The Literature and Emergency Medicine in 2017

The Top 5

ATEM 2017
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Dalhousie University and Saint John Regional Hospital

Wait – it's too much!

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PLoS MEDICINE

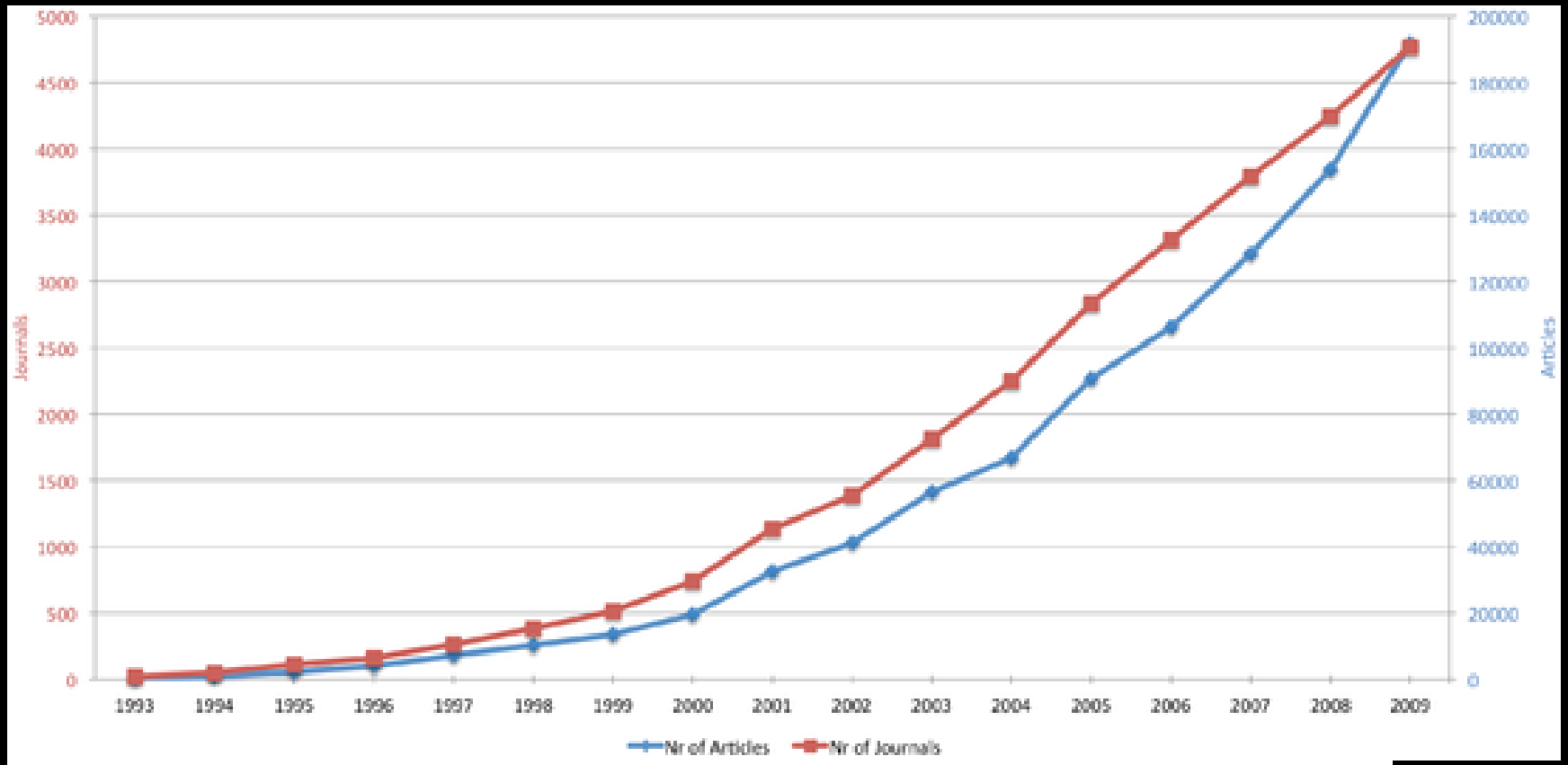
Policy Forum

Seventy-Five Trials and Eleven Systematic Reviews a Day: How Will We Ever Keep Up?

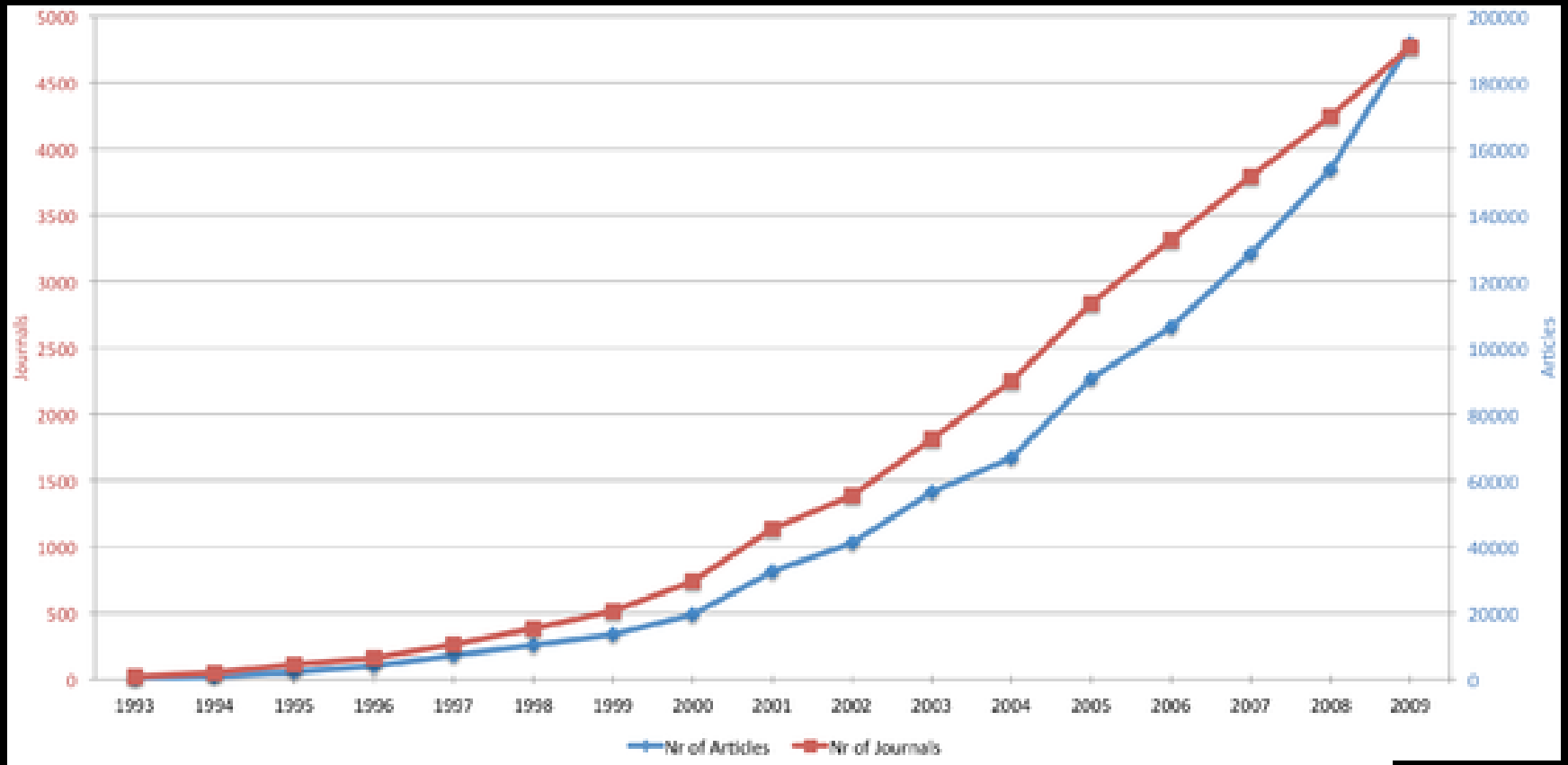
Hilda Bastian[1]*, Paul Glasziou[2], Iain Chalmers[3]

1 German Institute for Quality and Efficiency in Health Care (IQWiG), Cologne, Germany, **2** Centre for Research in Evidence-Based Practice, Faculty of Health Sciences, Bond University, Gold Coast, Australia, **3** James Lind Library, James Lind Initiative, Oxford, United Kingdom

Publish or perish



Publish AND STILL perish



PLoS Medicine | www.plosmedicine.org 1 September 2010 | Volume 7 | Issue 9 | e1000326

Did we really need to study that?

BRIEFS

Study Shows Frequent Sex Enhances Pregnancy Chances

By The Associated Press

BOSTON — A study that researchers say gives the best estimate ever of nature's window of female fertility comes to a not-so-startling conclusion: The best way

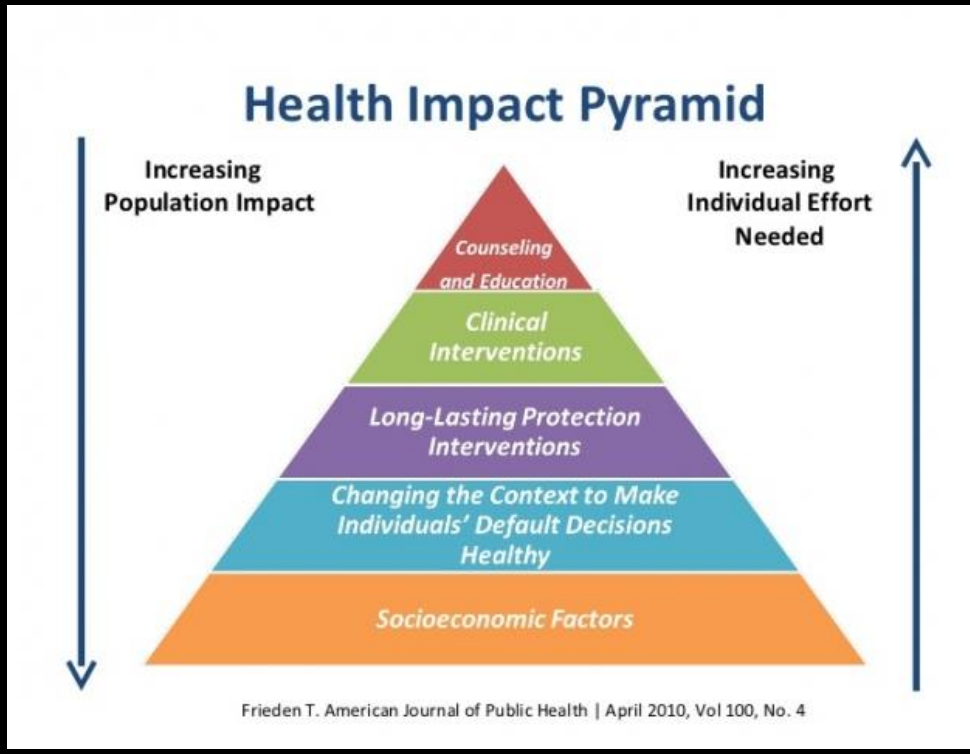
ples don't want to use other forms of birth control.

Researchers say there are six days in every menstrual month when a woman can get pregnant.

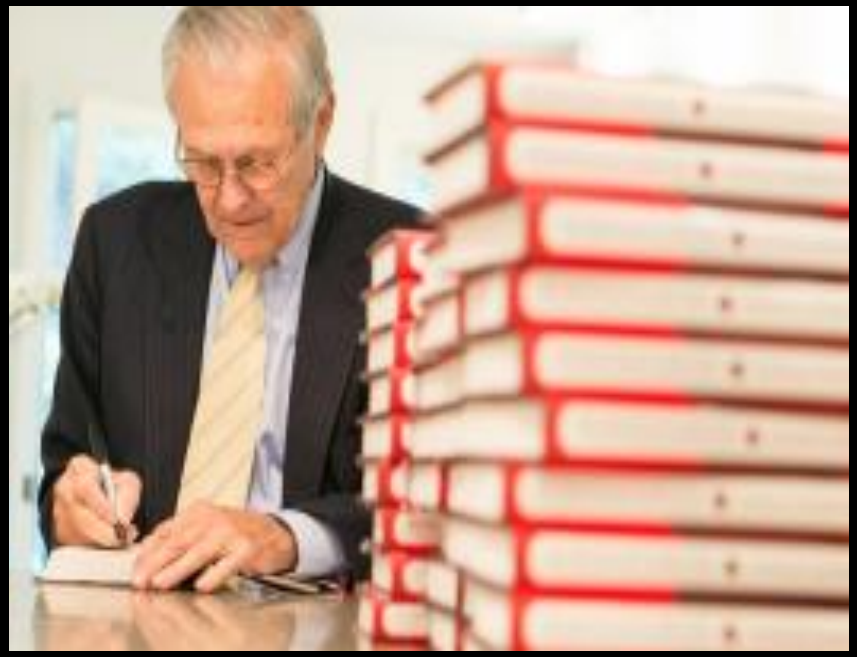
Until now, estimates of women's fertility ranged from two days in a

More?

- Does the world need another publication?
- Don't we have enough research already?
- Potential for impact?



We don’t even know what we don’t know…

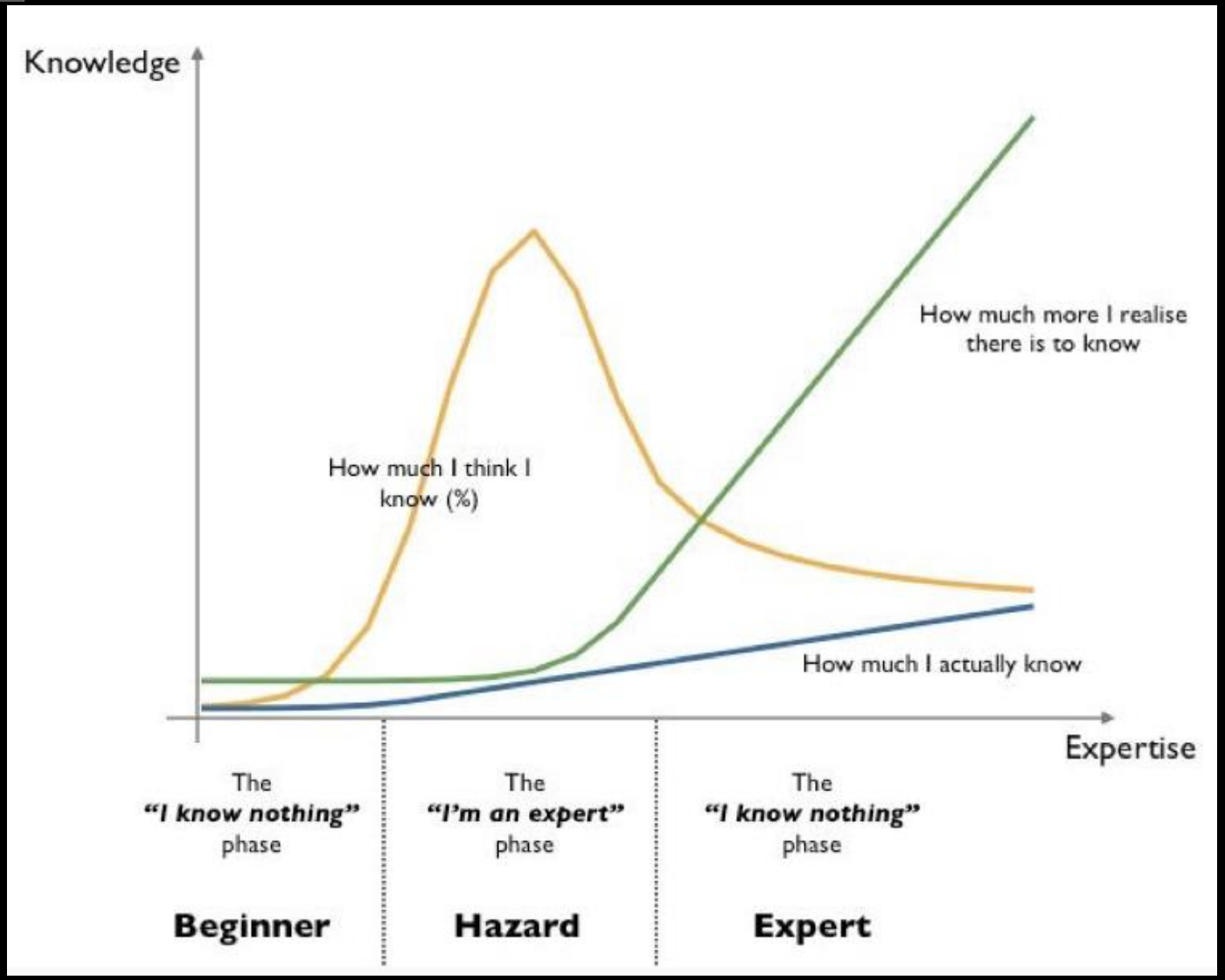


“there are known knowns; things that we know that we know

there are known unknowns; things we know we don't know

then there are unknown unknowns, things we ***don't know we don't know***”

D.R.



Wardley 2015

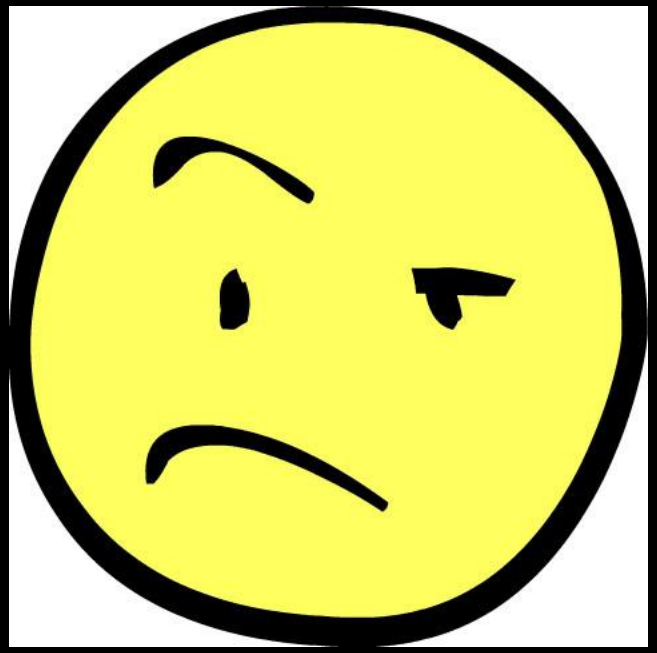
Why review the evidence?

» Because it is only 2017!

» It is unlikely that we have reached peak knowledge in emergency medicine.

Skeptic's Solutions

- Let's take a skeptical approach role to EM publications from the past year
- Is there anything new that might be worth thinking about?




5
TOP

ATLANTIC TRAUMA AND EMERGENCY MEDICINE CONFERENCE | CONGRÈS DE TRAUMATOLOGIE ET DE MÉDECINE D'URGENCE DE L'ATLANTIQUE

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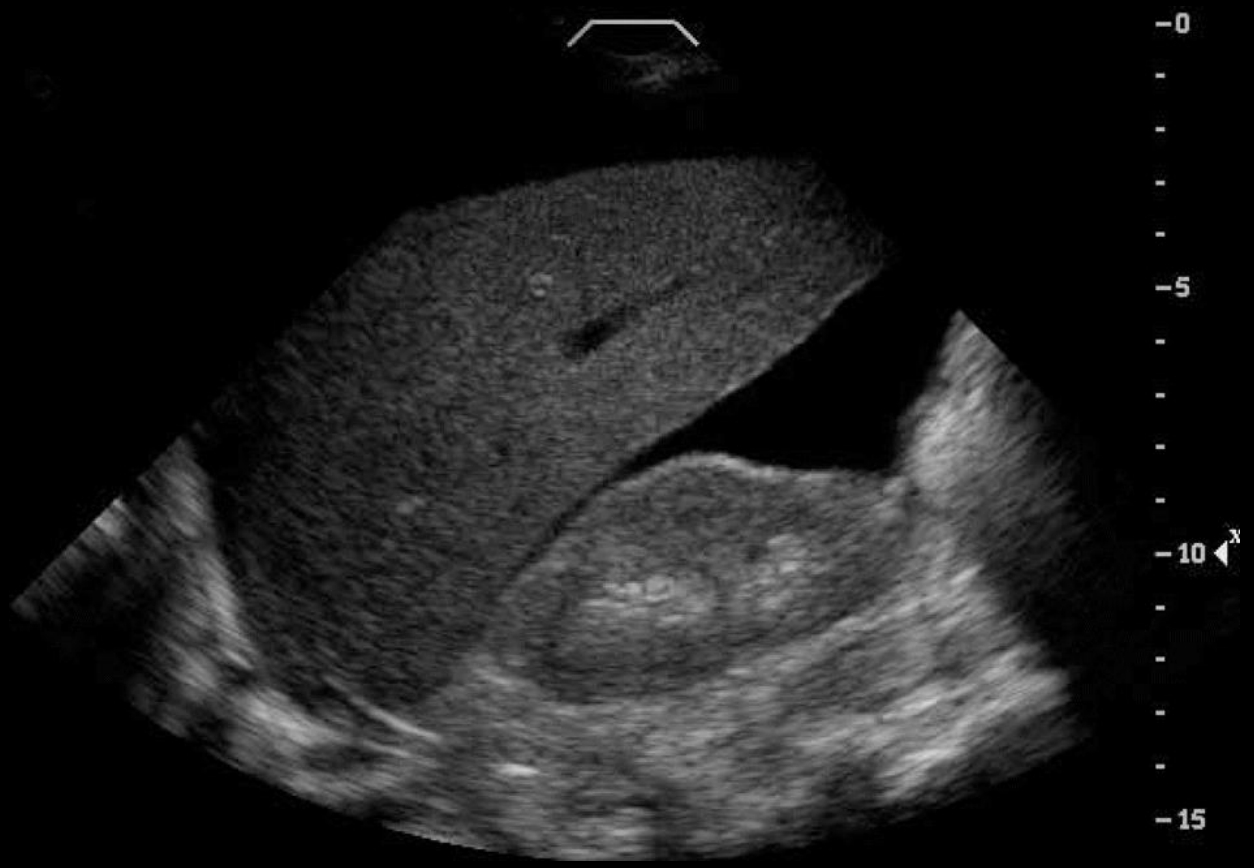
5

eFAST



eFAST

Emerg Med J. 2017 Sep;34(9):568-572. doi: 10.1136/emermed-2016-205980. Epub 2017 May 12.

Detection of pneumothoraces in patients with multiple blunt trauma: use and limitations of eFAST.

Sauter TC[1], Hoess S[1], Lehmann B[1], Exadaktylos AK[1], Haider DG[1].

⊕ Author information

Abstract

BACKGROUND: Extended focused assessment with sonography for trauma (eFAST) has been shown to have moderate sensitivity for detection of pneumothorax in trauma. Little is known about the location or size of missed pneumothoraces or clinical predictors of pneumothoraces in patients with false-negative eFAST.

METHODS: This retrospective cross-sectional study includes all patients with multiple blunt trauma diagnosed with pneumothorax who underwent both eFAST and CT performed in the ED of a level 1 trauma centre in Switzerland between 1 June 2012 and 30 September 2014. Sensitivity of eFAST for pneumothorax was determined using CT as the gold standard. Demographic and clinical characteristics of those who had a pneumothorax detected by eFAST and those who did not were compared using the Mann-Whitney U or Pearson's χ^2 tests. Univariate binary logistic regression models were used to identify predictors for pneumothoraces in patients with negative eFAST examination.

RESULTS: The study included 109 patients. Overall sensitivity for pneumothorax on eFAST was 0.59 and 0.81 for pneumothoraces requiring treatment. Compared with those detected by eFAST, missed pneumothoraces were less likely to be ventral (30 (47.6%) vs 4 (9.3%), p <0.001) and more likely to be apical and basal (7 (11.1%) vs 15 (34.9%), p=0.003; 11 (17.5%) vs 18 (41.9%), p=0.008, respectively). The missed pneumothoraces were smaller than the detected pneumothoraces (left side: 30.7±17.4 vs 12.1±13.9 mm; right side: 30.2±10.1 vs 6.9±10.2 mm, both p <0.001). No clinical variables were identified which predicted pneumothoraces in falsely negative eFAST. Among those pneumothoraces missed by eFAST, 30% required tube thoracostomy compared with 88.9% of those detected with eFAST.

CONCLUSION: In our study, pneumothoraces missed by eFAST were smaller and in atypical locations compared with those detected by eFAST and needed thoracic drainage less often.

Emerg Med J. 2017 Sep;34(9):

Detection of pneu

Sauter TC[1], Hoess S[1], Lehn

Author information

Abstract

BACKGROUND: Extende
detection of pneumothor
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METHODS: This retrospe
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CONCLUSION: In our stu
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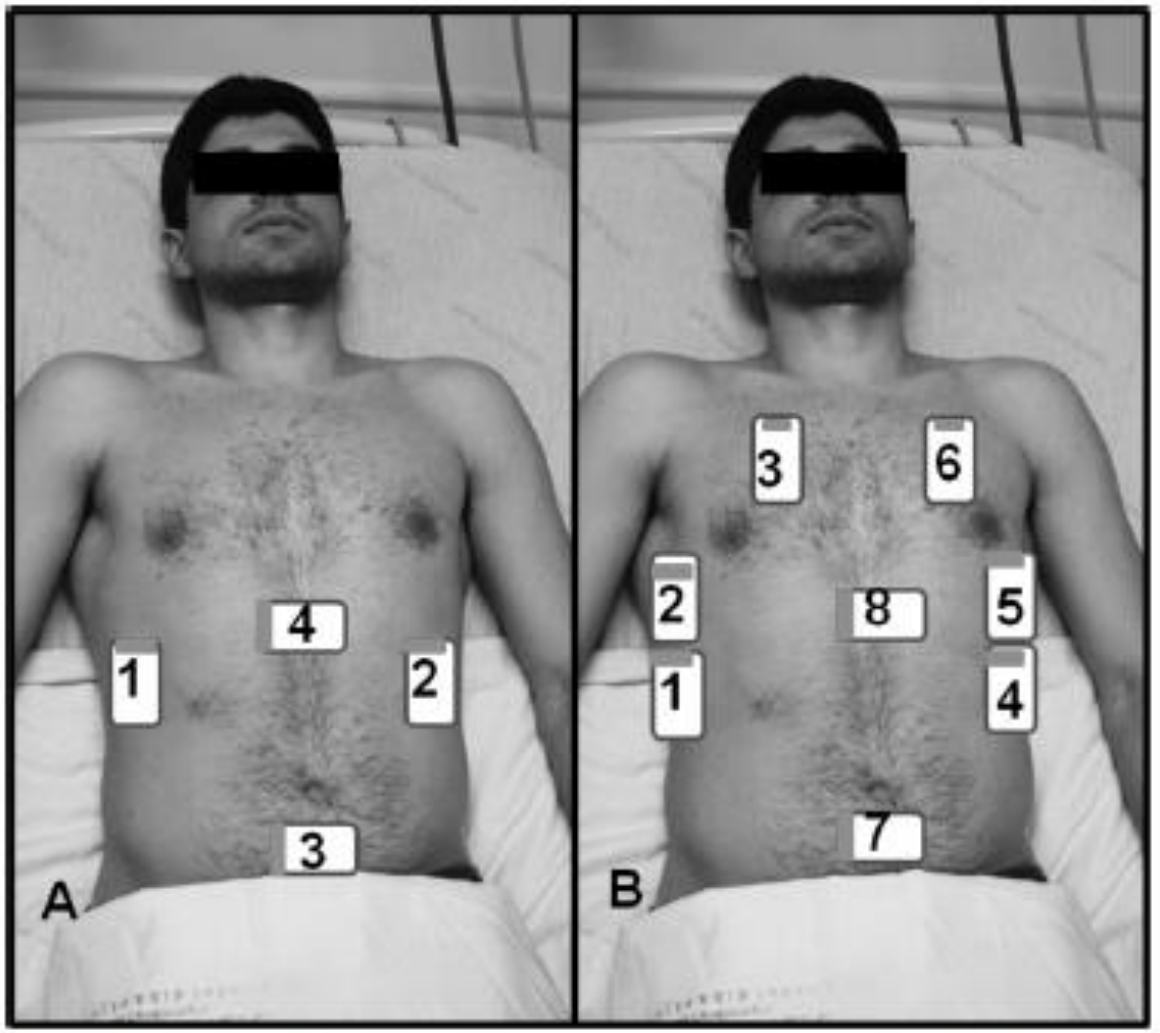


FAST - Focused Assessment with Sonography for Trauma; EFAST – Extended Focused Assessment with Sonography for Trauma.

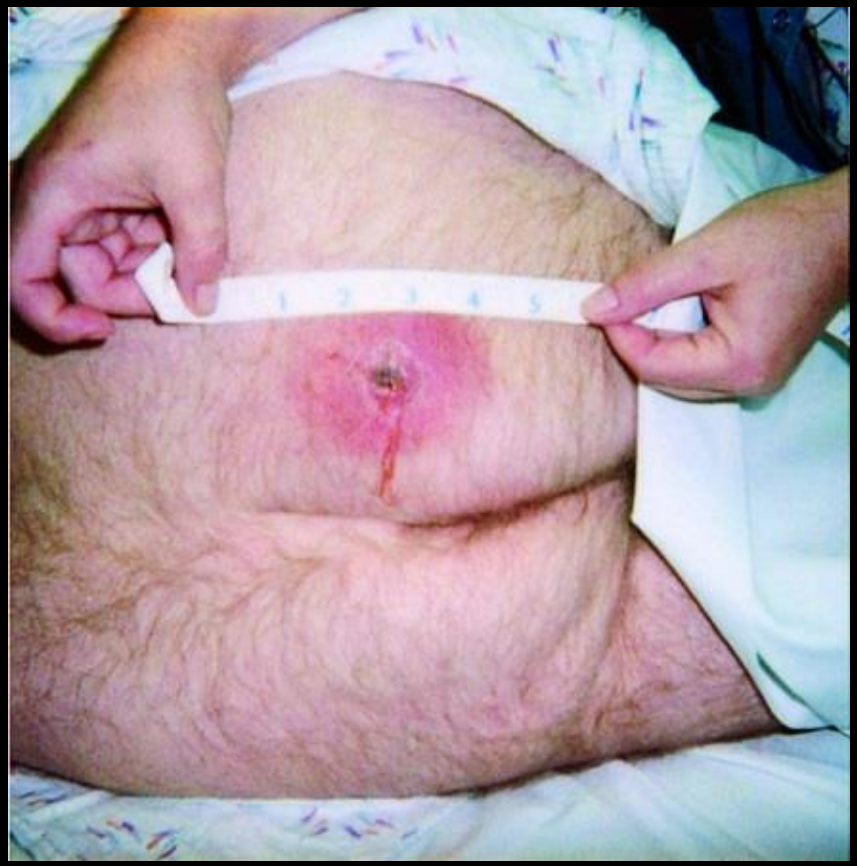
Figure 2- FAST (A) and EFAST (B) anatomical references.

eFAST

- Retrospective study of 109 patients who received both CT and eFAST. Reliability for detecting pneumathoraces?
- Overall sensitivity for pneumothorax on eFAST was 0.59 and 0.81 for pneumothoraces requiring treatment.
- Missed pneumothoraces:
  - less likely to be ventral (30 (47.6%) vs 4 (9.3%) and
  - more likely to be apical and basal (7 (11.1%) vs 15 (34.9%), 11 (17.5%) vs 18 (41.9%).
  - smaller than the detected pneumothoraces
  - 30% required tube thoracostomy compared with 88.9% of those detected with eFAST.
- Bottom line – eFAST can miss smaller pneumothoraces

4

Antibiotics and Abscesses



Antibiotics and Abscesses

N Engl J Med. 2017 Jun 29;376(26):2545-2555. doi: 10.1056/NEJMoa1607033.

A Placebo-Controlled Trial of Antibiotics for Smaller Skin Abscesses.

Daum RS[1], Miller LG[1], Immergluck L[1], Fritz S[1], Creech CB[1], Young D[1], Kumar N[1], Downing M[1], Pettibone S[1], Hoagland R[1], Eells SJ[1], Boyle MG[1], Parker TC[1], Chambers HF[1]; DMID 07-0051 Team.

⊕ **Collaborators (32)**

⊕ **Author information**

Abstract

BACKGROUND: Uncomplicated skin abscesses are common, yet the appropriate management of the condition in the era of community-associated methicillin-resistant Staphylococcus aureus (MRSA) is unclear.

METHODS: We conducted a multicenter, prospective, double-blind trial involving outpatient adults and children. Patients were stratified according to the presence of a surgically drainable abscess, abscess size, the number of sites of skin infection, and the presence of nonpurulent cellulitis. Participants with a skin abscess 5 cm or smaller in diameter were enrolled. After abscess incision and drainage, participants were randomly assigned to receive clindamycin, trimethoprim-sulfamethoxazole (TMP-SMX), or placebo for 10 days. The primary outcome was clinical cure 7 to 10 days after the end of treatment.

RESULTS: We enrolled 786 participants: 505 (64.2%) were adults and 281 (35.8%) were children. A total of 448 (57.0%) of the participants were male. S. aureus was isolated from 527 participants (67.0%), and MRSA was isolated from 388 (49.4%). Ten days after therapy in the intention-to-treat population, the cure rate among participants in the clindamycin group was similar to that in the TMP-SMX group (221 of 266 participants [83.1%] and 215 of 263 participants [81.7%], respectively; P=0.73), and the cure rate in each active-treatment group was higher than that in the placebo group (177 of 257 participants [68.9%], P<0.001 for both comparisons). The results in the population of patients who could be evaluated were similar. This beneficial effect was restricted to participants with S. aureus infection. Among the participants who were initially cured, new infections at 1 month of follow-up were less common in the clindamycin group (15 of 221, 6.8%) than in the TMP-SMX group (29 of 215 [13.5%], P=0.03) or the placebo group (22 of 177 [12.4%], P=0.06). Adverse events were more frequent with clindamycin (58 of 265 [21.9%]) than with TMP-SMX (29 of 261 [11.1%]) or placebo (32 of 255 [12.5%]); all adverse events resolved without sequelae. One participant who received TMP-SMX had a hypersensitivity reaction.

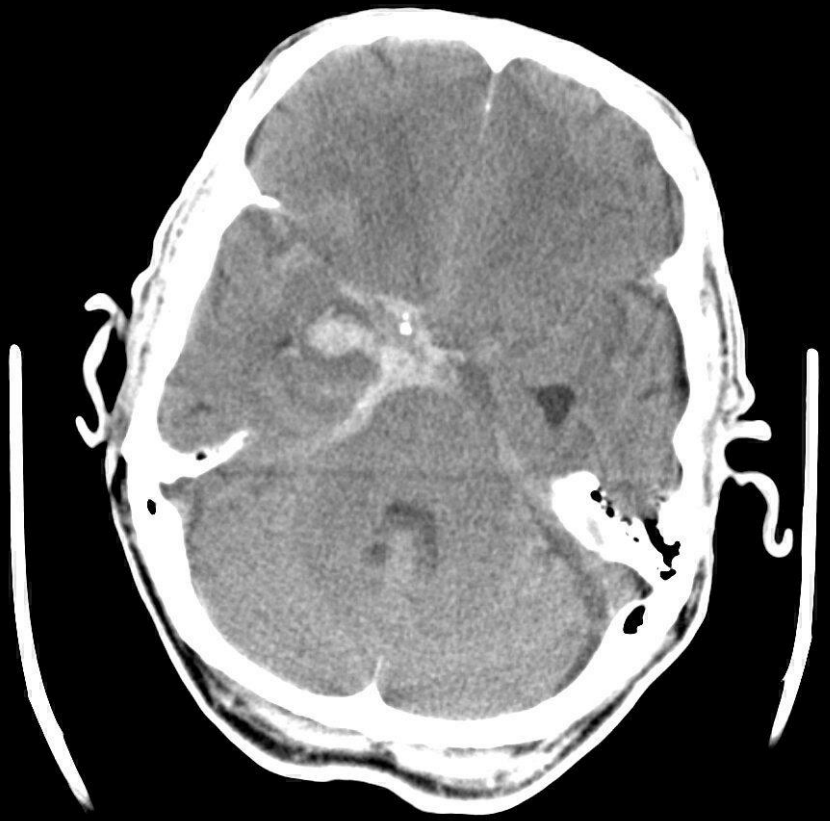
CONCLUSIONS: As compared with incision and drainage alone, clindamycin or TMP-SMX in conjunction with incision and drainage improves short-term outcomes in patients who have a simple abscess. This benefit must be weighed against the known side-effect profile of these antimicrobials. (Funded by the National Institutes of Health; ClinicalTrials.gov number, NCT00730028 .).

Antibiotics and Abscesses

- I&D is the key step in the management of skin abscess
- What about antibiotics?
- Randomized trial with 786 patients with skin abscess ≤5 cm (most were larger than 2 cm) who underwent incision and drainage,
- Higher 10 day cure rates were observed among those who received antibiotic therapy (TMP-SMX or clindamycin) than placebo (82 - 83 % versus 69 %);
  - MRSA was isolated in 49 percent of cases
  - Adverse events - antibiotic group 11-22% vs placebo 12%
- Bottom line – Consider antibiotics after I&D for skin abscesses over 2 cm.

3

CT and Subarachnoid Hemorrhage



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CT and Subarachnoid Hemorrhage

Acad Emerg Med. 2016 Sep;23(9):963-1003. doi: 10.1111/acem.12984. Epub 2016 Sep 6.

Spontaneous Subarachnoid Hemorrhage: A Systematic Review and Meta-analysis Describing the Diagnostic Accuracy of History, Physical Examination, Imaging, and Lumbar Puncture With an Exploration of Test Thresholds.

Carpenter CR[1], Hussain AM[2], Ward MJ[3], Zipfel GJ[4], Fowler S[5], Pines JM[6], Sivilotti ML[7].

⊕ Author information

Abstract

BACKGROUND: Spontaneous subarachnoid hemorrhage (SAH) is a rare, but serious etiology of headache. The diagnosis of SAH is especially challenging in alert, neurologically intact patients, as missed or delayed diagnosis can be catastrophic.

OBJECTIVES: The objective was to perform a diagnostic accuracy systematic review and meta-analysis of history, physical examination, cerebrospinal fluid (CSF) tests, computed tomography (CT), and clinical decision rules for spontaneous SAH. A secondary objective was to delineate probability of disease thresholds for imaging and lumbar puncture (LP).

METHODS: PubMed, Embase, Scopus, and research meeting abstracts were searched up to June 2015 for studies of emergency department patients with acute headache clinically concerning for spontaneous SAH. QUADAS-2 was used to assess study quality and, when appropriate, meta-analysis was conducted using random effects models. Outcomes were sensitivity, specificity, and positive (LR+) and negative (LR-) likelihood ratios. To identify test and treatment thresholds, we employed the Pauker-Kassirer method with Bernstein test indication curves using the summary estimates of diagnostic accuracy.

RESULTS: A total of 5,022 publications were identified, of which 122 underwent full-text review; 22 studies were included (average SAH prevalence = 7.5%). Diagnostic studies differed in assessment of history and physical examination findings, CT technology, analytical techniques used to identify xanthochromia, and criterion standards for SAH. Study quality by QUADAS-2 was variable; however, most had a relatively low risk of biases. A history of neck pain (LR+ = 4.1; 95% confidence interval [CI] = 2.2 to 7.6) and neck stiffness on physical examination (LR+ = 6.6; 95% CI = 4.0 to 11.0) were the individual findings most strongly associated with SAH. Combinations of findings may rule out SAH, yet promising clinical decision rules await external validation. Noncontrast cranial CT within 6 hours of headache onset accurately ruled in (LR+ = 230; 95% CI = 6 to 8,700) and ruled out SAH (LR- = 0.01; 95% CI = 0 to 0.04); CT beyond 6 hours had a LR- of 0.07 (95% CI = 0.01 to 0.61). CSF analyses had lower diagnostic accuracy, whether using red blood cell (RBC) count or xanthochromia. At a threshold RBC count of 1,000 × 10(6) /L, the LR+ was 5.7 (95% CI = 1.4 to 23) and LR- was 0.21 (95% CI = 0.03 to 1.7). Using the pooled estimates of diagnostic accuracy and testing risks and benefits, we estimate that LP only benefits CT-negative patients when the pre-LP probability of SAH is on the order of 5%, which corresponds to a pre-CT probability greater than 20%.

CONCLUSIONS: Less than one in 10 headache patients concerning for SAH are ultimately diagnosed with SAH in recent studies. While certain symptoms and signs increase or decrease the likelihood of SAH, no single characteristic is sufficient to rule in or rule out SAH. Within 6 hours of symptom onset, noncontrast cranial CT is highly accurate, while a negative CT beyond 6 hours substantially reduces the likelihood of SAH. LP appears to benefit relatively few patients within a narrow pretest probability range. With improvements in CT technology and an expanding body of evidence, test thresholds for LP may become more precise, obviating the need for a post-CT LP in more acute headache patients. Existing SAH clinical decision rules await external validation, but offer the potential to identify subsets most likely to benefit from post-CT LP, angiography, or no further testing.

CT and Subarachnoid Hemorrhage

- Does the improved sensitivity of modern CT technology obviate the need for LP, especially in the initial hours of the disease?
- High-quality meta-analysis focusing on the diagnostic accuracy of history, physical examination, LP, CT, and clinical decision rules for SAH.
- 22 studies included, average prevalence of SAH 7.5%.
  - No single history or physical exam feature was able to rule out SAH
  - No clinical decision rule has yet been successfully externally validated.
- Unenhanced CT within 6 hours of headache onset (3 studies)
  - Pooled sensitivity 100% (95% CI 98%-100%)
  - effectively ruled in (pooled LR+ 235; 95% confidence interval, 6–8744) and ruled out SAH (pooled LR− 0.01; 95% CI, 0.00–0.04).
  - Beyond 6 hours, the LR− was slightly higher but still low (LR- 0.07).
- Bottom line - If a patient presents within 6 hours of headache onset and has a negative unenhanced CT scan, stop — you have ruled out SAH.

2

Trauma teams

Trauma teams

CJEM. 2017 Jul 13:1-9. doi: 10.1017/cem.2017.352. [Epub ahead of print]

A traumatic tale of two cities: a comparison of outcomes for adults with major trauma who present to differing trauma centres in neighbouring Canadian provinces.

Hayre J[1], Rouse C[1], French J[1], Fraser J[2], Watson I[3], Benjamin S[3], Chisholm A[3], Stoica G[4], Sealy B[5], Erdogan M[5], Green R[5], Atkinson P[1].

Author information

Abstract

OBJECTIVES: While the use of formal trauma teams is widely promoted, the literature is not clear that this structure provides improved outcomes over emergency physician delivered trauma care. The goal of this investigation was to examine if a trauma team model with a formalized, specialty-based trauma team, with specific activation criteria and staff composition, performs differently than an emergency physician delivered model. Our primary outcome was survival to discharge or 30 days.

METHODS: An observational registry-based study using aggregate data from both the New Brunswick and Nova Scotia trauma registries was performed with data from April 1, 2011 to March 31, 2013. Inclusion criteria included patients 16 years-old and older who had an Injury Severity Score greater than 12, who suffered a kinetic injury and arrived with signs of life to a level-1 trauma centre.

RESULTS: 266 patients from the trauma team model and 111 from the emergency physician model were compared. No difference was found in the primary outcome of proportion of survival to discharge or 30 days between the two systems (0.88, n=266 vs. 0.89, n=111; p=0.8608).

CONCLUSIONS: We were unable to detect any difference in survival between a trauma team and an emergency physician delivered model.

Trauma teams

- Do trauma team models with a formalized, specialty-based trauma team, with specific activation criteria and staff composition, perform differently than emergency physician delivered models?
- An observational registry-based study (NS vs NB) with 377 adult trauma patients with ISS > 12
- Primary outcome: survival to discharge or 30 days.
  - No difference (88% vs. 89%; p = 0.8608)
- Secondary outcomes
  - Mean ISS same (TT 20.4 vs. EP 19.6; p=0.29)
  - TT had more transfusions, shorter time to CT for head injury and shorter time to OR
- Bottom line – process, but no survival difference found

Trauma systems

» 2.1

N=328

ISS >12

Survival to hospital

AEMS 92%
BEMS 95%

LO10

A traumatic tale of two cities: Does EMS level of care and transportation model affect survival in trauma patients transported to Level 1 trauma centres?

C. Rouse, BSc, J. Hayre, BSc, J. French, BSc, BM Dip IMC RCS Ed, B. Sealy, M. Erdogan, PhD, MHI, J. Fraser, BN, I. Watson, MHSc, S. Benjamin, BN, R. Green, MD, P.R. Atkinson, MD; Dalhousie Medicine New Brunswick, Saint John, NB

Introduction: Emergency medical services (EMS) are the major contributor to trauma care in the prehospital setting. The methods of transport and levels of care provided to trauma patients before arriving in hospital varies across systems in different regions. Atlantic Canada provides a natural experiment between two provinces with similar demographics but different EMS systems. Nova Scotia (NS) operates an Advanced Emergency Medical System (AEMS) which includes advanced care paramedics and helicopter services. In contrast, during the study period, New Brunswick (NB) had a Standard Emergency Medical System (SEMS) which included primary care paramedics in a ground transport network of multi-level trauma centres. We sought to determine if there was a difference in overall patient survival rates between the two systems, as well as whether being treated in an AEMS improved survival in patients with more severe injuries (ISS > 24). **Methods:** This prospective observational cohort study examined trauma patients (age >15 years) who suffered a kinetic injury (Injury Severity Score > 12) for whom EMS was called and who were transported directly to a level 1 trauma centre in NB or NS between April 1, 2011 and March 31, 2013. Survival to hospital and survival to discharge or thirty days were the primary endpoints. 101 cases met inclusion criteria in NB and were compared to 251 cases in NS. Hypothesis testing was conducted using Fisher's exact test to compare the results data extracted from the two registries. **Results:** Baseline demographics were similar between groups. Overall, there was no difference in survival to hospital when patients were treated by an AEMS (92%, n = 232) compared to patients treated by a BEMS (95%, n = 96) respectively (p = 0.49). Furthermore, when comparing patients with more severe injuries (ISS > 24) there was no significant difference in survival. When treated in an AEMS 55% (n = 44) of severely injured patients survived to hospital compared to 55% (n = 18) of severely injured patients treated in a SEMS (P = 1.00). **Conclusion:** Overall survival to hospital was the same between advanced and standard Canadian EMS systems. As numbers included are low, individual case benefit cannot be excluded. These results support the need for case level data sharing between provinces to permit analysis of potential confounding variables.

Keywords: trauma, emergency medical services, systems

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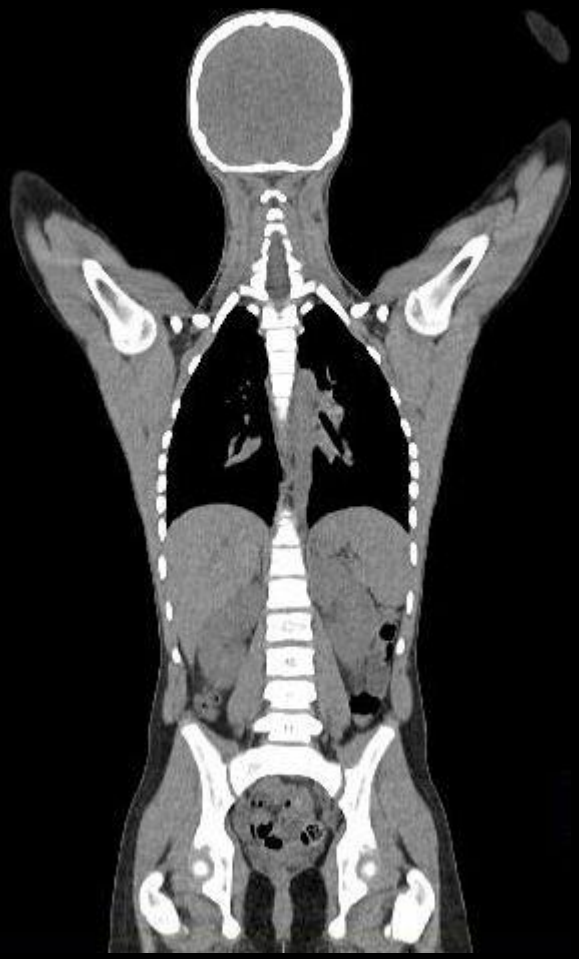
Whole body CT



Whole body CT

Lancet. 2016 Aug 13;388(10045):673-83. doi: 10.1016/S0140-6736(16)30932-1. Epub 2016 Jun 28.

Immediate total-body CT scanning versus conventional imaging and selective CT scanning in patients with severe trauma (REACT-2): a randomised controlled trial.

Sierink JC[1], Treskes K[1], Edwards MJ[2], Beuker BJ[3], den Hartog D[4], Hohmann J[5], Dijkgraaf MG[6], Luitse JS[1], Beenen LF[7], Hollmann MW[8], Goslings JC[9]; REACT-2 study group.

⊕ Collaborators (15)

⊕ Author information

Abstract

BACKGROUND: Published work suggests a survival benefit for patients with trauma who undergo total-body CT scanning during the initial trauma assessment; however, level 1 evidence is absent. We aimed to assess the effect of total-body CT scanning compared with the standard work-up on in-hospital mortality in patients with trauma.

METHODS: We undertook an international, multicentre, randomised controlled trial at four hospitals in the Netherlands and one in Switzerland. Patients aged 18 years or older with trauma with compromised vital parameters, clinical suspicion of life-threatening injuries, or severe injury were randomly assigned (1:1) by ALEA randomisation to immediate total-body CT scanning or to a standard work-up with conventional imaging supplemented with selective CT scanning. Neither doctors nor patients were masked to treatment allocation. The primary endpoint was in-hospital mortality, analysed in the intention-to-treat population and in subgroups of patients with polytrauma and those with traumatic brain injury. The $\chi(2)$ test was used to assess differences in mortality. This trial is registered with ClinicalTrials.gov, number NCT01523626.

FINDINGS: Between April 22, 2011, and Jan 1, 2014, 5475 patients were assessed for eligibility, 1403 of whom were randomly assigned: 702 to immediate total-body CT scanning and 701 to the standard work-up. 541 patients in the immediate total-body CT scanning group and 542 in the standard work-up group were included in the primary analysis. In-hospital mortality did not differ between groups (total-body CT 86 [16%] of 541 vs standard work-up 85 [16%] of 542; p=0.92). In-hospital mortality also did not differ between groups in subgroup analyses in patients with polytrauma (total-body CT 81 [22%] of 362 vs standard work-up 82 [25%] of 331; p=0.46) and traumatic brain injury (68 [38%] of 178 vs 66 [44%] of 151; p=0.31). Three serious adverse events were reported in patients in the total-body CT group (1%), one in the standard work-up group (<1%), and one in a patient who was excluded after random allocation. All five patients died.

INTERPRETATION: Diagnosing patients with an immediate total-body CT scan does not reduce in-hospital mortality compared with the standard radiological work-up. Because of the increased radiation dose, future research should focus on the selection of patients who will benefit from immediate total-body CT.

REACT-2

- In patients with severe trauma does immediate total body CT scanning (intervention) compared with standard workup with selective CT scanning (control), reduce hospital mortality?
  - RCT - 1403 adult trauma patients with potentially severe injuries (320 excluded post randomization)
- Primary outcome:
  - In-hospital mortality
    - No significant difference
    - intervention group 15.9% vs. control group 15.7% (p=0.923)

REACT-2

- Selected Secondary outcomes:
  - Radiation exposure was increased *(a bit)* in the intervention group
    - ED Radiation exposure (median): 20.9mSv (IQR 20.6-20.9) vs. 20.6mSv (IQR 9.9-22.1, p<0.0001
    - Hospital Radiation exposure during: 21mSv (IQR 20.9-25.2) vs. 20.6mSv (11.8-27.6), p<0.0001
  - Time to imaging completed – less in intervention group 30min vs. 37min
  - Time to diagnosis –reduced in the intervention group 50min vs. 58min
  - Direct medical costs – no difference
  - Number of missed injuries – no difference 8.8% vs. 10.1%
- Pre-determined sub-group analysis
  - No significant difference in hospital mortality for:
    - Patients with ISS ≥16: 22.4% vs 24.8%
    - Traumatic brain injury: 38.2% vs. 43.7%
- Bottom line – whole body CT should be used in **poly-trauma** patients

REACT-2

- Selected Secondary outcomes:
  - Radiation exposure was increased *(a bit)* in the intervention group
    - ED Radiation exposure (median): 20.9mSv (IQR 20.6-20.9) vs. 20.6mSv (IQR 9.9-22.1, p<0.0001
    - Hospital Radiation exposure during: 21mSv (IQR 20.9-25.2) vs. 20.6mSv (11.8-27.6), p<0.0001
  - Time to s. 37min
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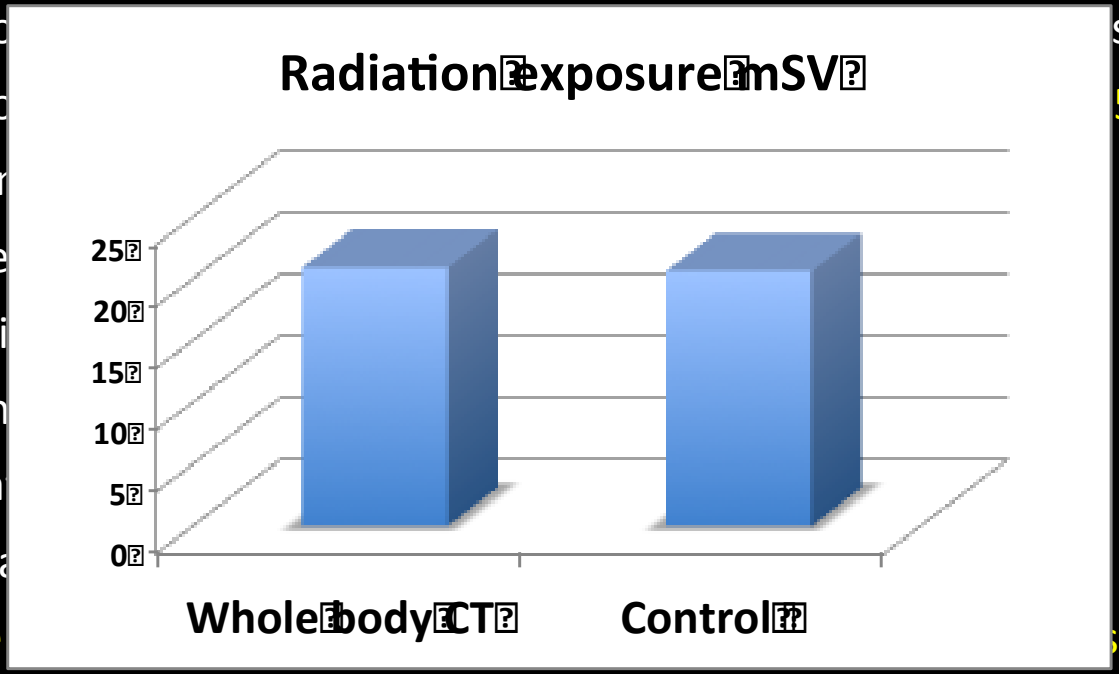

REACT-2

- Selected Secondary outcomes:
  - Radiation exposure was increased *(a bit)* in the intervention group
    - ED Radiation exposure (median): 20.9mSv (IQR 20.6-20.9) vs. 20.6mSv (IQR 9.9-22.1, p<0.0001
    - Hospital Radiation exposure during: 21mSv (IQR 20.9-25.2) vs. 20.6mSv (11.8-27.6), p<0.0001
  - Time to imaging completed – less in intervention group 30min vs. 37min
  - Time to diagnosis –reduced in the intervention group 50min vs. 58min
  - Direct medical costs – no difference
  - Number of missed injuries – no difference 8.8% vs. 10.1%
- Pre-determined sub-group analysis
  - No significant difference in hospital mortality for:
    - Patients with ISS ≥16: 22.4% vs 24.8%
    - Traumatic brain injury: 38.2% vs. 43.7%
- Bottom line – whole body CT should be used in **poly-trauma** patients

REACT-2

» Selected Secondary outcomes:

– Radi

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» Pre-d

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- Patients with ISS ≥16: 22.4% vs 24.8%
- Traumatic brain injury: 38.2% vs. 43.7%

» Bottom line – whole body CT should be used in **poly-trauma** patients

*REACT-2 showed the difficulty of trying to establish **beforehand** which patients are severely injured, as opposed to selecting patients with polytrauma retrospectively, when results of radiography are known and an Injury Severity Score is already attributed to the patient.*

Bonus

Impact Brain Apnea

Impact Brain Apnea

Resuscitation. 2016 Aug;105:52-8. doi: 10.1016/j.resuscitation.2016.05.007. Epub 2016 May 20.

Impact brain apnoea - A forgotten cause of cardiovascular collapse in trauma.

Wilson MH[1], Hinds J[2], Grier G[3], Burns B[4], Carley S[5], Davies G[3].

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Abstract

OBJECTIVE: Early death following cranial trauma is often considered unsurvivable traumatic brain injury (TBI). However, Impact Brain Apnoea (IBA), the phenomenon of apnoea following TBI, may be a significant and preventable contributor to death attributed to primary injury. This paper reviews the history of IBA, cites case examples and reports a survey of emergency responder experience.

METHODS: Literature and narrative review and focused survey of pre-hospital physicians.

RESULTS: IBA was first reported in the medical literature in 1705 but has been demonstrated in multiple animal studies and is frequently anecdotally witnessed in the pre-hospital arena following human TBI. It is characterised by the cessation of spontaneous breathing following a TBI and is commonly accompanied by a catecholamine surge witnessed as hypertension followed by cardiovascular collapse. This contradicts the belief that isolated traumatic brain injury cannot be the cause of shock, raising the possibility that brain injury may be misinterpreted and therefore mismanaged in patients with isolated brain injury. Current trauma management techniques (e.g. rolling patients supine, compression only cardiopulmonary resuscitation) could theoretically compound hypoxia and worsen the effects of IBA. Anecdotal examples from clinicians attending head injured patients within a few minutes of injury are described. Proposals for the study and intervention for IBA using advances in remote technology are discussed.

CONCLUSION: IBA is a potential cause of early death in some head injured patients. The precise mechanisms in humans are poorly understood but it is likely that early, simple interventions to prevent apnoea could improve clinical outcomes.

IBA is a potential cause of early death in some head injured patients.
It is likely that early, simple interventions to prevent apnea could improve clinical outcomes.

Bonus 2

Live long and prosper

Live long and prosper

AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 60:753–761 (2017)

The Effect of Long Working Hours on Cerebrovascular and Cardiovascular Disease; A Case-Crossover Study

Kyong-sok Shin, MD, MPH,[1] **Yun kyung Chung**, MD, PhD,[2*] **Young-Jun Kwon**, MD, PhD,[2] **Jun-Seok Son**, MD, PhD,[3] **and Se-hoon Lee**, MD, PhD[4]

Background *This study investigated the relationship between weekly working hours and the occurrence of cerebro-cardiovascular diseases using a case-crossover study design.*

Methods *We investigated average working hours during the 7 days before the onset of illness (hazard period) and average weekly working hours between 8 days and 3 months before the onset of cerebro-cardiovascular diseases (control period) for 1,042 cases from the workers' compensation database for 2009.*

Results *Among all subjects, the odds ratio by conditional logistic regression for the risk of cerebro-cardiovascular diseases with a 10 hr increase in average weekly working hours was 1.45 (95% confidence interval [CI]: 1.22–1.72), a significant association.*

Conclusions *An increase in average weekly working hours may trigger the onset of cerebro-cardiovascular disease. Am. J. Ind. Med.* 60:753–761, 2017.

Working 61 to 70 hours a week increased the risk of coronary heart disease by 42 percent, and working 71 to 80 hours increased it by 63 percent

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Thank you

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