



The NEW ENGLAND JOURNAL of MEDICINE

The Canadian C-Spine Rule versus the NEXUS Low-Risk Criteria in Patients with Trauma

Volume 349:2510-2518 December 25, 2003 Number 26

Ian G. Stiell, M.D.

ABSTRACT

Background The Canadian C-Spine (cervical-spine) Rule (CCR) and the National Emergency X-Radiography Utilization Study (NEXUS) Low-Risk Criteria (NLC) are decision rules to guide the use of cervical-spine radiography in patients with trauma. It is unclear how the two decision rules compare in terms of clinical performance.

Methods We conducted a prospective cohort study in nine Canadian emergency departments comparing the CCR and NLC as applied to alert patients with trauma who were in stable condition. The CCR and NLC were interpreted by 394 physicians for patients before radiography.

Results Among the 8283 patients, 169 (2.0 percent) had clinically important cervical-spine injuries. In 845 (10.2 percent) of the patients, physicians did not evaluate range of motion as required by the CCR algorithm. In analyses that excluded these indeterminate cases, the CCR was more sensitive than the NLC (99.4 percent vs. 90.7 percent, $P<0.001$) and more specific (45.1 percent vs. 36.8 percent, $P<0.001$) for injury, and its use would have resulted in lower radiography rates (55.9 percent vs. 66.6 percent, $P<0.001$). In secondary analyses that included all patients, the sensitivity and specificity of CCR, assuming that the indeterminate cases were all positive, were 99.4 percent and 40.4 percent, respectively ($P<0.001$ for both comparisons with the NLC). Assuming that the CCR was negative for all indeterminate cases, these rates were 95.3 percent ($P=0.09$ for the comparison with the NLC) and 50.7 percent ($P=0.001$). The CCR would have missed 1 patient and the NLC would have missed 16 patients with important injuries.

Conclusions For alert patients with trauma who are in stable condition, the CCR is superior to the NLC with respect to sensitivity and specificity for cervical-spine injury, and its use would result in reduced rates of radiography.