

Incidence of Adult ($\geq 40y$) Traumatic Intracranial Bleeding and Likelihood of Routine Discharge: Do Co-Morbidities Matter?

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Introduction

- Intracranial bleeding as a result of trauma is a known cause of morbidity and mortality among adults [1,2].
- The current literature demonstrates an association between both size and presence of intracranial hemorrhage and its effects on mortality, however it does not readily address the morbidity and associated functional outcomes of those who survive [3,4].
- It is often difficult for families to make decisions regarding post-acute placement of family members who have suffered traumatic brain injuries [5,6].
- The correlative information from this study can be used in the future to assist with prognostication for patients admitted to trauma services to help facilitate goals of care discussions with patients and families.

Objective

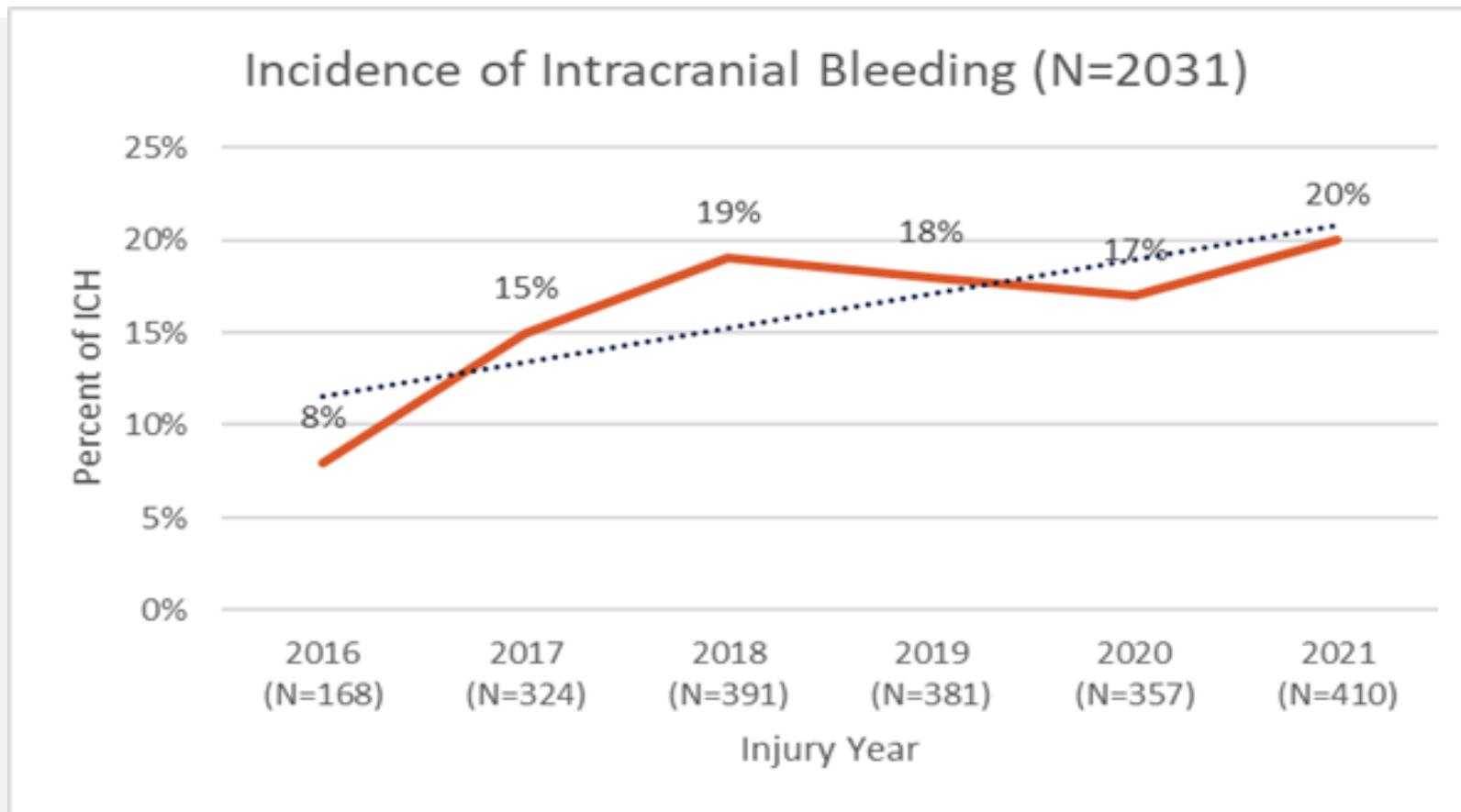
- This study aims to demonstrate the presence of traumatic intracranial bleeding in adult trauma patients age 40 and above and identify comorbidities associated with discharge disposition of these patients.
- We hypothesized that the likelihood of discharge to home decreases with advancement of age in the presence of intracranial hemorrhage (ICH).

Methods

- This is a single center retrospective cross-sectional study on prospectively collected trauma registry data of all adult (≥ 40 years) trauma patients with an ICH admitted to an ACS verified Level I trauma center in South Carolina, inclusive years July 2016 to December 2021.
- 2031 patients were included in the analysis.
- Dependent Variables: Age groups: 40-49, 50-64, 65-74, 75-84, and ≥ 85
- Independent Variables: Demographics, Injury Patterns, Morbidity, and Mortality
- This research shows the length of stay and discharge disposition of each subset of patients
- A logistic regression was performed to ascertain the effects of predictor variables on the likelihood that an adult ICH trauma patient experienced a routine disposition.

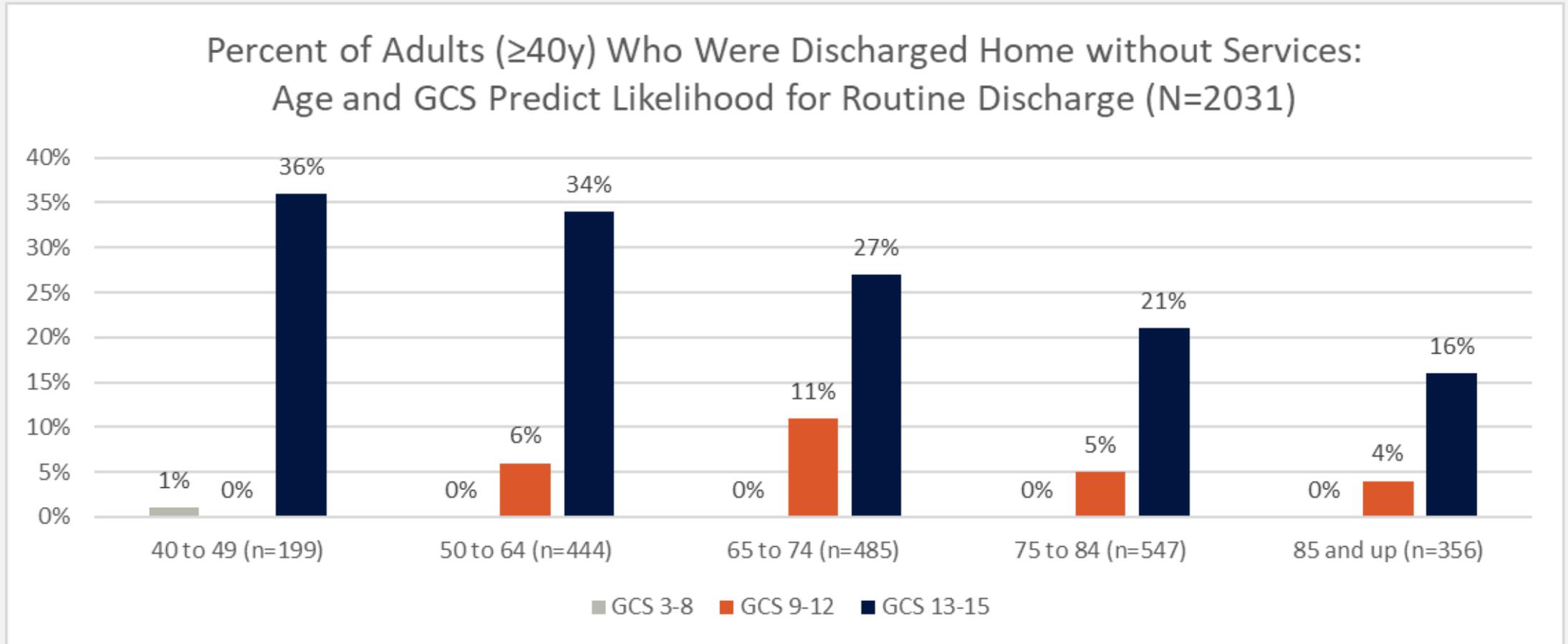
Results

- 837 (41%) experienced routine discharge to home
- Across the study timeframe there was an increase in incidence of ICH in adult (≥ 40 years) trauma patients.
- The likelihood of routine discharge to home decreased by 6% with advancement in age (per year starting at age 40)
- Hospital Length of Stay = discharge to home decreases by 15% as the hospital length of stay increases by one day.
- Full Trauma Activation = discharge to home decreases by 41% if the patient is fully activated.



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GCS and Discharge



Glasgow Coma Score = as GCS increases by one unit; the odds to discharge to home without services increases by one.

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Results: Comorbidities

- CVA Comorbidity = discharge to home decreases by 49% if the patient has a CVA Comorbidity.
- COPD Comorbidity = discharge to home decreases by 46% if the patient has a COPD Comorbidity
- Dementia Comorbidity = discharge to home decreases by 45% if the patient has a Dementia Comorbidity.
- Diabetes Comorbidity = discharge to home decreases by 27% if the patient has a Diabetes Comorbidity.

Discussion

- It is known that traumatic intracranial hemorrhages are more common in the elderly. This is thought to be secondary to several mechanisms, including increased fall risk as well as increased cerebrovascular fragility with aging, particularly of bridging veins. [8]. This research shows that advancement of age every year starting at age 40 is an independent risk factor for decreased likelihood by 6% with each year of age advancement, of routine discharge to home in the presence of an intracranial hemorrhage.
- This data also shows that patients are less likely to be discharged to routine home care if they also have a CVA, COPD, dementia, or diabetes. These risk factors can be determined early on in the hospital course in order to identify patients with these medical comorbidities that have been associated with a lower likelihood of routine home discharge.
- This data also demonstrates that with each day of increased hospital length of stay, the likelihood of discharge to home decreases.

Discussion

- The use of palliative care services for goals of care discussions in trauma patients has become increasingly more common, however it is still underutilized, particularly in geriatric trauma situations where the outcome is likely to be poor [7].
- The correlative data from this study can be used to help identify risk factors in adult patients age 40+ who have suffered an intracranial hemorrhage that are associated with a lower likelihood of returning to routine home care.
- This information can be used in the future to assist with prognostication for patients admitted to trauma services to help facilitate goals of care discussions with patients and families.

Strengths and Limitations

- The current literature is lacking in identifying risk factors associated with discharge disposition in patients with intracranial hemorrhage. In this retrospective cross-sectional study, we were able to demonstrate several comorbidities associated with a decreased likelihood of routine home discharge in this patient population.
- This study has several limitations, including data extraction errors by the trauma registry, which is not solely designed for research. Further, the data represents one community in South Carolina and may not be generalizable to larger populations or regions. Future research could include large multi-institutional studies or prospective observational research.
- More studies are needed in the future to follow patients after discharge to determine if there is a correlation between discharge disposition and functional outcome.

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