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Justin Pasquale

James Cipolla

Mark Cipolle MD

Puja Patel MD

Jennifer Macfarlan

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# The Need for Neurosurgical Intervention in Trauma Patients with a Positive CT Scan and Glasgow Coma Scale of 13-15

Justin Pasquale, James Cipolla, Mark Cipolle MD, Puja Patel MD, Jennifer McFarlan

Lehigh Valley Health Network, Allentown, Pennsylvania

## Background

- Lehigh Valley Cedar Crest (LVH-CC), a PTSF Level 1 Trauma Center, admits over 4,000 Trauma patients a year.
- Many of these patients have a minor brain injury as defined as a Glasgow Coma Scale anywhere from 13-15.
- These patients, with a positive CT head scan, are often admitted or transferred to LVH-CC for neurosurgical evaluation.

## Objectives

- While neurosurgical consultation is very common in these patients, the majority of these patients do not need a neurosurgical intervention.
- The purpose of this study is to determine what factors are associated with the need for a neurosurgical intervention in trauma patients with a GCS of 13-15 and a positive CT head scan.

## Methods

The trauma registry and epic hyperspace were used to populate REDcap and excel databases that were created prior to the study.

Patient data was obtained from online records such as type of brain injury, neurosurgical consult, use of anticoagulants, midline shift, etc.

The information collected through REDcap will be moved to an excel document where it can be further analyzed.

## Results

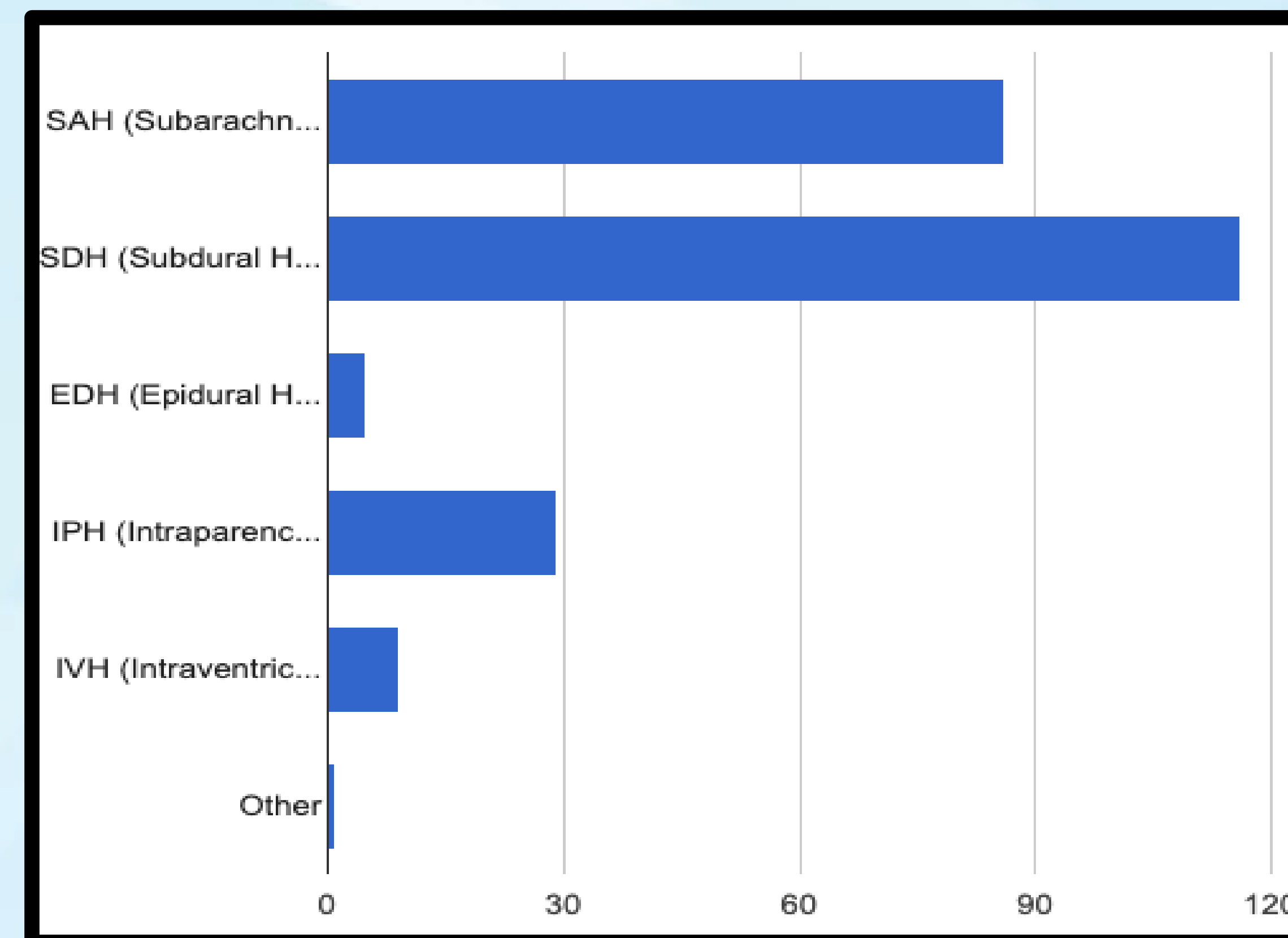


Figure 1: The graph above depicts the type of brain injuries sustained by the 199 reviewed trauma patients. (Patients can sustain multiple bleeds)

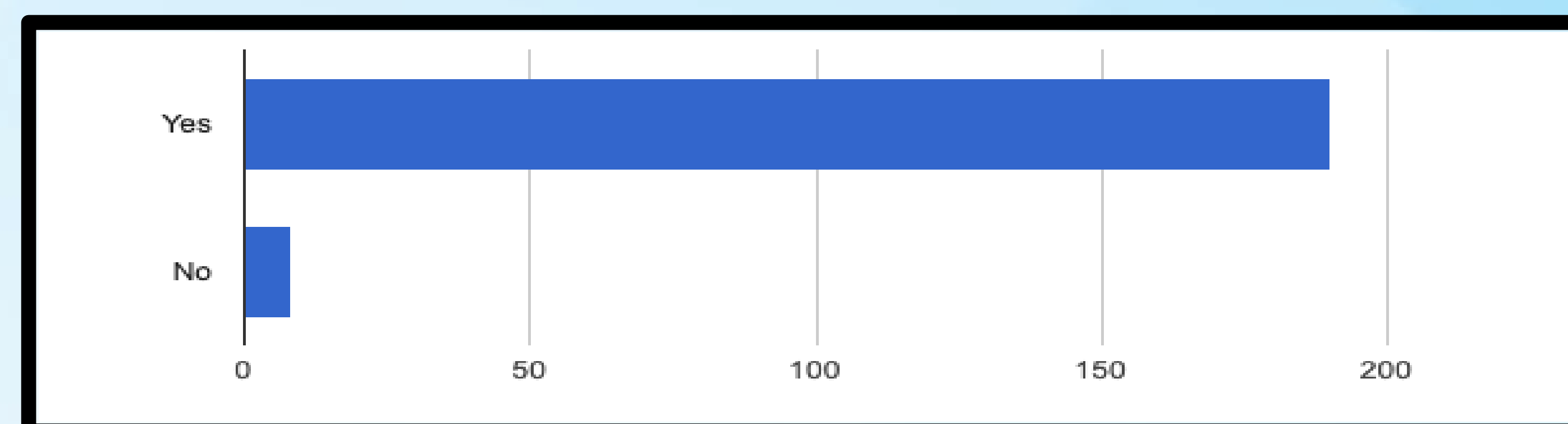


Figure 2: This graph shows the number of trauma patients who did or did not receive a neurosurgical consult.

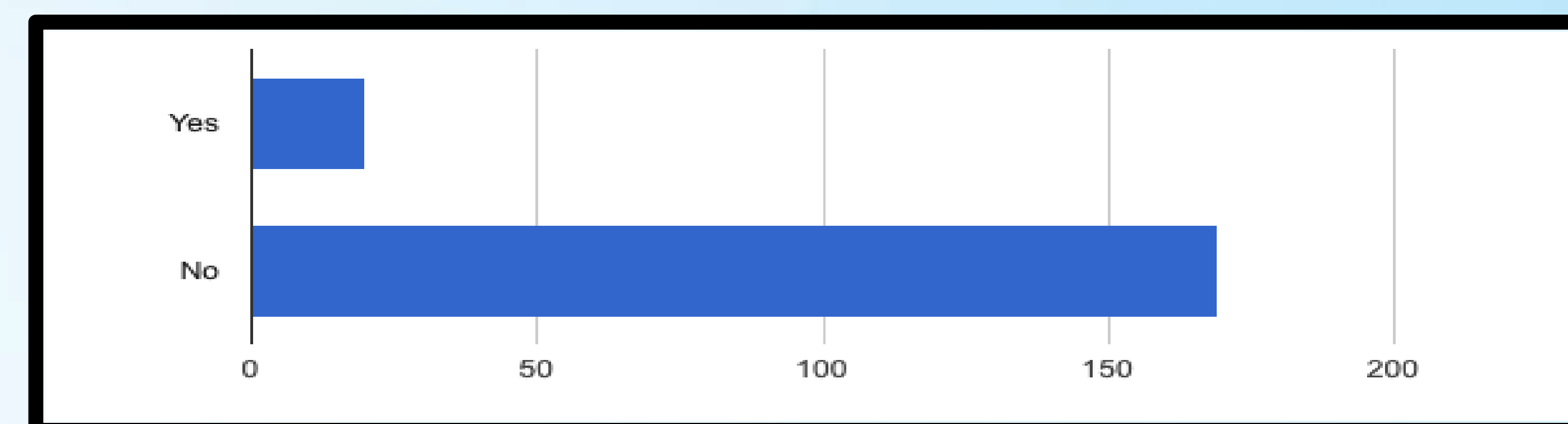


Figure 3: This graph shows the number of trauma patients who did or did not require a neurosurgical intervention.

## Results

- Out of the 199 reviewed patients, about 80% of them had a Subarachnoid/Subdural (Hematoma/Hemorrhage) bleed.
- About 96% of patients had a neurosurgical consult and of these patients only about 11% required a neurosurgical intervention.
- Most patients who needed a neurosurgical intervention received a Craniectomy/Craniotomy.
- The majority of SAH and SDH bleeds remain the same or even improve at follow-up scanning

## Conclusion

- Out of the patients reviewed from the database, the majority received a neurosurgical consult but did not need a neurosurgical intervention.
- The common mechanism of injury seen in the patients was some type of fall.
- Most common bleed were SDH and SAH
- The majority of bleeds in these patients improved or were unchanged on follow-up scanning.
- Future analysis will include factors associated with the need for a neurosurgical intervention in these patients with a GCS 13-15.
- Therefore, we may be able to define a subset of these patients that do NOT need a neurosurgical consultation and admission or transfer to a Level 1 trauma center.

### References

- Joseph B;Aziz H;Sadoun M;Kulvatunyou N;Tang A;O'Keeffe T;Wynne J;Gries L;Green DJ;Friese RS;Rhee P; "The Acute Care Surgery Model: Managing Traumatic Brain Injury without an Inpatient Neurosurgical Consultation." *The Journal of Trauma and Acute Care Surgery*, U.S. National Library of Medicine, pubmed.ncbi.nlm.nih.gov/23778447/.
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