Maine Medical Center  
Department of Emergency Medicine  
Journal Club Summary Template

<table>
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<tr>
<th>Date: 1/18/17</th>
<th>Presenter Name: Brook Goddard</th>
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**Article Citation:**

Cervical Spine Fractures in geriatric blunt trauma patients with low-energy mechanism: are clinical predictors adequate. Sherwin P. Schrag et al. The American Journal of Surgery; 2008

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<th>Country(ies): United States</th>
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<tr>
<th>Funding Source(s): Unknown</th>
<th>None Stated</th>
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**Purpose**

**Research Question(s):**

The primary research question being addressed in this study was: *Are clinical predictors adequate in the identification of cervical spine fractures in geriatric blunt trauma patients with low energy mechanisms?*

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<th>Hypotheses:</th>
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They study authors hypothesized that clinical predictors are not adequate in identifying cervical spine fractures in geriatric blunt trauma patients with low energy mechanisms

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<th>Study Purpose:</th>
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The purpose of this study was to identify if clinical predictors are adequate in identifying cervical spine fractures in geriatric blunt trauma patients with low energy mechanisms.

**Methods**

**Study Design:**

This was a retrospective case-control analysis was performed on geriatric blunt trauma patients who sustained cervical spine fractures as the result of low-energy mechanisms.

**Outcome(s) [or Dependent Variable]:** Presence of c-spine injury

JC Template 7.12.17
Intervention [or Independent Variable]: None

Ethics Review: [ ] IRB Review  [ ] IACUC Review  [ ] Other:  [ ] None Stated

Research Setting:

St. Luke’s Hospital, a regional level 1 trauma center in Pennsylvania

Study Subjects:

The trauma registry was queried to identify geriatric patients who sustained a low-level fall from January 2000 – January 2006

Inclusion Criteria:

Patients who had a GCS of 8 or higher, CT evaluation of the c-spine, and were 65 years or older

Exclusion Criteria: Patients were excluded from study if there was no mention in the chart of the presence or absence of the 8 clinical and radiographic predictors described belw

Study Interventions: None

Study Groups:

- During the aforementioned time-frame, 1264 patients met the inclusion criteria
- 40 (3.17%) patients were identified to have a cervical spine fractures
- All patients had low mechanism of injury (majority with fall from standing)
- Compared to 64 randomly selected patients without c-spine fractures identified on CT
- Groups were matched for age, sex, GCS, and mechanism

Instruments/Measures Used:

- Retrospectively compared the presence of 8 clinical and radiographic predictors between groups
  - CT evaluation of the head
  - C-spine tenderness
  - Cephalohematoma
  - Confusion
  - Focal neuologic deficit
  - Facial fractures
  - Other fractures
  - Ethanol consumption (excluded as this was only present in 2 patients)
- 35/40 patients had the presence or absence of these predictors documented
**Data Collection:** Retrospective Chart Review

**Data Analysis:**

*A priori* sample size calculation?  Yes  No  Not Described  N/A

Statistical analyses used:

Adjustment for potential confounders?  Yes  No  Not Described  N/A

If yes, list:

**Results**

Brief answers to research questions [*key findings*]:

- 3.17% of patients which underwent CT c-spine were found to have a c-spine fracture
- 85% of these fractures were in patients 75 y.o. or up
- Statistically significant difference in presence of c-spine tenderness in patients with c-spine fractures when compared to patients without c-spine fractures
- C-spine tenderness was only present in 45.5% of the patients with c-spine fractures
- No other predictors reached statistical significance

Additional findings:

Limitations:

- Small sample size, single institution, low power
- Results are based on observations from retrospective chart review and clinical predictors measured were limited to what was consistently documented in the chart
- Study included patients with GCS ranging from 8-15 which represents very different patient populations therefore, it is unclear how accurate the clinical predictors studied were between patients included in this study

Clinical Implications

Applicable? The study and results are applicable to clinical practice

Feasible? n/a

Clinically relevant? Yes

Comments:
Given that the presence of c-spine fractures increase with age between 65-90, even with low energy mechanisms such as a fall from standing and that 55% of the patients studied did not have documented presence of c-spine tenderness (the only clinical predictor found to have clinical significance), I will probably be somewhat more liberal with my use of CT c-spine in the patient population.

### Level of evidence generated from this study

- [ ] Ia: evidence obtained from meta-analysis of randomized controlled trials
- [ ] Ib: evidence obtained from at least one randomized controlled trial
- [ ] Ila: evidence obtained from at least one well-designed, controlled study without randomization
- [ ] IIb: evidence obtained from at least one other type of well-designed quasi-experimental study
- [ ] III: evidence obtained from a well-designed, non-experimental study
- [ ] IV: expert committee reports; expert opinion; case study; case report

### Additional Comments/Discussion/Notes