An audit of nurses' conduct and recording of observations using the Glasgow Coma Scale

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ABSTRACT

Objectives: The Glasgow Coma Scale (GCS) is routinely used to assess patients following head injury or other acute neurological events. The aims of this project were: to assess and evaluate registered nurses' baseline knowledge of the three behavioural responses that make up the assessment tool; to review the recording of GCS in neuroscience areas compared with non-specialist units; and to ascertain when the GCS is taught during nurse training and the background experience of the lecturers who teach it.

Methods: Sixty questionnaires were used across six clinical areas: neurosurgery, neuro-intensive care, neuromedicine, general medicine, accident and emergency, and general intensive care. Observational studies compared nurses' performance, recording and documentation of GCS observations in each of these units. The unpublished standards for making GCS observations, written by the Neuroscience Nursing Benchmarking Group, were used to identify questions for examination in the audit.

Results: Several areas for improvement were identified; including the use and application of painful stimulus. The use of sternal rubbing and nail bed compression continues to be common practice. Data collected also suggested a lack of knowledge of the patho-physiology underpinning the three components that make up the scale. Problems were evident in the record keeping, with very few examples of documentation within nursing records of the separate components of the GCS. Finally, the questionnaires returned from the universities revealed that students were introduced to the assessment tool during the first year of training, normally by lecturers with a critical care or accident and emergency clinical background.

Conclusions: The data demonstrated wide variation in GCS scoring across all specialties. While the benchmarking standards are applied in neuroscience wards, the guidelines are not widely available for use in other units. It is pertinent to consider whether access to a clear and comprehensive protocol would help remove some of the ambiguities and ensure a more consistent approach to assessment. Novel approaches to education are required to maintain knowledge and skills in this area of practice. Documentation needs to improve and include the results from component parts of the scale. Instruction on the performance of GCS observations, if taught in the first year of training, should be re-examined, linking theory to practice prior to qualifying. The findings from this study will provide a useful basis for future research using more precise methods.

Key words
■ Glasgow Coma Scale ■ Head injury ■ Assessment ■ Outcomes ■ Benchmarking

Accepted for publication following double-blind peer review 30 September 2008

The Glasgow Coma Scale (GCS) was published by Teasdale and Jennet in 1974 as a clinical scale for 'assessing the depth and duration of impaired consciousness and coma' (*Table 1*). The GCS is routinely used for the assessment of patients with head injuries and other neurological problems. The early detection of subtle changes in the GCS assessment is vital to the treatment, management and ultimate prognosis of brain injured patients.

However, there is a growing amount of evidence that suggests that problems are encountered when completing some aspects of a GCS assessment (Waterhouse, 2007) and that the potential for performing an incorrect assessment is high in some clinical situations, e.g. in the ventilated patient receiving sedation and muscle relaxants, or where alcohol or substance misuse masks the assessment process.

To address these problems, a project to explore nurses' practise and knowledge of the GCS began in January 2007, undertaken by members of the national Neuroscience

Table 1. Glasgow Coma Scale

Eye opening	Spontaneously	4
	To speech	3
	To pain	2
	None	1
Best verbal response	Orientated	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	None	1
Best motor response	Obeys commands	6
	Localizes to pain	5
	Flexes/withdraws to pain	4
	Abnormal flexion	3
	Extension	2
	None	1

From: Teasdale and Jennet, 1974.

Nursing Benchmarking Group (NNBG), working with the Royal College of Nursing (RCN) neuroscience nursing forum and the British Association of Neuroscience Nurses (BANN). The aim of this project was to examine registered nurses' baseline knowledge of the GCS and their perceptions of its use in practice. Observational studies compared the performance of GCS observations in a general ward, accident and emergency unit, and general intensive care, as well as in neuroscience areas. A key goal of the project was to determine at what point in nurses' professional development the GCS was taught, whether in clinical practice or in the university setting, specifically within nurse training.

It was anticipated that information and data gathered through this work would assist in the development of guidelines to facilitate a more accurate and consistent use of the tool. Guidelines would address some of the anomalies implicit in the recording of these observations. The aim is that the development of guidelines may help clarify nurses' misunderstandings about the GCS and its use.

Methods

Both qualitative and quantitative methods of data collection were used. Twenty questionnaires were distributed to course tutors based at universities across the country to establish the education and training provided to student nurses, (only eight were returned). A further 60 questionnaires comprising in-depth interviews, combined with direct observations, were designed for the clinical areas.

A number of teams from different clinical areas were invited to participate through their clinical educators and unit managers. These included:

- Neurosurgery
- Neuro-intensive care
- Neuromedicine
- General intensive care
- General medical ward
- Accident and emergency department.

The neuroscience areas were all based within the regional neuroscience unit. The remaining three clinical areas were recruited from a large local hospital trust and a district general hospital.

This was a multi-centre study, and ethical approval was obtained through the local research ethics committee. Validity was established by basing the design of the assessment tool on standards written by the NNBG (*Table 2*), best evidence (Brunker, 2006), accepted best practice and consensus agreement. Data were collected using two questionnaires and an observational proforma. These data were then entered onto a secure database for further analysis.

Twenty-three questions were selected representing the basic themes for the investigation including (*Table 3*):

- Assessment of nurses' knowledge of the rationale for using the GCS
- Identifying nurses' knowledge and their understanding of the underpinning physiology supporting the three behavioural responses of the GCS

Table 2. The benchmark for undertaking Glasgow Coma Scale observations

The national benchmark for GCS observations was written by members of the national Neuroscience Nursing Benchmarking Group (NNBG) by a team comprising nurse representatives of most of the regional neuroscience units across the UK.

This benchmark is evidence based, although some aspects relied on consensus agreement owing to a dearth of research by nurses on the recording of GCS observations.

The GCS benchmark remains unpublished although key recommendations have been published by Waterhouse, 2005. Palmer and Knight (2006) also make reference to the benchmark.

The benchmark document is available to members of the NNBG

- Determining the use of painful stimuli by the nurse in the different sections of the GCS
- The assessment of measures that maintain continuity and consistency of GCS recording and documentation.

The questionnaire was piloted with five volunteers from the researchers' neurosurgical unit and was also reviewed by members of the NNBG to assess whether there were any methodological issues to be addressed, such as problems with the content, wording or difficulties in understanding the statement or completing the questionnaire. This led to the addition of a free-text box at the end of each statement for people who wished to make further comments.

Results

Three quarters of the staff interviewed were staff nurses who had been qualified between 2–6 years. A small number (n=7, 11%) were senior staff nurses with over 10 years' experience, nearly all of them working in the same clinical area since qualifying.

Rationale for using the GCS

Questions 1–6 related to the design of the scale, the category of patients that might require monitoring and the actual purpose of the tool. The following information was elicited from the responses in this section.

There was obviously some confusion about what participants believed constituted the GCS with 62% (n=38) of nurses including pupil response and limb movement into the three established components of the tool. Meanwhile the remaining 38% (n=22), identified eye opening, verbal response and motor response accurately.

All respondents agreed that the GCS should be used to observe the following head-injured patients:

- Conscious patients
- Unconscious patients
- Complaints of headache
- Changes in behaviour.

The clinical area and personal experience of the practi-

Table 3. Questionnaire for the Glasgow Coma Scale audit

Where do you work: .....Length of time in the clinical area: .....
Staff Grade: .....Length of time since qualifying: .....
(Tick the appropriate box or add comments at the bottom of the form)

1.	Have you ever received any formal training on the use of the GCS?	Yes ☐	No ☐
2.	How frequently do you use the GCS as a neurological assessment tool for the patients that you care for?		
	• Every day	☐	
	• Every week	☐	
	• More than once a month	☐	
	• Less than once a month	☐	
	• Almost never	☐	
	• Never	☐	
3.	What types of patients should have a GCS performed ? (tick all that apply)		
	• An Unconscious patient	☐	
	• A patient with obvious facial injuries	☐	
	• Patient with a history of head injury – no loss of consciousness	☐	
	• History of headaches	☐	
	• A patient with a fractured skull	☐	
	• A patient displaying changes in their normal behaviour	☐	
	• A patient diagnosed as having a stroke	☐	
	• A patient suffering with a nose bleed	☐	
	• Not sure / Don't know	☐	
4.	What is the purpose of the tool? (tick all that apply)		
	• Assessment of the severity of the injury	☐	
	• To measure the level of consciousness	☐	
	• To assess the cognitive ability of the patients	☐	
	• To assess the patient's level of responsiveness	☐	
	• Don't know / Not sure	☐	
5.	What are the specific sections that comprise the GCS tool?		
	• Eye opening, verbal response, motor response	☐	
	• Eye opening, verbal response, pupil response	☐	
	• Eye opening, pupil response, limb response	☐	
	• Eye opening , verbal response, motor response, pupil reaction, limb movement	☐	
	• Don't know / Not sure	☐	
6.	There are two types of scale – can you tell me the difference between the 14 and 15 point scale?		
	• Pupil size greater than 9	☐	
	• Extension recorded	☐	
	• Abnormal flexion	☐	
	• Don't know	☐	
7.	What part of the body is being assessed when you are assessing eye opening?		
	• Cerebral cortex	☐	
	• Occipital lobe	☐	
	• Cerebellum	☐	
	• Reticular formation	☐	
	• Hypothalamus	☐	
	• Don't know/not sure	☐	
8.	Which part of the body is being assessed when you assess the verbal response?		
	• Cerebral cortex	☐	
	• Occipital lobe	☐	
	• Cerebellum	☐	
	• Reticular formation	☐	
	• Temporal lobe	☐	
	• Don't know/not sure	☐	
9.	What method do you use to apply peripheral painful stimulus to encourage the patient to open their eyes?		
	• Jaw margin	☐	
	• Trapezius pinch	☐	
	• Sternal rub	☐	
	• Supra-orbital ridge pressure	☐	
	• Other (please state)	☐	
10.	Which part of the body is being assessed when you assess motor response?		
	• Cerebral cortex	☐	
	• Occipital lobe	☐	
	• Cerebellum	☐	
	• Reticular formation	☐	
	• Temporal lobe	☐	
	• Don't know/not sure	☐	

Table 3. Questionnaire for the Glasgow Coma Scale audit (continued)

11.	What method do you use to apply central painful stimulus to encourage the patient to move their limbs? • Jaw margin ☐ • Trapezius pinch ☐ • Sternal rub ☐ • Supra-orbital ridge pressure ☐ • Other (please state) ..... ☐	
12.	What method do you use to apply peripheral painful stimulus to encourage the patient to open their eyes? • Jaw margin ☐ • Trapezius pinch ☐ • Sternal rub ☐ • Supra-orbital ridge pressure ☐ • Other (please state) ..... ☐	
13.	Can you list the types of stimulation that are not recommended for use? • ..... • ..... • ..... •	
14.	When testing the best motor response do you: (tick all that apply) • record the response in the best arm ☐ • record the response in the worst arm ☐ • record the response in the both arms ☐ • record the best response from the legs ☐ • record the best response in all four limbs ☐ • Don't know ☐	
15.	Can you describe the difference between:	Yes / No
	• localisation	☐ ☐
	• normal flexion	☐ ☐
	• abnormal flexion	☐ ☐
	• extension	☐ ☐
16.	When testing verbal responses do you ask the patient : • Where they were ☐ • Which year it was ☐ • Their date of birth ☐ • Which day of the week it was ☐ • Other – please state ..... ☐	
17.	How would you differentiate between a patient who is confused or offering inappropriate words.	
19.	Do you discuss the contents of the three questions when handing over to the nurse taking over on the next shift. 7.30 ☐ 13.30 ☐ 21.00 ☐	
20.	Do you always use small dots in the appropriate boxes when recording on the chart.	Yes ☐ No ☐
21.	Do you always use straight lines to join up the 'dots' on the chart.	Yes ☐ No ☐
22.	Do you records the completed patients assessment in the nursing documentation as sum of the component parts	Yes ☐ No ☐
23.	A complete set of GCS observations are completed together during shift handover or on transfer of the patient,	Yes ☐ No ☐

tioners influenced the use of the GCS to assess patients suffering stroke, facial injuries and a severe nose bleed.

Knowledge of anatomy and physiology

Four questions aimed to investigate the depth of nurses' knowledge of the anatomical regions of the brain that correspond with the three subdivisions of the GCS. In the author's experience, in-depth knowledge of the relevant physiology enhances performance of GCS observations (*Table 4*), so that the GCS becomes more than a tick-box assessment tool, and provides more meaningful information for a neurological assessment.

Table 4. Physiological rationale for the three subdivisions of the Glasgow Coma Scale (GCS)

Eye opening	Reflects the activity of the reticular activating system, extending from the brain stem into the thalamus and through to the cerebral cortex, described by Hickey (2003) as 'the degree to which a person is able to interact with their environment with a quality of vigilance'. Disruption of these pathways will cause a discernable change in level of consciousness and is reflected in the GCS
Verbal response	Determines the integrity of the higher, cognitive and interpretive centres of the brain responsible for speech, comprehension and articulation
Motor response	Assesses the function of the sensory and motor pathways and looks for the best response to a series of simple commands

Given that only seven (16%) of the 43 nurses who had received enhanced instruction on the GCS could remember the relevant anatomy, it is reasonable to conclude in this study that, in practice, knowledge of the relevant anatomy makes little difference to nurses' neurological assessments. Respondents' comments also questioned the relevance of knowledge of anatomy and reasoned that, provided they recorded the responses correctly, the additional knowledge did not and would not influence their performance of the assessment.

Nurses were asked where and when they were taught GCS observations. About 70% (n=42) of them stated that they had received instruction during their first year of training but none of them indicated that they repeated this training as their knowledge of physiology increased.

Out of the total of 60 respondents, 22 (37%) had received additional instruction by attending post-basic university modules in neuroscience, critical care or emergency care nursing practice; and 21 (35%), had received education in their clinical areas.

It was difficult to identify any quantitative data to demonstrate whether nurses who had received additional instruction were more competent at performing GCS observations. However, it was apparent from the clinical observations, and confirmed during the interviews, that while less experienced nurses could record the observed responses in the appropriate boxes on the chart, they were tentative when their assessment did not tally with the previous recording, believing it was as a result of their inexperience rather than genuine changes in the patient's condition. Similarly, the 75% of respondents who were experienced nurses (i.e. qualified for more than 2 years) (n=45) repeatedly made reference to the importance of their intuitive skills—that, irrespective of any obvious clinical signs, they had a 'sense' of impending neurological change or deterioration that heightened their level of vigilance and observation (*Figure 1*).

Figure 1. Place of formal training in the use of the Glasgow Coma Scale by participants in the study

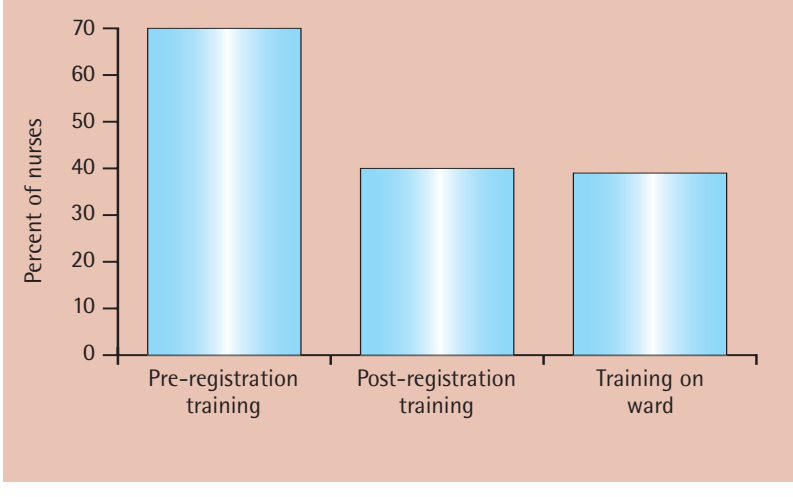


Table 5. Rationale for use of painful stimulus in Glasgow Coma Scale assessments

Eye opening

If the patient fails to open his/her eyes to voice or to gentle stimulation, a much deeper painful stimulus is required, recognized as pressure applied to the lateral outer aspect of the second or third finger for approximately 10–15 seconds.

Motor response

If the patient is unable to move his/her limbs to commands, a central painful stimulus should be used, in practice, pressure applied over the supra-orbital nerve (except for suspected facial fractures) or to the spinal accessory nerve lying under the trapezium muscle (except for high cervical fractures).

Application of painful stimuli

The aim of questions 13–16 was to determine whether nurses appreciated the importance of when, why and how to apply painful stimuli if the patient is unable to respond to voice or command. There has been considerable confusion about the indications for applying a central versus a peripheral stimulus to elicit a particular response from the patient. Primary afferent neurons transmit information from the somatic sensory receptors, i.e. the peripheral source of the pain, to the dorsal horn in the spinal cord. One branch shares a synapse with a second-order neuron, and triggers or moderates a range of rapid and involuntary reflexes (simple reflex action). The other branch immediately decussates and the impulse ascends along the spinothalamic fibres, through the brain stem to the thalamus. A painful stimulus from the head and shoulders (i.e. a 'central pain' applied to the cranial nerves) follows a similar pathway to the thalamus, where both impulses are then transmitted and mediated in a variety of areas of the sensory cortex before an appropriate motor response is initiated.

It is apparent therefore, that the delineation and application of the two types of painful stimuli has become obscured, and it is important that practitioners understand the rationale for the use of these two methods in different clinical circumstances.

The aim of applying any painful stimuli is to elicit a response but not to cause long-term pain or damage that may be interpreted as a sign of battery or abuse (Fairley and Cosgrove, 1999). The GCS uses eye opening as an indicator of the patient's wakefulness and awareness of his/her surroundings. While a peripheral stimulus may provoke an isolated reflex action, if the patient is also able to open his/her eyes, it demonstrates the integrity of the spinal pathways to the reticular formation in the brainstem. However, this test is ineffectual in the patient with a spinal cord lesion.

Motor response is intented only to assess the patient's ability to obey a series of commands or to localize toward the source of the pain. The use of a peripheral stimulus could produce a reflex action that has not been interpreted or mediated in the higher centres of the brain. A 'central'

painful stimulus targeting the cranial nerves avoids the likelihood of such an equivocal response, with the use of the trapezium muscle pinch (XIth spinal accessory cranial nerve), used in the presence of severe facial fractures (*Table 5*).

This part of the study involved observation of the practitioner to increase validity and reliability. Data collection was particularly difficult and time consuming. It was the intention at the outset of this study to observe all nurses assessing patients. While there was little difficulty studying nurses working in neurosurgery or neuro-intensive care where peripheral and central stimuli are used on a daily basis, in all other areas, even neurology, the need to apply pain is rarely indicated. As a consequence, it was necessary to rely for research observations on participants demonstrating to the author the type of stimulus that they would have used.

Although all of the nurses were able to list the types of painful stimuli that are not recommended (including nipple tweaking, sternal rub and pinching the skin around the arms), only 47% (n=29) could correctly identify the approved methods. Despite this, while 89% (n=53) of the nurses working in neurosurgical areas applied pressure to the side of the finger, other nurses used a combination of nail bed, sternal rubbing and pressure to the trigeminal nerve at the jaw margin. Interestingly, of the ten nurses that had worked on the neurosurgical unit for more than 5 years, four of them regularly used jaw margin compression (trigeminal nerve), compared to the more junior nurse, who applied supra-orbital ridge pressure.

In general clinical areas, 29 respondents (48%) routinely employed nail bed pressure, despite it causing significant bruising and ongoing discomfort, while the remaining nurses used sternal rubbing, trapezius pinch or stated that they would use supra-orbital ridge pressure as both a peripheral or central stimulus.

An abnormal motor response to a central painful stimulus is one indication of a severe brain injury. Nurses on NITU and GITU had little difficulty in using supra-orbital ridge pressure to elicit a response. In comparison, practitioners in other areas expressed reluctance to use this pressure point, with 32% (n=19) preferring to use the trapezium pinch or even the sternal rub, even though they recognized that these were not recommended interventions.

The data revealed some confusion relating to understanding and recognizing the difference between localization, abnormal flexion and extension. While the nurses working in neurosurgery and neuro-intensive care clearly identified the differences and understood the clinical significance of each one, 14 respondents were unclear that they needed to record the highest level of movement observed from the responses.

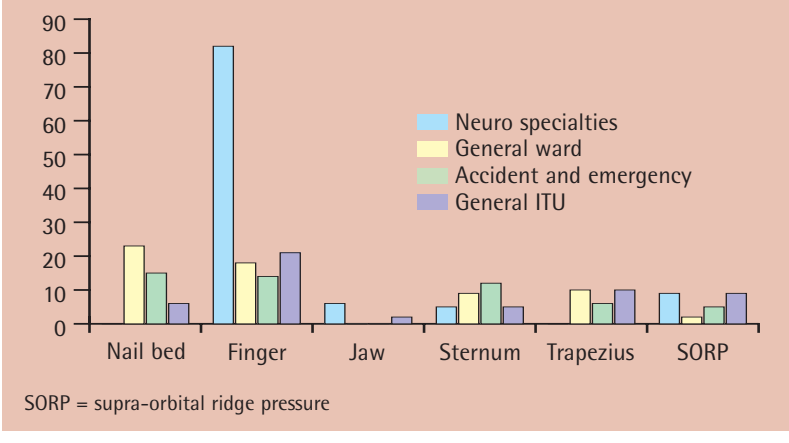
Verbal response assesses the patient's orientation to time, place and person. All nurses asked questions related to the patient's personal details and where the patient was (town, city or hospital). However, 9% of participants (n=5) went on to ask the patient the date and day of the week, particularly if they had answered the year and month correctly (*Figures 2* and *3*).

Ensuring continuity and consistency of GCS recording

The final few questions related to documentation to ascertain how or if nurses related changes or variations in observations to colleagues to maintain continuity of care.

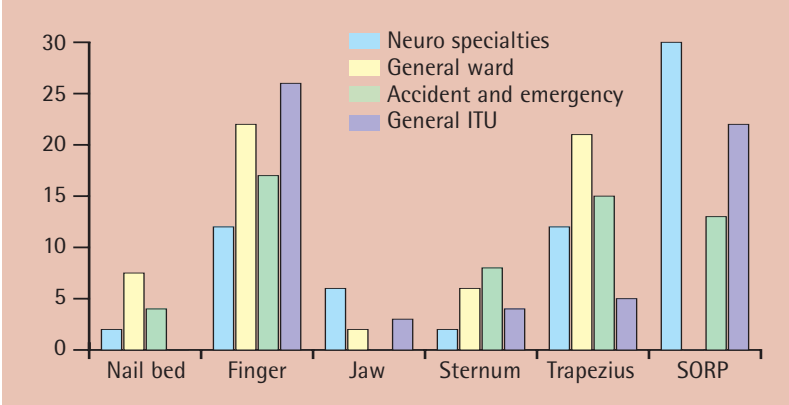
A patient who is awake and fully oriented with normal movements will have a GCS documented as 15/15. The National Collaborating Centre for Acute Care (2007) recommends (in NICE guideline 56) that a deterioration of 1 point in the motor response, a drop of 3 points in the eye opening or verbal response, or an overall deterioration of 2 points in the GCS is of clinical significance and must be reported immediately. GCS observations must be recorded half-hourly until the GCS has returned to 15. However, these guidelines are primarily aimed at head injury assessment in accident and emergency departments. Emergency care practitioners may have little difficulty in conforming to this guidance, as their patients are acute admissions and frequently clinically unstable, necessitating continuous monitoring. The present study revealed that there is some confusion in other clinical areas as to how this guidance should be translated, and the frequency of recording of

Figure 2. Methods used to apply peripheral painful stimulus



SORP = supra-orbital ridge pressure

Figure 3. Methods used to apply central painful stimulus



SORP = supra-orbital ridge pressure

observations varied significantly across all six clinical areas that participated.

A patient with his/her eyes closed will need to be stimulated to encourage eye opening. The degree of stimulation will vary from merely calling the patient's name, gently shaking him/her, to the application of a more painful stimulus. A patient on 4-hourly observations will naturally try to sleep in between the observations. On the neurosurgical ward, GCS may be recorded as '14/15' to reflect the fact that the patient has required rousing from sleep during the night (relative to the patient's normal baseline). However, on one general medical ward, the nurses commented that they followed a locally developed algorithm, based on the (now superseded) 2003 head injury guideline from NICE, which meant that they were instructed to perform half-hourly observations, just because the patient needed 'waking up' from what they believed was 'normal' sleep, which meant that the patient had dropped one point on the GCS. These nurses expressed their frustration given the frequency of the observations and the instructions to inform medical staff whenever there was a fall in GCS of 1 point.

Finally, nurses were observed and in some cases asked whether they repeated the contents of the questions or performed a set of GCS observations during shift handover or when transferring care to nurses on different clinical areas. Only 28% of nurses (n=17) stated that they did, but they all stated that practice was inconsistent across all patients, and that this was usually reserved for those patients that were causing most concern.

Checking nursing records it was obvious that very few nurses documented the sum of the component parts of the GCS at the end of each shift. The importance of calculating the sum is often underrecognized, as a GCS of 8 may consist of E1, V2, M5 with a completely different prognosis to a GCS of E3, V3, M2. These changes are normally obvious in the acutely deteriorating patient but are more difficult to track in the patient who may be deteriorating over a few days.

Discussion

As this is the first stage of an investigation into the performance of GCS observations, it is important to consider each objective and the implications for practice.

Rationale for performing GCS observations

It was apparent from the review that all practitioners, regardless of specialty or experience, understood the indications for commencing a patient on GCS observations. Despite this, there is experiential and anecdotal evidence that some patients' neurological status is inconsistently monitored, particularly following relatively minor slips, trips or falls.

Recommendation

The importance of recording GCS observations following even a relatively minor injury must be emphasized through in-house education sessions.

Knowledge of anatomy and physiology

It is apparent that few nurses appear to appreciate the underlying knowledge base that underpins the GCS assessment process.

Recommendation

A basic knowledge of physiology through local training might enable the practitioner to identify more subtle signs of altered levels of consciousness and understand the significance of their findings.

Application of painful stimulus

The data revealed considerable variation and discrepancies in the way that painful stimulus was applied. In particular, the difference between central and peripheral stimulus and when it is clinically indicated to apply a deeper stimulus. On initial observation it would seem that nurses have not integrated available knowledge into their clinical practice. Confusion among nurses was particularly high when they discussed the rationale behind using a central versus a peripheral stimulus. Many nurses responded, 'you need to use a 'central' painful stimulus to assess motor response', but in practice, 20% of nurses (n=12) applied pain to the centre of the body, rather than to the central nervous system, an easy mistake considering the practice of some medical staff of using the sternal rub for stimulation. Unfortunately, in the clinical situation, inadequate stimulation can lead to an inaccurate baseline from which to observe early and subtle changes of deterioration resulting in significant consequences for the patient.

Recommendations

Painful stimulus should only be applied when the patient shows no response to voice or commands. The practice of applying painful stimulus to assess hemiplegic limbs in patients who are awake and aware should be firmly discouraged. There is a definite need for further clarification on the type, degree and indications for applying painful stimuli.

Ensuring continuity and consistency of GCS recording

Vigilant observation and accurate recordings are essential for detecting changes in neurological function. Ideally, the same person should perform the assessment over the shift to maintain a consistent approach to patient observations. Although it could be argued that, if the GCS is a reliable tool, it should not depend on who carries out the assessment, in practice, continuity of recording by the same practitioner can identify more subtle changes in neurological status earlier than when it is carried out by a nurse who is unfamiliar with that patient. Unfortunately, this was impossible to quantify with these data and can only be supported through the interviews and personal and anecdotal experience. Although it is considered good practice in the NNBG benchmark, it may be unrealistic to expect nurses giving and receiving handover, to perform

GCS observations together on all the patients being monitored at the time. Therefore it is important to state and record the score in terms of E4, V5, and M6, i.e. opens eyes spontaneously, offers orientated verbal response and obeys commands, to avoid any possible misunderstanding when interpreting the total score.

An important question is: why may a scale that is so well established both nationally and internationally, which was designed to be straightforward and simple to use, cause so many uncertainties? The data highlighted in the present study have raised some key issues that should be used as prompts to make a number of recommendations to promote consistent practice and minimize confusion. Not surprisingly, there were wide variations in practice between the neuroscience unit and the other clinical areas, but errors in practice were evident even within the specialist areas. Given this degree of ambiguity it is pertinent to ask whether there is a need for more explicit guidelines. As a nurse working in a neuro-intensive care unit, the author can refer to colleagues, neurosurgeons and an anaesthetist for advice. However, many patients are transferred from accident and emergency and other general wards where the degree of competence in neuroscience nursing among staff is understandably not at the same level as nurses in a neurosurgical unit. Similarly, the delegation of recording of neurological observations to student nurses must also be carefully considered and should only be performed under direct supervision Finally, it may also be appropriate, if not rather contentious; to suggest that there should be one method of applying painful stimulus for both peripheral and central stimulus, given that many practitioners are unsure of what they are actually assessing.

Recommendations

- Further education on the use of GCS—may be formal or informal, supplemented by policies and guidelines
- Consistent use of GCS for all unconscious patients regardless of underlying pathology
- Dissemination of benchmarking standards across non-neuroscience specialties
- Laminated guidelines to be used along side the observations as an enable easy tool.

Conclusions and limitations

The conclusions that can be drawn from the findings of this study are limited by the small sample size. In addition, there were difficulties in observing sufficient GCS recordings on actual patients in non-neuroscience areas, where the GCS was infrequently used. Ideally, a 'team' of researchers would spend time in each of the clinical areas. Simulation exercises may have provided a useful alternative. As a result, there was some variability between the methods of data collection. Moreover, practice often changes when staff are closely observed, and this may have affected the findings.

Medical staff were not included in this study and the ability to compare their practice with that of nurses may have yielded important information about the sources of variability in the understanding and use of the GCS.

If greater resources in terms of time and additional personnel had been available for this study it might have been possible to collect data from a wider range of clinical areas or perhaps use clinical skills laboratories to simulate performance. These approaches might have yielded additional useful findings.

A similar study replicated throughout the UK could provide valuable data to inform the production of guidelines for the use of the GCS, and lead to improvements in patient care.

Conflict of interest: none declared

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KEY POINTS

- Many nurses experience confusion about what constitutes the Glasgow Coma Scale (GCS), often including pupil response and limb assessment
- A number of nurses expressed concern about when, how and in many cases why they need to apply a painful stimulus to elicit a particular response
- Caution is indicated when student nurses or unqualified staff undertake GCS observations—GCS observations should only be undertaken by staff that have been trained and are competent to perform the skill
- Nurses have no monopoly on making errors. Medical staff experience similar difficulties when undertaking GCS observations