Mechanism of injury is largely a waste of time

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Mechanism of injury

- By itself is a very poor predictor of major trauma
- Rarely changes what is actually done to the patient
- It is therefore largely a waste of time

- History of mechanism is important

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  - RTC vs fall
  - Blunt vs penetrating
- Specific mechanism of injury details are not
  - Trapped vs non-trapped
  - High speed vs low speed
  - Roll over vs not
  - Ejected vs not


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Mechanism of injury is a poor predictor for major trauma

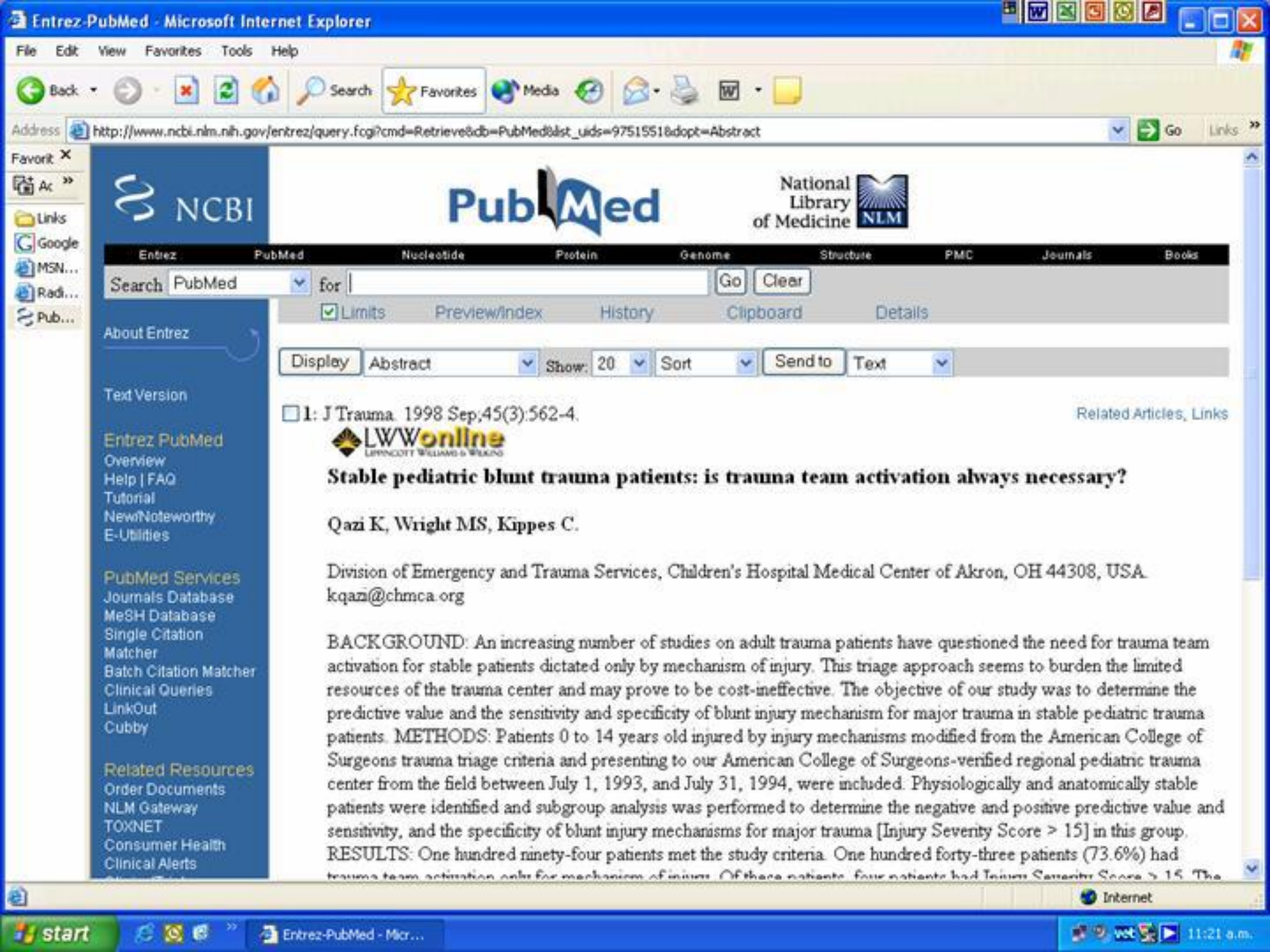
- Used by some as a triage tool for predicting major trauma in the absence of physiological or injury indicators
- Increases sensitivity (a little)
- Dramatically reduces specificity
- Has poor predictive value

Mechanism of injury is a poor predictor for major trauma

- Results in many patients who do not have major trauma being triaged as such
- Those few additional patients picked up usually have non-time critical problems
- In the absence of physiology or injury indicators of major trauma, mechanism of injury is a waste of time

Evidence

- Multiple papers showing that adding mechanism of injury criteria to physiological and injury criteria results in small increase in sensitivity but a large decrease in specificity
- Our own experience utilising prehospital major trauma triage criteria that do not contain mechanism of injury criteria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1: J Trauma. 1998 Sep;45(3):562-4.
Related Articles, Links
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Stable pediatric blunt trauma patients: is trauma team activation always necessary?
Qazi K, Wright MS, Kippes C.
Division of Emergency and Trauma Services, Children's Hospital Medical Center of Akron, OH 44308, USA. kqazi@chmca.org
BACKGROUND: An increasing number of studies on adult trauma patients have questioned the need for trauma team activation for stable patients dictated only by mechanism of injury. This triage approach seems to burden the limited resources of the trauma center and may prove to be cost-ineffective. The objective of our study was to determine the predictive value and the sensitivity and specificity of blunt injury mechanism for major trauma in stable pediatric trauma patients. METHODS: Patients 0 to 14 years old injured by injury mechanisms modified from the American College of Surgeons trauma triage criteria and presenting to our American College of Surgeons-verified regional pediatric trauma center from the field between July 1, 1993, and July 31, 1994, were included. Physiologically and anatomically stable patients were identified and subgroup analysis was performed to determine the negative and positive predictive value and sensitivity, and the specificity of blunt injury mechanisms for major trauma [Injury Severity Score > 15] in this group. RESULTS: One hundred ninety-four patients met the study criteria. One hundred forty-three patients (73.6%) had
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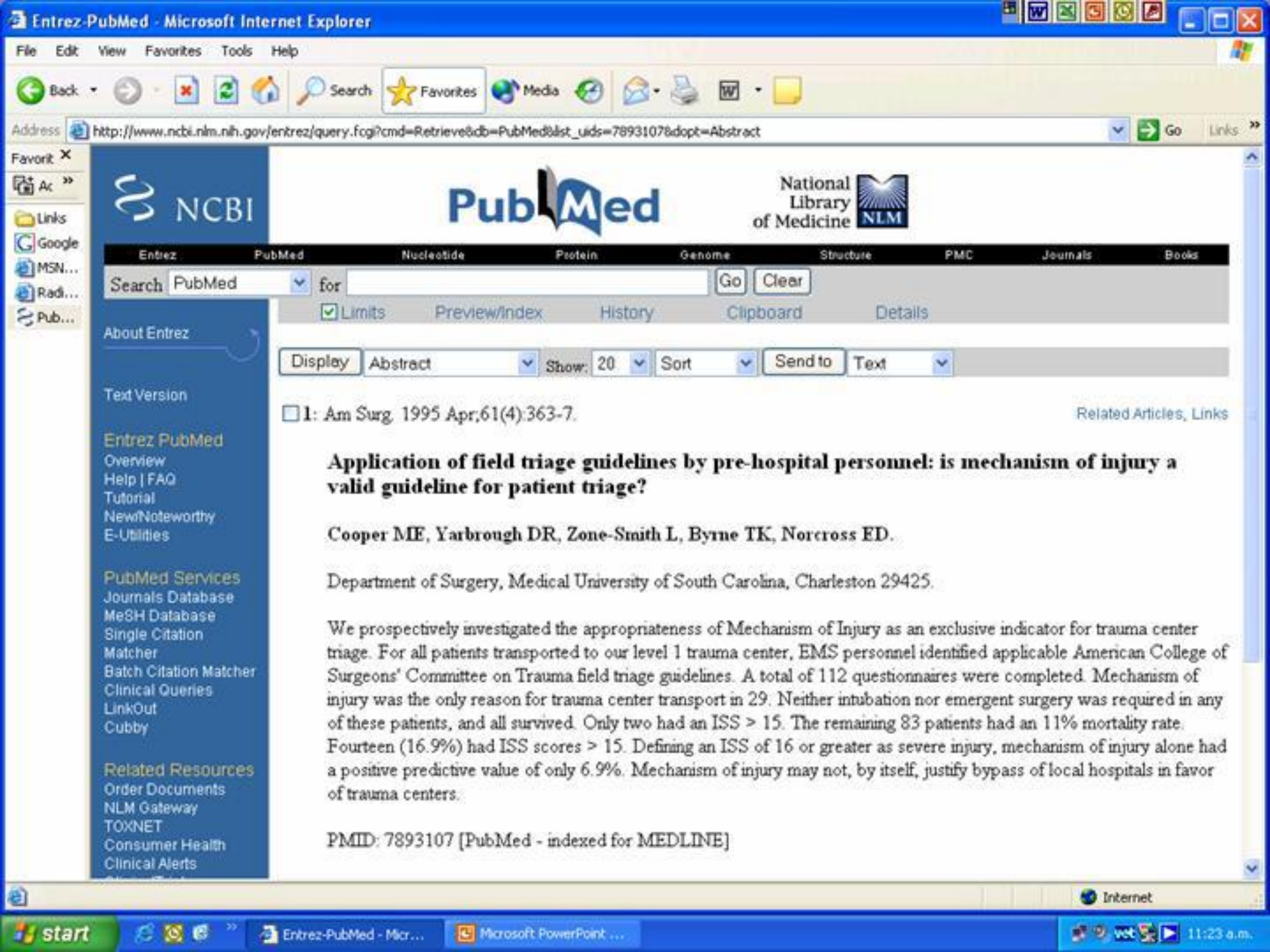
J Trauma 1998 Sep,45(3)562-4

- Mechanism of injury in the absence of physiological or injury criteria
- Mechanism of injury criteria alone had positive predictive value of 2.8%
- None had a time critical problem
- Concluded that “mechanism of injury criteria had very limited value”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1: Am Surg. 1995 Apr;61(4):363-7.
Related Articles, Links
Application of field triage guidelines by pre-hospital personnel: is mechanism of injury a valid guideline for patient triage?
Cooper ME, Yarbrough DR, Zone-Smith L, Byrne TK, Norcross ED.
Department of Surgery, Medical University of South Carolina, Charleston 29425.
We prospectively investigated the appropriateness of Mechanism of Injury as an exclusive indicator for trauma center triage. For all patients transported to our level 1 trauma center, EMS personnel identified applicable American College of Surgeons' Committee on Trauma field triage guidelines. A total of 112 questionnaires were completed. Mechanism of injury was the only reason for trauma center transport in 29. Neither intubation nor emergent surgery was required in any of these patients, and all survived. Only two had an ISS > 15. The remaining 83 patients had an 11% mortality rate. Fourteen (16.9%) had ISS scores > 15. Defining an ISS of 16 or greater as severe injury, mechanism of injury alone had a positive predictive value of only 6.9%. Mechanism of injury may not, by itself, justify bypass of local hospitals in favor of trauma centers.
PMID: 7893107 [PubMed - indexed for MEDLINE]
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Am Surg 1995 Apr,61(4)363-7

- All patients with mechanism of injury criteria (including those with other criteria)
- Mechanism of injury criteria had positive predictive value of 6.9%
- Concluded that “mechanism of injury does not predict major trauma accurately enough to warrant bypass of local hospital in favour of a trauma centre”

Our own experience

- 2002
- 188 patients with major trauma admitted to DCCM, Auckland Hospital
- 173 (92%) correctly identified by current prehospital criteria
- 15 missed

Those missed

- 12 of the 15 missed had problems which were not time critical
- 3 had a time critical problem
- Only one of these would have been picked up using mechanism of injury criteria

Positive predictive value is overestimated

- Most studies quote positive predictive value of 3-7%
- They assume all patients are transported from the scene
- In fact only one in three transported
- Common now for trapped patients to have minor injury
- Real positive predictive value not 3-7% but more likely 1-2%


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Summary

- History of mechanism is important
- Mechanism of injury criteria by themselves are poor predictors of major trauma
  - Significantly reduce specificity
  - Poor positive predictive value
- Patients picked up non-time critical
- Mechanism of injury does not significantly change what happens to the patient
- Mechanism of injury is a waste of time


the gloves are off !
SLOW DOWN