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N H M R C

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Reducing the adverse effects of prolonged time in a cervical spine immobilisation collar

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Evidence-practice gap

- The evidence shows that stable minor trauma patients often wait for prolonged periods in a cervical spine (c-spine) immobilisation collar before clearance. This can happen due to medical staff shortages, excess patient presentations, and in-patient and ED departmental bed shortages.
- Prolonged time in a hard collar can cause adverse complications such as decubitus ulceration, increased intracranial pressure, pulmonary aspiration, increased respiratory compromise and infection, thromboembolism, and increased pain and anxiety. A study reported that hard collars are extremely uncomfortable and have been found to cause prolonged neck pain. This finding was supported by data collected from the Gold Coast Hospital emergency department (ED).
- The literature identifies two clinical decision rules for clearance of the c-spine – the NEXUS rule and the Canadian C Spine Rule (CCR). While both are relatively comparable and well validated, the CCR has a higher specificity of 42.5% as opposed to 13% for NEXUS

Project aim

This project aimed to reduce the time patients remain in c-spine immobilisation collars by developing and implementing a protocol supporting the use of the CCR by senior emergency nurses.

Key findings

- Data collected over a 3-month period following implementation showed a reduction in average waiting times for collar removal from 112 minutes to 37 minutes
- Patients assessed by nursing staff had waiting times for collar removal reduced by a further 11 minutes to an average waiting time of only 26 minutes.

Implications for clinical practice

- Implementation of a c-spine protocol for senior nursing staff allows them to develop new skills and clinical knowledge for work as advanced practitioners. It also encourages improved clinical relationships between senior nurses and senior medical staff.
- Strong support from senior medical and radiology staff is required to ensure smooth implementation and assistance as needed. Consultants and senior management should be given opportunities to participate in designing the education and training program, and to have input into development of the protocol.

- Ongoing support should be available from senior medical staff to help senior emergency nurses develop the skills and confidence they need to adequately assess and clear a c-spine collar in a constantly busy and time-critical environment.
- Staff turnover and changing professional education and competency requirements must be planned for to ensure the uptake and sustainability of protocols.

Planning and implementation

Funding was received to appoint a project officer who was able to undertake focused and efficient research, and develop and implement the protocol.

1. A literature review was undertaken with consultation of staff to identify the gap in current evidence-based practice.
2. Data was collected randomly over a two-month period to establish a baseline of current practice including time of arrival, time of radiology and time of collar removal.
3. CCR was selected as the basis of the c-spine protocol. The CCR has a sensitivity of 100%, making it effective in determining which patients can be managed without radiography, potentially lowering the rate of radiographs ordered for this group of patients. In addition, the CCR has clear boundaries and clinical application, making it objective. These factors are more likely to result in support for the protocol from medical and management staff.
4. A supporting education and competency assessment was developed
5. The policy and protocol was endorsed by the department medical consultants and nurse managers.
6. Emergency consultants were engaged to offer clinical guidance and information, and deliver the clinical practice and assessment aspect of the education package.
7. A 4-hour workshop was held with senior clinical nurses and nurse managers from the emergency department. It included:
 - a review of anatomy and physiology principles, an in-depth review and explanation of the CCR with clinical scenario discussion.
 - a practical session on the assessment of a c-spine immobilised patient, with particular attention to the palpation of the midline c-spine as this was an issue highlighted in the literature.
 - On completion of the workshop, staff had a take-home examination and competency checklist that outlined four practical assessments to be witnessed and signed off by an emergency consultant.
8. The audit and review process is ongoing within the department to ensure the best and safest practice is maintained. To date, no adverse event or missed injury has been notified.

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