

The NEXUS decision instrument is a fairly simple tool based on clinical criteria. In a validation set involving a huge cohort of real-world patients presenting to just about every type of facility and applied by many hundreds of diverse physicians, it had near-perfect sensitivity, and would have decreased imaging by a small but meaningful amount. The Canadian C-spine Rule, derived in a homogeneous set of teaching hospitals, is far more complicated. *If* it is successfully validated in that same set of facilities, clinicians may wish to consider whether they can or are willing to apply it in their own practice. If so and at that time, they would have the luxury of considering two different instruments to help them identify a small but important group of very low risk patients in whom imaging of the C-spine can be safely avoided.

### References

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## Response

### C-Spine Decision Rules

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We appreciate the response of Drs. Hoffman and Mower to our commentary (1,2). We agree that emergency physicians are blessed to have gone from rags to riches in having guidance for ordering C-spine radiography, with not one, but two clinical decision rules for C-spine radiography in blunt trauma patients. Unfortunately, these two clinical decision instruments are not identical and sometimes produce conflicting advice on whether to obtain C-spine radiography in individual patients. Emergency physicians do have to choose - do they follow one or the other, both or neither to assess if C-spine radiography is needed?

The NEXUS study is a landmark study in emergency medicine and should be the standard of care for ordering C-spine radiography in the US. However, because of different practice patterns and standards of care, we are not certain that the NEXUS criteria are sufficiently sensitive or specific to be adopted in Canada (where the rate of C-spine radiography is much lower). We would also suggest that prior to accepting and adopting NEXUS as a global standard, validation outside of the US is required. This applies equally to the CCR and any other clinical decision rule. It took many years and

multiple validation studies from around the world before the Ottawa Ankle Rules achieved widespread acceptance as a global decision tool.

The patient populations sampled in the entire Canadian C-Spine Rule (CCR) derivation set and the NEXUS study were very similar. Both had a 1.7% rate of positive radiography for significant C-spine injury. However, in NEXUS, all patients had radiography, while in the CCR data set only 68.9% had radiographs. The rate of positive radiographs was 2.4% in the CCR, compared to 1.7% in NEXUS (a 41% relative difference). We suspect that the baseline rate for radiography in C-spine injury approximates 100% in the US, but it is less than 70% in Canada. As such, implementing a clinical decision rule could potentially result in a paradoxical increase in C-spine radiography rates in Canada.

Contrary to the comments of Hoffman and Mower, the CCR study was conducted in both teaching and community hospital emergency departments, across Canada.

Hoffman and Mower are quite correct in criticizing our drawing conclusions from the use of only a derivation data set. However, the CCR has subsequently been validated and is in the publication process.

**References:**

1. Hoffman and Mower response
2. Sticking your neck out commentary