

Top of the Charts: Detecting neurological deterioration more efficiently through improved documentation.

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Abstract

The Glasgow Coma Scale is a practical tool, accepted and utilised worldwide, to assess a patient's conscious level. Despite the introduction of other tools, the Glasgow Coma Scale still remains the most reliable and effective method of detecting neurological deterioration.

Detecting neurological change in an individual requires skilled observation and must rely on the ability of the clinician to carry out an accurate and reliable assessment. A large limitation of the Glasgow Coma Scale is that observer assessments may vary from clinician to clinician. What one individual may observe as neurological deterioration, another may not notice.

It was recognised by senior nursing staff that if a neurological chart could be designed, that enhanced the ability to see the trends in a patient's conscious level and instructed clinicians on when to report a finding, deterioration may be identified earlier and managed more efficiently.

This study outlines a new neurological chart implemented at a busy private hospital in Melbourne and discusses the impact that clear and concise observation and documentation has on the ability to detect neurological deterioration.

Key Words: *Glasgow Coma Scale, neurological observations, neurological assessment, conscious level assessment.*

Introduction

Neuroscience nurses are very familiar with the Glasgow Coma Scale. It is a reliable tool that most nurses in the neuroscience setting would use on a daily basis to assess their patients. Many neuroscience nurses would go as far as saying that they perform the Glasgow Coma Scale assessment so often, it almost comes as a second nature to them. However, what about those nurses that are not neuroscience trained and are not as familiar with the use of the tool? How confident do they feel utilising the tool and knowing that they are performing it correctly? There have been numerous studies carried out which suggest that when the Glasgow Coma Scale is utilised by individuals who are not highly trained in performing the tool, the chances of missing critical information to suggest neurological decline increases.

The Glasgow Coma Scale was first intro-

duced in Glasgow in 1974 by two men, Graham Teasdale and Brian Jennett. The purpose of the tool was to provide a relatively simple method of assessing and recording the level of consciousness in individuals who had experienced head trauma (Matis & Birbilis, 2008). Initially, the tool was used to assess and grade the severity of head injury in the first six hours following head trauma. However, over time, the intentions of its use have expanded and it is now commonly used to predict a patient's overall outcome (Balestreri, Czosnyka, Chatfield, Steiner, Schmidt, Smielewski, Matta & Pickard, 2004). The Glasgow Coma Scale is not only utilised to assess the depth and duration of coma and impaired consciousness; it can also help to gauge the impact of a wide variety of conditions such as acute brain damage due to traumatic and vascular injuries, infections and metabolic disorders (Matis & Birbilis, 2008).

The Glasgow coma score uses the following criteria to assess level of consciousness:

- Eye opening Score 1-4
- Best verbal response Score 1-5
- Best motor response Score 1-6

By adding the scores, the final score is be-

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tween 3 and 15.

The Glasgow Coma Scale quickly became a simple, standardised tool used throughout the world (see Figure 1). Its simplicity meant that doctors, nurses and other healthcare professionals could all use the one system to assess and grade their patients (Fischer, Ruegg, Czaplinski, Strohmeier, Lehmann, Tschan, Hunziker & Marsch, 2010). Unfortunately over the recent years, a large limitation to the tool has become apparent and that is the ability of the person carrying out the tool to do so reliably and consistently (Fischer et al., 2010).

In many neuroscience settings, there are nursing staff that do not have a strong background in neuroscience nursing. For example, agency staff and new graduate nurses commonly work in these settings without necessarily having the desired amount of experi-

Aim

To create a neurological observation chart that shows clear parameters for reporting clinical deterioration and to assist nurses who are not as experienced at performing the Glasgow Coma Scale by providing them with prompts for clinical escalation.

Method

A study was conducted between January 2015 and June 2015 on a busy neurosurgical ward in Melbourne. 26 medical records were reviewed for patients undergoing craniotomy procedures. 1089 sets of neurological observations were audited to see how many nurses were documenting their neurological observations correctly. The criteria for correct documentation included:

- Date and time of assessment
- A mark was placed on the chart for each of the assessment criteria of eye opening, best verbal and best motor response.
- The Glasgow score was added up correctly.
- The Glasgow score was written down.

*Limb strength documentation was not included in the audit, as this is a separate assessment from the Glasgow Coma Scale.

A new neurological observation chart was then created and implemented on the neurosciences ward within the hospital (see Figure 2). Staff were provided with formal in-services on how to utilise the new chart. They were also re-educated on how to perform an accurate conscious level assessment. Neurosurgeons working within the clinical area were also consulted and asked of their opinions when it came to creating guidelines as to the use of the chart.

The chart was trialed for 8 months. At the conclusion of the trial period, the chart was audited according to the same criteria as the previous audit. Once again, 1089 sets of neurological observations were reviewed.

Results

Pre implementation audit was undertaken on 26 medical records. The initial audit on the old neurological observation chart returned a result of 62% correct documentation. Of the 1089 sets of neurological observations, 677 sets of observations were correctly documented.

The post implementation audit was undertak-

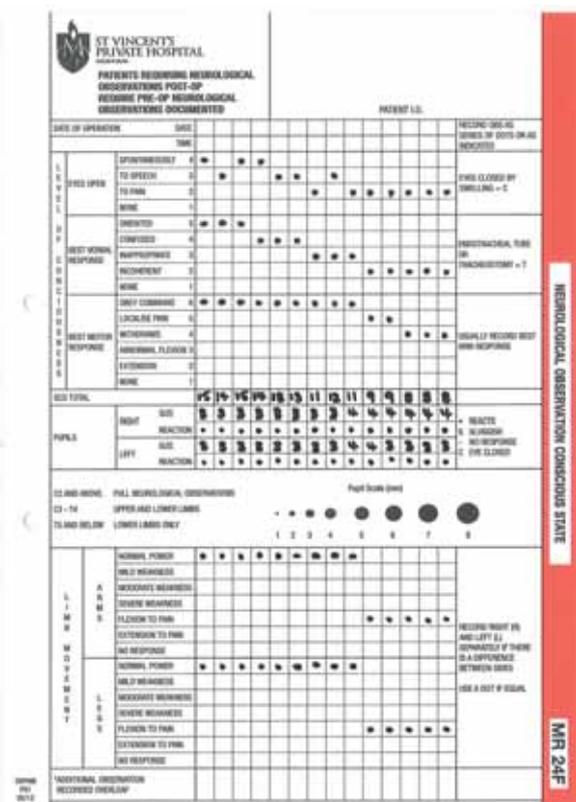


Figure 1 (Above): The old neurological observation chart formerly used throughout the hospital.

ence to accurately detect clinical deterioration. It was felt that if a neurological observation chart could be created, that would prompt nursing staff on what to do in the event of neurological decline, the chances of missing the critical signs of patient deterioration could potentially be reduced.

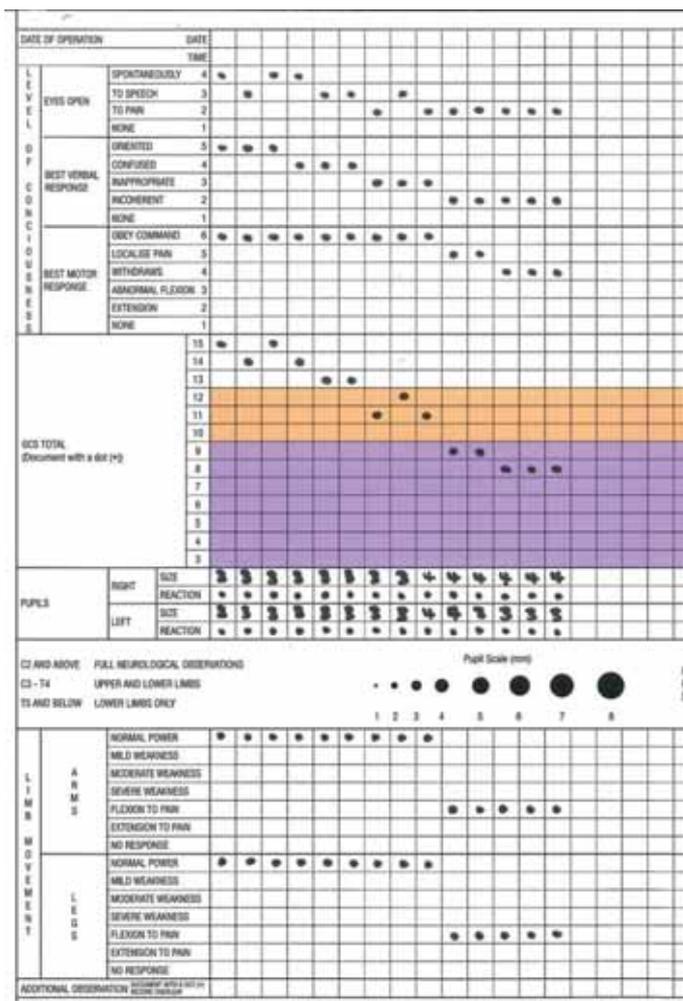


Figure 2 (Above): The new neurological observation chart that was introduced in 2014.

en on 27 medical records. The second audit on the new observation chart returned a result of 87% correct documentation. Of the 1082 sets of neurological observations, 940 sets of observations were correctly documented.

Discussion

The accurate neurological assessments of a nurse enable quick detection of neurological changes and prompt actions by the by the medical team to improve survival outcomes of patients and minimise long-term effects (Chu, 2014). There is strong evidence to suggest that conscious level assessment is critical in identifying patients who may require escalation in their care, however serious errors in assessment can lead to a failure to detect or deal with complications in a timely manner. Nurses are required to have sound anatomical and physiological knowledge if they are to accurately interpret an assessment of level of consciousness (Chu, 2014). A study carried out by the Joanna Briggs In-

stitute qualified a nurse as having adequate experience in performing a Glasgow Coma scale (GCS), if they had at least two years post-registration experience, with one of those years spent practicing neurological nursing. The study went on to report that knowledge and experience were the most critical factors in determining a nurse's assessment of a patient's conscious state (Chu, 2014).

A study carried out by Rowley and Fielding compared the ability of experienced neuroscience nurses, as opposed to newly graduated and student nurses, to carry out a GCS. The study found that experienced nurses were more consistent and confident with their GCS scoring than those that were less experienced (Gabbe, Cameron & Finch, 2003).

The new neurological chart designed was effectively the same as the old chart, however it had a few new changes to assist nurses in recognising clinical deterioration. The new

chart was colour-coded to represent the severity of the GCS score. The colour coding was based on the guide to head injury, provided by the Joanna Briggs Institute. Mild head injury was represented with a score of 13-15; moderate head injury was given a score of 9-12; and severe head injury a score of 3-8 (Joanna Briggs Institute, 2013). A GCS score of 9 or below was colour-coded in purple so that it would prompt an emergency response by nursing staff. A score of 10-12 was colour-coded in orange to allow staff to recognise that their patient may need clinical review. A score of 13-15 was coloured in white, to represent a stable patient. The idea of the colour coding was to push staff to recognise deterioration early, ideally before the patient deteriorates into the purple zone.

Whereas the old chart required nursing staff to write a number in the box to correlate with the patient's GCS score, the new chart asks the staff member to place a dot in the box corresponding with the appropriate GCS total. Effectively, it creates a graph of the patient's Glasgow Coma Score over a twenty-four hour period. This method was named the "track and trigger" method, where the staff member can visually track the GCS score and pre-empt the beginnings of clinical deterioration.

The new chart provides much stricter guidelines to its use and as to when nursing staff must contact a doctor. Staff must report according to the colour coding on the chart. This does not mean that they cannot report if they are simply concerned about their patient. A guideline was put in place that the staff member must report to the doctor if a patient's GCS score drops by 2 points or more, if the result lies in an orange or purple area. For instance, if a patient with a score of 15 drops to a score of 13, the nurse is not required to take any action because a GCS of 13 still lies within the white zone. However, if the GCS were to drop one point more to 12, which lies within the yellow zone, the nurse would be required to seek clinical review of that patient.

Discussions with relevant Neurosurgeons prior to the release of the new chart enabled relevant guidelines to be put in place. It was decided that staff did not have to report variations in patients' pupil sizes unless they were two or more sizes different. It was felt that pupils that only differed in size by one point was not enough evidence to suggest the beginnings of neurological decline.

A new area was added to the chart to enable additional observations to be recorded. Such observations may include objective or subjective data, such as noticeable facial droop and slurred speech or things the patient may tell staff. For example, feelings of pins and needles in a limb or blurred vision. The additional observations area also allows nurses to write down specific orders relevant to the patient. For example, an alteration in the frequency of observations or a specific instruction from a doctor. Having this specific area allows for improved communication between staff members and informs nurses about how to adequately respond to the changes in their patients' neurological status'.

Conclusion

Creating a new neurological observation chart is never going to replace the need for nurses to have sound assessment skills and critical thinking. Staff need to be educated on how to perform a thorough, accurate conscious level assessment. A neurological observation chart that includes strict guidelines and visual prompting is a step forward in the right direction when it comes to the accuracy of clinical documentation. However, further audits and reviews will need to be conducted in the future in order to narrow the discrepancies between staff member interpretation and documentation of conscious level assessment.

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