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# C-Spine Imaging in a Non-trauma Centre: Compliance with NEXUS Criteria Audit

**Authors :** Andrew White, Abigail Lowe, Kory Watkins, Hamed Akhlaghi, Nicole Winter

**Abstract :** The timing and appropriateness of diagnostic imaging are critical to the evaluation and management of traumatic injuries. Within the subclass of trauma patients, the prevalence of c-spine injury is less than 4%. However, the incidence of delayed diagnosis within this cohort has been documented as up to 20%, with inadequate radiological examination most cited issue. In order to assess those in which c-spine injury cannot be fully excluded based on clinical examination alone and, therefore, should undergo diagnostic imaging, a set of criteria is used to provide clinical guidance. The NEXUS (National Emergency X-Radiography Utilisation Study) criteria is a validated clinical decision-making tool used to facilitate selective c-spine radiography. The criteria allow clinicians to determine whether cervical spine imaging can be safely avoided in appropriate patients. The NEXUS criteria are widely used within the Emergency Department setting given their ease of use and relatively straightforward application and are used in the Victorian State Trauma System's guidelines. This audit utilized retrospective data collection to examine the concordance of c-spine imaging in trauma patients to that of the NEXUS criteria and assess compliance with state guidance on diagnostic imaging in trauma. Of the 183 patients that presented with trauma to the head, neck, or face (244 excluded due to incorrect triage), 98 did not undergo imaging of the c-spine. Out of those 98, 44% fulfilled at least one of the NEXUS criteria, meaning the c-spine could not be clinically cleared as per the current guidelines. The criterion most met was intoxication, comprising 42% (18 of 43), with midline spinal tenderness (or absence of documentation of this) the second most common with 23% (10 of 43). Intoxication being the most met criteria is significant but not unexpected given the cohort of patients seen at St Vincent's and within many emergency departments in general. Given these patients will always meet NEXUS criteria, an element of clinical judgment is likely needed, or concurrent use of the Canadian C-Spine Rules to exclude the need for imaging. Midline tenderness as a met criterion was often in the context of poor or absent documentation relating to this, emphasizing the importance of clear and accurate assessments. The distracting injury was identified in 7 out of the 43 patients; however, only one of these patients exhibited a thoracic injury (T11 compression fracture), with the remainder comprising injuries to the extremities – some studies suggest that C-spine imaging may not be required in the evaluable blunt trauma patient despite distracting injuries in any body regions that do not involve the upper chest. This emphasises the need for standardised definitions for distracting injury, at least at a departmental/regional level. The data highlights the currently poor application of the NEXUS guidelines, with likely common themes throughout emergency departments, highlighting the need for further education regarding implementation and potential refinement/clarification of criteria. Of note, there appeared to be no significant differences between levels of experience with respect to inappropriately clearing the c-spine clinically with respect to the guidelines.

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