

## ORIGINAL ARTICLE

# Are we able to comply with the NICE head injury guidelines?

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**Background:** An estimated 120 000 patients are admitted to hospital in England and Wales each year for neurological observations following a head injury. The National Institute for Clinical Excellence (NICE) has issued guidelines on the quality and frequency of neurological observations that should be made.

**Objective:** Review of frequency and quality of observations in one trauma unit.

**Study design:** Prospective audit of current practice.

**Method:** Data on 100 consecutive patients admitted to a trauma unit for neurological observations were audited to monitor the consistency and frequency of neurological observations requested by the admitting doctor. Medical staff had previously been briefed on the recommendations of the NICE head injury guidelines.

**Results:** A detailed evaluation revealed inconsistency and inexplicable gaps in observations. No single set of observations was complete. Sequential regular monitoring was difficult for many reasons, bringing into question the safety and reliability of current practice.

**Conclusions:** The introduction of the new guidelines which recommend more frequent neurological observations has major staffing implications, where underperformance raises significant clinical governance issues. All hospitals admitting patients with head injuries should have an established protocol based on the NICE guidelines with observations recorded on an appropriately designed data collection form. Trained nursing staff have enormous work and time pressures including direct patient care, ward rounds, drug rounds, administration, management, and responding to emergencies. The development of a competency based training programme for auxiliary nursing staff to undertake neurological observations, including when to report concerns, is one solution to reduce the pressure on trained nursing staff.

There are an estimated 120 000 admissions annually to hospitals in England and Wales following a head injury, accounting for 0.64% of all National Health Service (NHS) bed days (340 000 days).<sup>1</sup> Neurological observations are an obligatory part of the management of these patients, placing a significant demand on already stretched resources. One to three per cent of patients develop life threatening intracranial pathology,<sup>2,3</sup> reflecting that the quality and frequency of observations are paramount in the early detection of complications. These issues are addressed in the National Institute for Clinical Excellence (NICE) guidelines: *Head Injury: triage, assessment, investigation and early management of head injury in infants, children and adults*.<sup>4</sup>

The NICE guidelines recommend the following frequency of neurological observations:

- half-hourly until the Glasgow Coma Score (GCS) is 15
- half hourly for two hours
- only hourly for four hours
- two hourly thereafter.

Therefore once a GCS of 15 has been noted, there should be 17 observations recorded in the 24 hours following this assessment, providing the GCS remains 15.

The NICE guidelines recommend that all paramedics be “fully trained in the use of the adult and paediatric versions of the GCS and its derived score”. Therefore it may be argued that the observations should start at the first point of patient contact—that is, in the paramedic’s assessment, if they have been involved in the patient’s prehospital care. The minimum set of variables to be recorded each time as recommended by NICE includes:

- GCS
- Pupil size and reactivity

- Limb movements (separately from the “best motor response” assessed for GCS score)
- Respiratory rate
- Heart rate
- Blood pressure
- Temperature
- Blood oxygen saturation

This paper presents the results of a prospective audit in which the following were recorded:

- the initial prescription of the frequency of neurological observations
- the frequency of neurological observations performed
- the variables recorded as part of the neurological observations.

## METHODS

A consecutive series of 100 patients admitted with a head injury within the previous 24 hours were followed prospectively. The following were noted:

- Whether the admitting doctor had documented the frequency of neurological observations needed. If they had, did they comply with NICE guidelines?
- The frequency of observations carried out.
- The individual variables recorded during each, separate neurological evaluation.

The patients had been assessed by Accident and Emergency (A&E) medical staff and been referred to our trauma unit.

**Abbreviations:** A&E, accident and emergency; GCS, Glasgow Coma Score; NICE, National Institute for Clinical Excellence

Usually this was because of a history of transient loss of consciousness or persisting nausea and vomiting following a head injury. Medical and nursing staff were not informed of the audit. Ethical approval not obtained since this was a prospective observational study.

## RESULTS

A total of 65 male and 35 female patients (age range of 16–94 years; median 54.4) were admitted during the audit period. Children (that is, patients under the age of 16 years) are not admitted to our hospital. None of the admitted patients was excluded. Twenty patients (age range 20–79 years) had a computed tomography (CT) scan during their stay in hospital. There were two positive scan results.

- A 24 year old man: CT requested during assessment in A&E. The scan revealed cerebral contusion. No neurosurgical intervention was necessary.
- A 66 year old man: CT performed 48 hours after admission. The scan revealed a small subdural haematoma. No surgical intervention was necessary.

Of the 20 CT scans, 8 were requested during A&E assessment, and 12 during the ward admission. On the basis of age range there were two main groups of patients: 20–30 years ( $n = 7$ ) and 60–79 years ( $n = 8$ ).

### Prescription of the frequency of neurological observations

In 44% of patients the frequency of observations was not prescribed, presumably left to the discretion of the nursing staff. In 12% of cases the correct prescription—that is, in compliance with the NICE guidelines—was made. In 44% of the patients the frequency of observations requested were different from those recommended in the NICE guidelines.

### Frequency of neurological observations performed

Irrespective of the prescribed frequency of observations noted above only one patient (1%) had a complete set of observations. Furthermore this was the only case in which the frequency documented by the admitting doctor was actually adhered to (whether in accordance with NICE guidelines or not).

### Documented observations

The patient observations were not completed in any of the cases. A more detailed review of individual observations is given in fig 1. The total no of sets of observations undertaken was 1452, which should equate to 11616 individual variables (8 variables recorded as a minimum in the NICE guidelines). We noted 7702 variables recorded, representing 66% of full data collection. Importantly, the NICE guidelines suggest particular attention is given to motor response deterioration. In this study limb movements were noted in only 9% of each

set of individual variables. It is important to emphasise that the assessment of limb movements is separate from the best motor response as assessed for a GCS score. This is because a developing hemiparesis may be missed even though the best motor response—for example, obeying commands or putting out the tongue—may be noted.

## DISCUSSION

This audit demonstrates deficiencies in the current practice of neurological observations and raises serious clinical governance issues. We feel this is likely to be a problem across other hospital trusts rather than just our unit. A recent retrospective survey of 200 000 children presenting with a minor head injury in north-east England found that in the 14 children needing neurosurgical intervention, the recognition of secondary deterioration was delayed in all, with a mean delay of 18 hours (range 6 hours to 14 days). In only one child were there documented routine neurological observations.<sup>5</sup>

During the collection of these data, we undertook a questionnaire survey of charge nurses responsible for wards admitting head injuries in six local hospitals. This revealed that only 50% of units were aware of the NICE guidelines and only 33% were working to an existing hospital protocol for the management of head injuries. We found that that most of the nursing staff in our unit were also unaware of the NICE guidelines and that there was no departmental protocol in place for neurological observations.

The frequency and quality of neurological observations are of concern and current practice may be unreliable in detecting early neurological deterioration. Staff resources are limited with qualified nursing staff dealing with ward rounds, drug rounds, clinical emergencies, and managerial issues. Hence, sequential regular monitoring of neurological observations for many reasons is difficult. The development of competency based training programmes for auxiliary nursing staff to undertake neurological observations including when to report concerns is one possible solution to the problem of prescribed neurological observations.

## CONCLUSION

Our study has highlighted a number of potential issues in the implementation of NICE guidelines in relation to neurological observations. We recommend that all hospitals dealing with head injuries should use a protocol based on recommendations from the NICE guidelines, with training of all staff who deal with patients admitted for neurological observations. The observations should be recorded on a standard proforma that includes the eight components of the minimum data requirement. Hospital trusts should consider training—for example nursing auxiliaries—to perform neurological observations and to report any deterioration to qualified nursing staff.

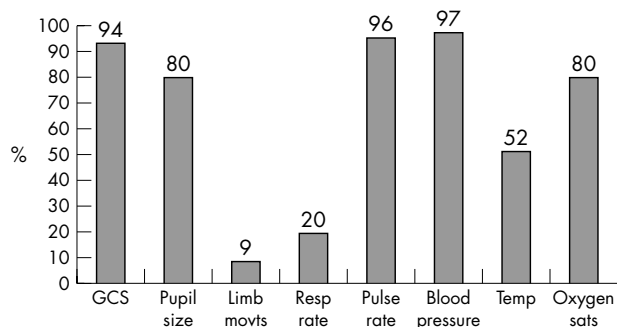
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## REFERENCES

- 1 Hospital Episode Statistics, 2000/2001. London: Department of Health.
- 2 Nelson MJ. *Safe Neurosurgery 2000. A Report from the Society of British Neurological Surgeons*. London: Society of British Neurological Surgeons, 1999.
- 3 Kay A, Teasdale G. Head injury in the United Kingdom. *World J Surg* 2001;25:1210–20.
- 4 National Institute for Clinical Excellence. *Head Injury: triage, assessment, investigation and early management of head injury in infants, children and adults*. London: National Institute for Clinical Excellence, 2003.
- 5 Pickthall C, White S, Eyre JA. Retrospective study of children with minor head injury in the North-East of England. 2002.



**Figure 1** Completeness of neurological observations ( $n = 100$ ). GCS, Glasgow Coma Score; movts movements; resp, respiratory; temp, temperature; sats, saturation.