Improving Provider Documentation of Glasgow Coma Scale Scores for Minor Adult Head Injuries: Is One Series of Education Sufficient?

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PURPOSE

- Minor head injuries are one of the most common acute complaints seen in the emergency medicine setting. In the United States, more than 2.5 million emergency department (ED) visits and hospitalizations occur each year due to traumatic brain injuries (Weber, et al., 2021). Minor head injuries can be defined with a Glasgow Coma Scale (GCS) score of 13-15 (Reddy, et al., 2023).
- Consistent documentation of GCS score allows providers to document the severity of an injury and determine the necessity of a head computed tomography (CT). In return, this helps decrease the exposure to radiation from unnecessary CTs and will continue to promote patient safety.
- Education was provided in February 2022 to emergency medicine providers employed by an independent physician group to promote consistent GCS documentation.

HYPOTHESIS

- The hypothesis was that one time education on consistent documentation of GCS score would be sufficient to support a practice change. The work group hypothesized that if the GCS score documentation is inconsistent, the number of inappropriately ordered head CT's (per the Canadian CT Head Rule), will increase. As time moved further the initial education (6-12 months), the GCS score documentation was presumed to decrease requiring additional education to be implanted again.

METHODS & ANALYSIS

- Provider documentation rates of the GCS score were evaluated during the pre-and post-intervention period along with appropriate Head CT utilization rates (as defined by criteria from the Michigan Emergency Department Improvement Collaborative (MEDIC).
- Data was obtained through d2i and Arbor Research, stored securely and analyzed in Excel. Patient and provider identifiers and any unnecessary elements of protected data were removed from the study data set.

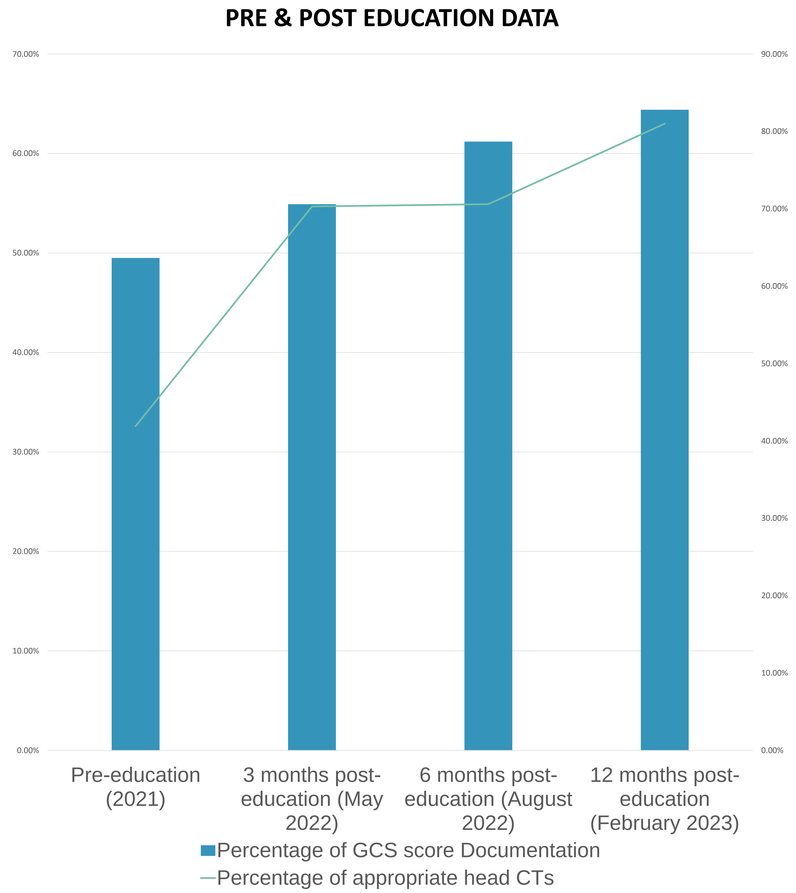
DESIGN, SETTING, AND SAMPLE

- ECS participates in MEDIC program as an independent physician group with support from the affiliated hospital system .
- The population sampled for the quality intervention period included adult emergency department visits with a primary International Classification of Diseases (ICD) 10th revision code of head or facial injury (>400 classification codes) or a chief complaint of head or facial injury.
- The adult head injury population was defined by MEDIC data dictionary.
- Data was analyzed from the pre-education period of January 2021-January 2022 and the post-education time of February 2022-February 2023. There were 10 total ED's represented in the full data set, but 3 were excluded due to not being present at the time of pre-education.

Although Blue Cross Blue Shield of Michigan and MEDIC work collaboratively, the opinions, beliefs and viewpoints expressed by the author do not necessarily reflect the opinions, beliefs and viewpoints of BCBSM or any of its employees. Support for MEDIC is provided by Blue Cross and Blue Shield of Michigan and Blue Care Network as part of the BCBSM Value Partnerships program

RESULTS

- GCS score documentation improved by 14.9% from pre-education implementation in 2021 to post education implementation in February 2023.
- Pearson Correlation value = 0.763, suggesting a strong correlation between GCS and appropriate utilization of head computed tomography (CT) as defined by MEDIC.



CONCLUSIONS

- One time education on the importance of GCS score documentation by providers for adult minor head injury cases demonstrated a 14.9% increase in GCS documentation rates post-education as compared to pre-education.
- It is important to note that this intervention was provided as part of a quality improvement (QI) bundle that consisted of several interventions aimed at improving provider adherence to evidence-based utilization of CT in adult minor head trauma cases.
- This indicates that consistent GCS score documentation is considered a factor in addition to other interventions such as the Canadian head CT, when appropriately ordering head CTs.
- Potential limitations for this project include a small sample size single provider group participation, passive educational methods used (e.g. email, asynchronous education updates), and data extends over a year.

IMPLICATIONS AND RECOMMENDATIONS

- Between 3- and 6- month post-education there was integration of a tool on Electronic Health Record (EHR) charting to help with documentation of GCS score for providers.
- Improvement of consistency for GCS score documentation can help reduce unnecessary head CT's and reduce cost for patient and hospital.
- Recommend continuation of promotion of consistent GCS score documentation as best practice rule and integration of this education into new hire curriculum.

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REFERENCES

Reddy, A., Poonthottathil, F., Jonnakuti, R., and Thomas, R. (2023). Efficacy of the Canadian CT head rule in patients presenting to the emergency department with minor head injury. *Indian Journal of Critical Care Medicine, 28* (2). 149-151. DOI: 10.5005/jp-journals-10071-24620

Weber, M., Nie, J., Espinosa, J., Delfino, K., & Michael, A. (2021). Assessing the efficacy of mild traumatic brain injury management. *Clinical Neurology and Neurosurgery, 202* doi:10.1016/j.clineuro.2021.106518

Pre-education (2021)
Education on importance of GCS documentation was completed and sent to all providers

3 months Post-education (May 2023)

6 months post-education (August 2023)
Epic program upgrade completed 3- 6 months post education to simplify GCS score documentation

12 months post-education (February 2023)
Achievement of quality improvement and consistency of GCS score documentation