HOW WELL DO WE IMAGE THE CERVICAL SPINE IN TRAUMA? RE-AUDIT
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BACKGROUND
Cervical spine trauma imaging must be of good quality, visualizing the entire cervical spine. When initial views fail additional views or CT should be advised.

STANDARD AND TARGET
In 100% the cervical spine should be adequately visualized, or if not the report should state so and advise appropriately.

METHODOLOGY
100 consecutive cases reviewed. Adequacy of radiographs obtained was assessed by addressing the following questions: Was 3 view series completed? Can peg be seen on 2 views? Is C7 - T1 junction visible? The corresponding radiologists’ reports were then reviewed to assess if completeness of imaging was indicated and appropriate advice given. The audit format is available on the RCR Audit Live menu (www.rcr.ac.uk/audittemplate.aspx?PageID=1020&AuditTemplateID=90)

RESULTS OF FIRST AUDIT ROUND
Plain Films adequate in 60%
Mean number of views 3.6
18% had CT
22% had neither adequate imaging nor further imaging advised.

IMPLEMENTED ACTION PLAN
Importance of adequate views emphasized to staff
Radiologists reminded to advise further imaging if initial coverage incomplete.
Access to CT improved by additional scanner.

RESULTS OF 2ND ROUND
Plain films adequate in 64%
Mean number of views 3.8 (40% had swimmers view, 21 % had repeat open mouth view)
25% had CT
4% had MRI
3% had further imaging advised but not performed on clinical grounds
9% had neither adequate imaging nor further imaging advised.
A few cases overlap

2ND ACTION PLAN
Imaging the cervical spine was much improved but we have not yet reached the 100% target and further educational efforts about when to advise and perform further imaging is needed.

DISCUSSION
Visualizing the cervical spine by plain radiographs is a compromise. A good 3 view series will exclude an unstable fracture in over 99% of cases (McDonald 1990). This suggests that inadequate views carry a significant risk of missing clinically important injuries. Therefore audit of this is of critical importance and is easily performed. We were disappointed on initial audit to find that for many of our patients’ plain radiography had not completely imaged the cervical spine yet we were failing to advise or perform other imaging often enough. By a combined approach of additional radiographic views; advising further imaging if required; and having much improved access to CT we markedly improved our adequacy in imaging the traumatized cervical spine. CT availability may be the most important factor. Following installation of a CT scanner in proximity, but not for the exclusive use of to the emergency department we are seeing around 25% of patients having plain radiographs proceeding to CT. This is probably inevitable “inadequacy” of plain films is a reflection of limitations of the technique and not a criticism of the radiographers. In spite of extensive efforts by radiographers to obtain adequate views, plain radiography has inherent limitations. In North America many authors advise CT as first line investigation. This is probably not practical in the UK and may not be needed in all cases however we should not hesitate to advise CT when plain radiography is incomplete.

An old adage is that the more people who look at a radiograph the better. As an “incidental” spin off during the second audit round a previously undiagnosed type 3 fracture of the Dens was detected!

REFERENCES