiac arrest. CPR performed with two fingers (TF) or two thumbs (TT)	Randomised crossover trial	Diastolic blood pressure Systolic blood pressure	No significant difference 25% increase with and 57% increase in two thumbs group when no force feedback was given	Sternal compression force achieved was lower in the two fingers group when investigators tried to standardise this component
Dorfman ML <i>et al</i> , 2000, USA	21 rescuers performing CPR on adapted manikin. CPR performed with two fingers (TF) or two thumbs (TT)	Randomised crossover trial	Diastolic blood pressure  Systolic blood pressure  Mean arterial blood pressure  Perfusion pressure	Higher in TT group (mean 17.6 v 12.5 p <0.001)  Higher in TT group (mean 68.9 v 44.8 p <0.001)  Higher in TT group (mean 35.3 v 23.3 p <0.001)  Higher in TT group (mean 51.4 v 31.2 p <0.001)	Only verbal instructions given in performing TT technique—all rescuers experienced in TF technique
Whitelaw CC <i>et al</i> , 2000, USA	209 subjects performing CPR on manikin. CPR performed with two fingers (TF) or two thumbs (TT)	Randomised crossover trial	Adequacy of CPR on skill guide	No significant difference—40 participants produced adequate CPR using TT (95% CI 14 to 25%) and 38 using TF (95% CI 13 to 24%).  TT produced more than 40 too shallow compressions in 40 participants compared with 15 in the TF group (p <0.005)	Heterogenous group of participants with varying levels of experience.  71% of participants failed to give more than 60 adequate compressions in 2 minute period

### ► CLINICAL BOTTOM LINE

Two thumb compression CPR produces improved haemodynamic states in experimental models, and should be performed when possible in preference to the two finger technique.

**Menegazzi JJ, Auble TE, Nicklas KA, et al.** Two-thumb versus two-finger chest compression during CRP in a swine infant model of cardiac arrest. *Ann Emerg Med* 1993;22:240–3.

**Houri PK, Frank LR, Menegazzi JJ, et al.** A randomized, controlled trial of two-thumb vs two-finger chest compression in a swine infant model of cardiac arrest. *Prehosp Emerg Care* 1997;1:65–7.

**Dorfsman ML, Menegazzi JJ, Wadas RJ, et al.** Two-thumb vs. two-finger chest compression in an infant model of prolonged cardiopulmonary resuscitation. *Acad Emerg Med* 2000;7:1077–82.

**Whitelaw CC, Slywka B, Goldsmith LJ.** Comparison of a two-finger versus two-thumb method for chest compressions by healthcare providers in an infant mechanical model. *Resuscitation* 2000;43:213–16.

## Non-steroidal anti-inflammatory drugs and exacerbations of asthma in children

Report by Richard Body, Senior House Officer  
Checked by Katherine Potier, Specialist Registrar

doi: 10.1136/emj.2004.019687

### Abstract

A short cut review was carried out to establish whether non-steroidal anti-inflammatory agents cause exacerbations of asthma in children. Altogether 301 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 7 year old asthmatic boy presents to the emergency department with a history of fever that has not settled despite paracetamol. You consider prescribing ibuprofen but the staff nurse is concerned that this will cause an exacerbation of his asthma. You wonder whether there is any evidence for this.

### Three part question

In [children with asthma] do [non-steroidal anti-inflammatory drugs] lead to [exacerbation of asthma]?

### Search strategy

Medline 1966-07/04 using the OVID interface. [exp Ibuprofen OR ibuprofen.mp OR nurofen.mp OR exp Anti-Inflammatory Agents, Non-Steroidal OR NSAIDS.mp] AND [exp Asthma OR exp Asthma, exercise induced OR wheeze. mp OR exp Bronchial Spasm OR exp bronchospasm.mp] limit to human and English language and the BestBETs Paediatric Filter.

### Search outcome

Altogether 301 papers were found of which 299 did not answer the study question. The remaining two are summarised in table 4.

### Comment(s)

Non-steroidal anti-inflammatory medications (NSAIDs) are often withheld from asthmatic children for fear that they may cause an exacerbation of the condition. Although aspirin induced bronchospasm has been described in the literature, there are no case reports relating to NSAID induced bronchospasm in children. The two clinical trials that have investigated this problem have not established any link. The paper by Lesko *et al* actually showed a statistically significant reduction in outpatient consultations for asthma in the

Table 4

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Short JA <i>et al</i> , 2000, UK	70 children aged 6–15 years with a diagnosis of asthma, recruited from a hospital respiratory clinic or at presentation for day case surgery. All patients given 1–1.5 mg/kg orally diclofenac after baseline spirometry and after filling a questionnaire detailing the severity of their asthma	Clinical trial	Change in PEF <sub>1</sub> or FEV <sub>1</sub> at 10, 20, and 30 minutes after diclofenac	No patient showed decrease >15% in PEF <sub>1</sub> or FEV <sub>1</sub>	Uncontrolled, no healthy volunteers to compare with specific population. No sample size analysis; sample size of 70 seems small.  15% reduction in PEF <sub>1</sub> or FEV <sub>1</sub> considered significant but no explanation offered as to why this figure was chosen
Lesko SM <i>et al</i> , 2002, UK	1879 febrile children (aged 6 months to 12 years) receiving asthma medications randomised to receive either paracetamol 12 mg/kg, ibuprofen 5 mg/kg or ibuprofen 10 mg/kg	Prospective randomised double-blind controlled trial	Hospitalisation rates for asthma over four weeks. Outpatient visits for asthma over four weeks	Relative risk for hospitalisation in ibuprofen group of 0.63 (95% confidence intervals 0.25 to 1.6) 18 admitted. Relative risk in ibuprofen group 0.56 (95% confidence intervals 0.34 to 0.95) 69 patients	Original study was not designed to look at these outcomes. No objective measure of pulmonary function—follow up by case note review and parental questionnaire. Wide confidence intervals for first outcome. No power calculations. No details of randomisation process



ibuprofen treated group. This may have been a chance result. Alternatively, it may be that either paracetamol can induce bronchospasm or that NSAIDs lead to an improvement in bronchial tone, perhaps as a result of their anti-inflammatory action. A third paper, by Lesko and Mitchell, investigated the safety of ibuprofen and paracetamol in children under two years of age. Although the paper did not answer the three part question directly, they randomised a total of 27 065 febrile children to receive either paracetamol, ibuprofen 5 mg/kg, or ibuprofen 10 mg/kg. There was no increase in the incidence of hospitalisation with asthma or anaphylaxis in the ibuprofen treated group. From the available evidence, it would seem that NSAIDs are safe to use in asthmatic children.

#### ► CLINICAL BOTTOM LINE

There is no evidence that NSAIDs lead to exacerbation of asthma in children.

Short JA, Barr CA, Palmer CD, *et al.* Use of diclofenac in children with asthma. *Anaesthesia* 2000;55:334-7.

Lesko SM, Louik C, Vezina RM, *et al.* Asthma morbidity after the short-term use of ibuprofen in children. *Pediatrics* 2002;109:E20.

Lesko SM, Mitchell AA. The safety of acetaminophen and ibuprofen among children younger than two years old. *Pediatrics* 1999;104:e39.

## Thrombotic complications of a femoral central venous catheter

Report by Joel Desmond, *Research Fellow*  
Checked by Stewart Teece, *Clinical Research Fellow*

doi: 10.1136/emj.2004.019695

#### Abstract

A short cut review was carried out to establish whether the insertion of a femoral central venous pressure line causes more thrombotic complications than insertion of a jugular line. Altogether 90 papers were found using the reported search, of which eight presented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant

Table 5

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Kanter RK <i>et al</i> , 1986, USA,	Phase 1: threeyear surveillance in paediatric ICU of 161 catheters (49 femoral) (one third of children under 10 kg) Phase 2: 29 paediatric patients needing central line had femoral line 77% had Ultrasound evaluation for thrombus	Cohort study	Phase 1 complications  Phase 2 complications	Femoral line: 6.1% complication rate including three leg swellings Neck sites: 4.5% complication rate, including two arm swellings Leg swelling in four patients and one thrombus around catheter at necropsy (11% adverse incident rate)	Poor gold standard for excluding thrombus as no children received ultrasound scanning or other imaging to look for thrombus, even if their leg swelled Also 14% arterial puncture rate
Trottier SJ <i>et al</i> , 1995,	45 patients in a medical and surgical ICU  Randomised to upper or lower central line placement  Ultrasonography performed before insertion, after removal and 7 days after removal	PRCT	Thrombotic complications	Upper access sites: 0 of 21 positive ultrasound findings  Femoral access sites: 6 of 25 had DVT clinically and an additional 7 of 25 had USS findings of thrombosis	The USS examination did not look at the upper extremity deep veins There were seven more triple lumen catheters inserted into the femoral vein than single lumen catheters, compared with upper access sites
Sheffer A <i>et al</i> , 1995, Australia	56 femoral lines in 54 children in a general paediatric ICU.  Mean age 36 months range 0-192 months  All patients had USS examination within three days of insertion and repeated every two to four days	Prospective cohort study	Thrombotic complications	IVC thrombosis was found in 6 of 56 children (10.6%). All six were found on, or after 8 days of insertion.  Thromboses found on day: 8, 8, 10, 20, and 20.  Only one patient showed clinical signs	Small uncontrolled cohort  No attempt to look at USS of lower limb deep veins  May not be applicable to adult or older child groups
Durbec O <i>et al</i> , 1997, France	80 consecutive patients undergoing femoral central line in a single adult ICU	Observational cohort study	Thrombotic complications	No clinical signs of DVTs or PEs seen, but on phlebography 34% of patients had DVT and 25% popliteal thrombosis	No power study performed. Uncontrolled study
Durbec O <i>et al</i> , 1997, France	61 ICU patients undergoing either femoral venous catheterisation (31) or internal jugular (10) or axillary vein (21) cannulation Bilateral leg phlebography performed on removal	PRCT	Thrombotic complications Phlebography	No patient had clinical signs of a DVT or PE Fibrin sleeve seen in 23% of femoral group and none in SVC group. Two femoral vein thromboses seen in femoral group and one femoral vein thrombosis in the SVC cannula group	Axillary vein cannulation is an atypical site to use as a control group  No power calculations, underpowered study

Table 5 Continued

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Timsit JF <i>et al</i> , 1999, France	336 patients in three intensive care units  Randomly assigned to tunnelled or non-tunnelled femoral venous catheter 10 cm tunnel was used	PRCT	Time for insertion  Thrombotic complications	15 min for non-tunnelled line and 25 min for tunnelled line 7 DVTs	92% were ventilated
Joynt GM <i>et al</i> , 2000, Hong Kong	140 patients in an intensive care unit, all receiving a femoral line Duplex ultrasound performed before insertion, 12 hours after insertion, and then daily until removal	Cohort study	Thrombotic complications	12 iliofemoral DVTs found in cannulated leg 2 found in uncannulated leg  Positive findings were not related to coagulation status, attempts at insertion, duration of catheterisation, or heparin bonded line use	No control group to compare the types of complication found with subclavian line, for example, pneumothorax, but otherwise a well conducted study
Merrer J <i>et al</i> , 2001, France	289 adult patients in eight intensive care units receiving first central line  Randomly assigned to femoral insertion (n=145) or subclavian insertion (n=144)	PRCT	Thrombotic complications	USS detected Femoral 21.5% Subclavian 1.9%, p<0.01  Major thrombosis: femoral 6% subclavian 0%	Thrombotic complications only assessed in 76% of patients, (but reasons for all of these were accounted for)  Otherwise well conducted study

outcomes, results and study weaknesses of these best papers are tabulated. A clinical bottom line is stated.

### Clinical scenario

You are in the emergency department attending to a 68 year old man who was found in his car that had left the road and hit a tree. On arrival his GCS was 6 and he had two fractured clavicles and an open fracture of the left humerus. His BP is 90/50 and his pulse is 110 and after stabilisation you call an anaesthetist to intubate him, with cervical collar in situ. While he is doing this, you find multiple medications for heart failure in his pockets and the radiographer brings you a large packet of his old films including several showing pulmonary oedema over the past few days. There is nothing acute on his ECG and only cerebral oedema is seen on the head computed tomography. You can see that his fluid balance will be very difficult to manage over the next few days. You elect to insert a femoral central line but wonder if there will be any additional risks to placing this into the femoral vein rather than the currently inaccessible cervical region.

### Three part question

In [patients requiring central venous pressure monitoring] does the insertion of [a femoral central line as compared with an internal jugular or subclavian line] increase [the rate of thrombotic complications]?

### Search strategy

Medline 1966-07/04 using the OVID interface. [(exp femoral vein OR femoral vein.mp) AND (exp catheterisation, central venous OR exp Catheterisation OR catheterisation.mp) AND (exp thrombosis OR thrombosis.mp OR exp venous thrombosis)] AND maximally sensitive RCT filter.

### Search outcome

Altogether 90 papers were found of which seven were relevant. A further paper was found by cross referencing. These papers are shown in table 5.

### Comment(s)

All studies found evidence of thrombosis after femoral central line insertion. Rates ranged from a 2% rate of DVTs seen clinically by Timsit *et al* in a study that did not specifically look for evidence of a DVT, to 21% detection of thrombus by USS by Merrer *et al*, a 34% rate of thrombus detection on phlebography by Durbec *et al*. Of note Joynt *et al* found an 8% rate of iliofemoral DVTs, but two DVTs were also seen in contralateral, uncannulated legs. All studies detect high rates of lower limb thromboses and therefore extreme caution should be used when deciding to insert a femoral central line. If a femoral line is deemed necessary attention should be paid to gaining access elsewhere at the earliest possible opportunity.

### ► CLINICAL BOTTOM LINE

Central lines inserted into the femoral vein have an unacceptably high rate of thrombotic complications and efforts to minimise the use of this route of access should be taken.

**Kanter RK, Zimmerman JJ, Strauss RH, *et al*.** Central venous catheter insertion by femoral vein: safety and effectiveness for the pediatric patient. *Pediatrics* 1986;**77**:842-7.

**Trotter SJ, Veremakis C, O'Brien J, *et al*.** Femoral deep vein thrombosis associated with central venous catheterization: results from a prospective randomized trial. *Crit Care Med* 1995;**23**:52-9.

**Sheffer A, Gillis J, Lam A, *et al*.** Inferior vena cava thrombosis as a complication of femoral vein catheterisation. *Arch Dis Child* 1995;**72**:343-5.

**Durbec O, Vivand X, Potie F, *et al*.** A prospective evaluation of the use of femoral venous catheters in critically ill adults. *Crit Care Med* 1997;**25**:1986-9.

**Durbec O, Vivand X, Potie F, *et al*.** Lower extremity deep vein thrombosis: a prospective, randomized, controlled trial in comatose or sedated patients undergoing femoral vein catheterization. *Crit Care Med* 1997;**25**:1982-5.

**Timsit JF, Bruneel F, Cheval C, *et al*.** Use of tunneled femoral catheters to prevent catheter-related infection. A randomized, controlled trial. *Ann Intern Med* 1999;**130**:729-35.

**Joynt GM, Kew J, Gomersall CD, *et al*.** Deep venous thrombosis caused by femoral venous catheters in critically ill adult patients. *Chest* 2000;**117**:178-83.

**Merrer J, De Jonghe B, Golliot F, *et al*.** Complications of femoral and subclavian venous catheterization in critically ill patients: a randomized controlled trial. *JAMA* 2001;**286**:700-7.

# Suicide at Christmas

Report by Simon Carley, *Consultant*

Checked by Mark Hamilton, *Emergency Physician*

doi: 10.1136/emj.2004.019703

## Abstract

A short cut review was carried out to establish whether the risk of suicide and parasuicide increases at Christmas. Fifteen papers were found using the reported search, of which six 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

You are planning for winter pressures in your emergency department. You wonder if you will need additional psychiatric support over the Christmas period to cope with a perceived increase in the number of suicide attempts. When you bring this up at a senior team meeting a colleague suggests that in fact the number of suicides decreases over the Christmas period. You wonder if this is true.

**Table 6**

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Phillips SP and Wills JS, 1987, US	Suicides in the US from 1973–1979. 188,047 suicides included in database	Retrospective database analysis	Rates at Christmas	Fewer (up to 15%) suicides before Christmas ( $p < 0.05$ )	
Masterton G, 1991, UK	All parasuicide admissions between January 1969 and December 1987 involving people in Edinburgh. Aged $>16$ . 22169 admissions were included	Retrospective database analysis	Parasuicide incidence at Christmas in women  Parasuicide incidence at Christmas in men	About 20% decrease in rates for the 4 weeks from 4 Dec until 1 Jan. This was followed by an 11% increase in the first week of the New Year. (comparisons made with average rate over year)  No statistical difference over the Christmas period.	Only one centre. Only admitted patients. Long time span of study may result in a number of confounding factors (for example, need for admission)
Cullum SJ <i>et al</i> , 1993, UK	Cases of deliberate self harm presenting to three EDs in London. Rates on Christmas day were compared with rates on 7 Feb and 15 Aug	Retrospective database analysis	Total cases on Christmas day over 7 years Total cases on 7 Feb  Total cases on 15 Aug	12 cases 25 cases 25 cases	Although a statistical difference was found ( $p < 0.05$ ) these are still small numbers. There is no account for the effect on incidence on days before and after Christmas as seen in other papers
Jessen G and Jensen BF, 1999, Denmark	Database of suicides between 1970 and 1994. 32291 suicides included	Retrospective database analysis	Incidence of suicide at Christmas Lowest rate of suicide  Overall rate in December	Decreased in week around Christmas 30% less than expected on Christmas Eve. 20% less than expected on Christmas day  6% less than expected	
Jessen G <i>et al</i> , 1999, Multicentre WHO study	24388 suicide attempts in patients over 15 years between 1989–1996. Data from 13 European centres. Holidays around Christmas and New Year (20 Dec to 6 Jan)	Cohort	Before Christmas  After Christmas  General fluctuation	Statistically fewer attempts on the 20, 21, and 23 Dec Statistically more than expected on the 27 Dec (39% increase) and on New Year's day There was a greater degree of fluctuation around all public holidays	Data collection may suffer during public holidays. This study only examined suicide attempts rather than deaths that reached health service care
Ajdacic-Gross V <i>et al</i> , 2003, Switzerland	Swiss mortality data from 1969–1994. 37158 suicides included in database	Retrospective database analysis	Suicide rates in December  Dates with lowest rates of suicide	10% less than average for year  23, 25, and 30 Dec	



**Three part question**

[In patients at risk of suicide/parasuicide] is [Christmas] a [high risk period]?

**Search strategy**

Medline(R) In-Process, Other Non-Indexed Citations, Medline 1966-07/2004 using the Ovid interface. [christmas.mp] AND [suicide.mp OR exp suicide OR exp suicide, attempted OR parasuicide.mp].

**Search outcome**

Altogether 15 papers were found of which six were relevant to the clinical question. These papers are shown in table 6.

**Comment(s)**

Although the papers presented show a mix of suicide and parasuicide statistics it is apparent that there is a general trend for such events to reduce in December and in particular around the days preceding Christmas day. As with all studies in this area there may be difficulties in gauging the true

incidence as a result of under reporting. This is unlikely to be significantly different at Christmas so overall trends should be valid. The perception of many is that rates go up around Christmas. This has resulted in a greater awareness and access to services at this time. It is an interesting question to ponder whether the reductions seen here are attributable to an overall reduction in need, or the effectiveness of available help services.

**► CLINICAL BOTTOM LINE**

Suicide and parasuicide rates go down around Christmas.

**Phillips DP**, Wills JS. A drop in suicides around major national holidays. *Suicide Life Threat Behav* 1987;**17**:1–12.

**Masterton G**. Monthly and seasonal variation in parasuicide: a sex difference. *Br J Psychiatry* 199;**158**:155–7.

**Cullum SJ**, Catalan J, Berelowitz K, *et al*. Deliberate self-harm and public holidays: Is there a link? *Crisis* 1993;**14**:39–42.

**Jessen G**, Jensen BF. Postponed suicide death? Suicide around birthdays and major public holidays. *Suicide Life Threat Behav* 1999;**29**:272–82.

**Jessen G**, Jensen BF, Arensman E, *et al*. Attempted suicide and major public holidays in Europe: findings from the WHO/EURO Multicentre study on parasuicide. *Acta Psychiatr Scand* 1999;**99**:412–18.

**Ajdacic-Gross V**, Wang J, Bopp M, *et al*. Are seasonalities in suicide dependent on suicide methods? A reappraisal. *Soc Sci Med* 2003;**57**:1173–81.

## VOLUME 21 REVIEWERS .....

**T**he journal would not function without the time and effort given by our reviewers. The editorial team are immensely grateful for the enormous amount of work and thought given to reviews. We publish this list of our most active reviewers over the past year, a full list would be too long to print!

Thanks to all who review for the *EMJ*, you are the unsung heroes of the journal and we hope we can count on your continued support in the future.

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