Compliance with NICE guidelines for those with head injury attending a busy ED and needing a CT brain scan

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Objectives: The updated National Institute for Clinical Excellence (NICE) guidelines on the use of computed tomography (CT) for the management of head injuries were introduced in September 2007. This audit evaluates compliance with them in a busy emergency department (ED).

Study design: A retrospective audit was carried out.

Method: Data from 56 patients who presented with head injury and had a CT brain scan was analysed over a 15 month period. Case notes and electronic medical records were obtained in order to investigate the level of compliance.

Results: The vast majority of CT scans performed were justified according to the NICE clinical guidelines, with 86% of patients being assessed within the recommended 15 minute period. However, when indicated over two thirds failed to have their scan within 1 hour and amongst this group a significant proportion were found to have acute changes secondary to their head injury.

Conclusions: Most ED doctors seemed to be aware of the necessary criteria for CT. However, the majority of scans were not performed in a timely fashion as recommended by NICE. Increased awareness of the time frames for CT scanning, and better communication with the radiology department, need to be addressed in order to reach these targets. All medical staff who work in an ED need to be aware of their departments’ head injury proforma. It is suggested that this document is used, completed and then filed in the patient’s notes each time a request for CT is made.

Data was collected from 56 cases of CT for head injury during a 15 month period (1st January 2008–30th May 2009). Head injury was defined as any trauma to the head, excluding superficial injuries to the face. Only adult patients were subject to this audit and those under the age of 16 were excluded. Medical staff of the ED had not been informed about the audit.

RESULTS

Mean age was 51 years. 57% of patients were male and 43% were female. In the vast majority of patients the initial assessment time complied with the NICE guidelines, as 81% were assessed within 15 minutes upon arrival into the ED. Figure 1 provides a breakdown for the times of initial assessment. It can be seen that over half were assessed within 5 minutes of arrival, but a significant proportion (13%) had to wait over 25 minutes.

88% of scans performed were justified according to the NICE criteria. In those who NICE recommended to have a scan within 8 hours, 92% of patients had it within the correct time frame. However, less than one third (31%) of those who needed a scan within 1 hour had it within this time. Figure 2 shows the level of doctor and for each the
percentage of scans which were justified and performed within the recommended time according to NICE.

![Figure 2: Compliance for each level of doctor with the NICE guidelines for the time taken for CT and whether the scan was justified.](image)

The CT reports were also analysed in order to determine those who had sustained significant injury (i.e. fractures or any acute intracranial pathology secondary to their head injury). Figure 3 provides a breakdown of these results for each of the following clinical scenarios.

<table>
<thead>
<tr>
<th>Clinical scenario</th>
<th>Percentage of CT scans which were found to have fractures or acute intracranial pathology secondary to head injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had CT within 1 hour when needed</td>
<td>45%</td>
</tr>
<tr>
<td>Did not have CT within 1 hour when needed</td>
<td>36%</td>
</tr>
<tr>
<td>Had CT within 8 hour when needed</td>
<td>25%</td>
</tr>
<tr>
<td>Did not have CT within 8 hour when needed</td>
<td>0%</td>
</tr>
<tr>
<td>Had CT, which was justified by NICE criteria</td>
<td>35%</td>
</tr>
<tr>
<td>Had CT, but did not justify NICE criteria</td>
<td>29%</td>
</tr>
</tbody>
</table>

![Figure 3: Proportion of CT scans with acute changes caused by the head injury.](image)

DISCUSSION

This audit has highlighted that there were significant delays in the optimal time intervals for obtaining a CT. This reflects poor compliance with this area of the NICE guidelines. It is felt that this is likely to be a problem for other hospitals throughout the country, since the updated guidelines now mean that there is now an even higher demand for this form of imaging. Despite this, the vast majority of scans (88%) were justified according to the NICE criteria. This implies that most doctors seem to be aware of the NICE guidelines. Of these, 35% were found to have significant acute changes secondary to their head injury. However, a considerable proportion (29%) of those CTs performed which did not satisfy NICE criteria were also found to have acute changes. This raises controversy over the true value of the NICE guidelines. There is no substitute for clinical experience. Junior doctors are more likely to follow a guideline than an experienced emergency physician. It is clear that the NICE guidelines should not be used in isolation, but should be used as a tool to help guide clinicians in their management of patients with head injuries.

Most scans were not performed in a timely fashion. This was most markedly seen when junior doctors organised the scan and only managed to get 17% of their patients scanned within 1 hour when indicated. This was much less than consultants who managed to get half of their patients scanned within the hour. However, both managed to get all of their patients to have their scan within 8 hours when indicated. It is clear that the one hour target is difficult to achieve due to the high demand placed on the radiology department. It may be particularly difficult for junior doctors to comply with the 1 hour target as they are likely to discuss their patient with a more senior doctor. This may take quite a long time, particularly when the department is busy. Despite this, it is important that junior doctors discuss their patients in order to learn and also to make sure that they do not subject them to an unnecessary large dose of radiation.

CONCLUSION

The use of CT scanning in those who sustain a head injury has dramatically increased over recent years. This reflects NICE guidelines which recommend a change from ‘admit and observe’ to ‘diagnose and decide’. Unfortunately, this has placed added pressure on many radiology departments throughout the country, including the one at RBH.

The results of this audit have revealed that there is still controversy whether the NICE guidelines are achievable without extra staff and equipment. The recommended NICE time intervals for scanning have placed added pressure on ED staff who now have to face an additional obstacle in achieving the four hour throughput target set by the government. There is also clearly an uneven spread of facilities for CT scanning across the country. RBH has only one CT scanner available for patients from the ED. Those hospitals with EDs with the luxury of two or more available CT scanners would be expected to be more flexible and compliant with the guidelines.

Clearly, there is a need for this audit to be repeated in the future. It is suggested that more subjects are assessed over a longer time frame in order to increase the accuracy of results. It is also recommended that the use of CT for the management of head injuries amongst those under 16 is investigated, as the NICE guidelines differ for this age group.

Abbreviations

CT, computed tomography
ED, emergency department
NICE, National Institute for Clinical Excellence
RBH, Royal Blackburn Hospital

References
