



## 6<sup>th</sup> WSES Congress 2019

### **Title:**

Can we combine NEXUS and Canadian C spine Rules to reduce the number of C spine CT's?

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### **Topic:**

Clinical decision rule to evaluate the need for imaging of the cervical spine in trauma patients presenting at the Emergency Department.

### **Background:**

The National Emergency X-Radiography Utilisation Study low risk (NEXUS) criteria and the Canadian C-spine (CCS) rule are validated rules with high specificity and negative predictive values to evaluate the need for radiography. Dr. Scott Weingart proposed/suggested a combined NEXUS-CCS rule as optimal.

### **Aim:**

Aim of our study is to investigate whether the diagnostic characteristics of the combined NEXUS-CCS rule is comparable or better than the separate/single NEXUS and CCS rules.

### **Methods:**

This is a prospective pilot study (n=99) of adult patients with suspicion of cervical spine injury by using NEXUS criteria, presenting at the Emergency Department (ED). The NEXUS, CCS and NEXUS-CCS rule were scored before Computed Tomography (CT). CT outcome and treatment were noted. The CT amounts, negative predictive values and NRI were estimated.

### **Results:**

The incidence of cervical fracture was 3.0%. Two of the three patients had multiple fractures with a sum of 6 fractures. Dens fracture (n=1), anterior/posterior arch of C1 (n=2), fracture of calcified anterior corpus ligament (n=2), fracture of anterior syndesmophyte (n=1). The amount of C spine CT's was 64.6% [95% CI: 54.4-74.0] compared with 88.9% [95% CI: 81.0-94.3] with NEXUS and 62.6% [95% CI: 52.3-72.2] with CCS. Negative predictive value was 11.5% [95% CI: 5.9-19.6] for NEXUS, 37.5% [95% CI: 27.8-48.0] for CCS and 35.4% [95% CI: 25.9-45.8] for NEXUS-CCS. The Net Reclassification Index (NRI) was 0.068 [95% CI: -0.031-0.166] for cervical fractures and 0.364 [95% CI: -0.138-0.613] for no cervical fractures. The total NRI was 0.432 [95% CI: 0.163-0.942]. An unstable fracture was missed by NEXUS-CCS and the CCS rule alone due to a young frail M. Bechterew patient.

### **Discussion:**



Our small size pilot study suggests that the test characteristics of the combined NEXUS-CCS rule are comparable to the CCS rule alone and suboptimal compared to the NEXUS rule. The combined NEXUS - CCS rule cannot accurately diagnose, nor rule out, cervical spine injury. A refinement by adding an extra criteria to select patients with bone or muscle disease as high risk patients needs further investigation.

**Position presenting author:** underlined

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