



# Investigating Ventriculostomy Associated Infection: A Challenging Task due to Documentation Variance

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## Background

- A Case:
  - DC presents to the ER with altered mental status and is diagnosed with a large intracranial hemorrhage that extends into the ventricular system. She is admitted to the intensive care unit (ICU). Informed consent is obtained for intracranial pressure (ICP) management with an External Ventricular Drain (EVD). Post-EVD placement, the patient's neurologic status improves and eventually the EVD is removed. Following this the patient's neurologic status again declines. Lumbar puncture is performed, ICP is elevated and cerebrospinal fluid analysis suggests meningitis. A ventriculostomy associated infection (VAI) is diagnosed.
- VAI Statistics
  - In the US-4% of patients with an EVD result in VAI.
  - VAIs lead to a median 15.5 day and 40.4 day increase in ICU and hospital length of stay respectively.
  - 9.2 day mean EVD duration at MHC.
  - Using EVD bundles and following standardized protocol(s) reduces the incidence of VAI.
  - To properly investigate the potential causes for our patient's CSF infection retrospectively, we rely upon complete and standardized procedural documentation.

## Objective

- We endeavored to determine if EVD placement and manipulation were documented in a standardized fashion at our academic affiliated community-based hospital.

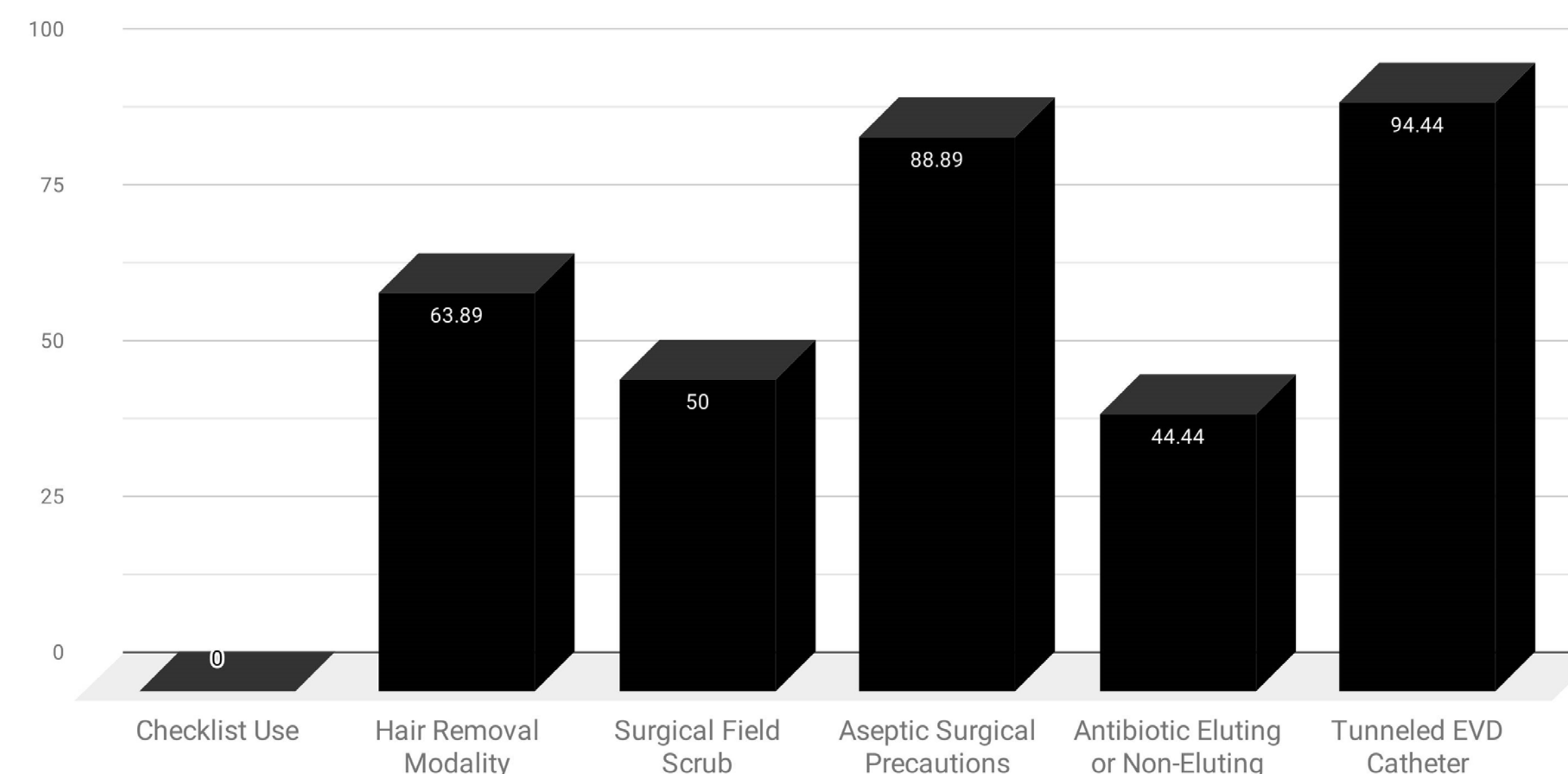
## Methods

- A retrospective chart review was performed of all patients (36) with percutaneous EVD placed in 2018 at our hospital
- Data extracted included: (Best Practice Guidelines)
  - Use of a checklist, chlorhexidine surgical site preparation, sterile EVD placement, hair removal with clippers, antibiotic eluting catheter use, tunneled catheter placement, use of occlusive dressing with chlorhexidine patch, aseptic EVD manipulation e.g. CSF sampling, and no routine EVD replacements.

## Results

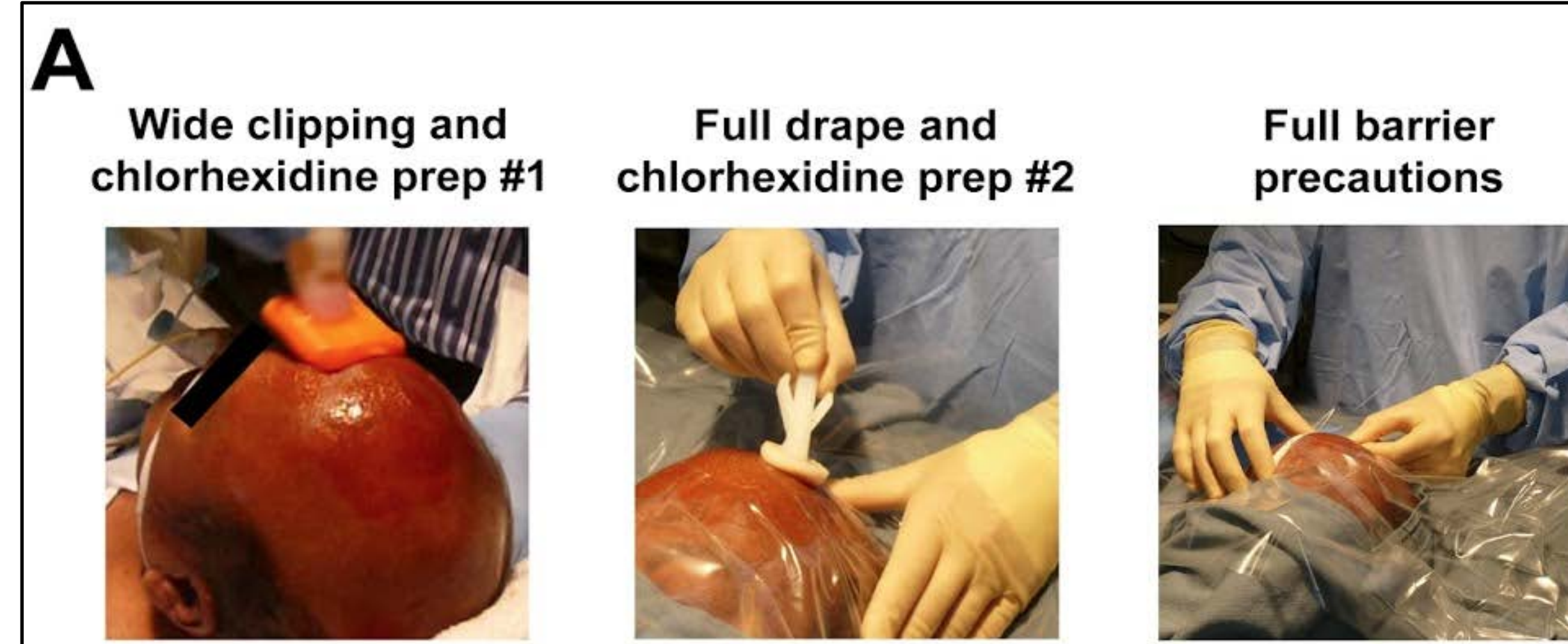
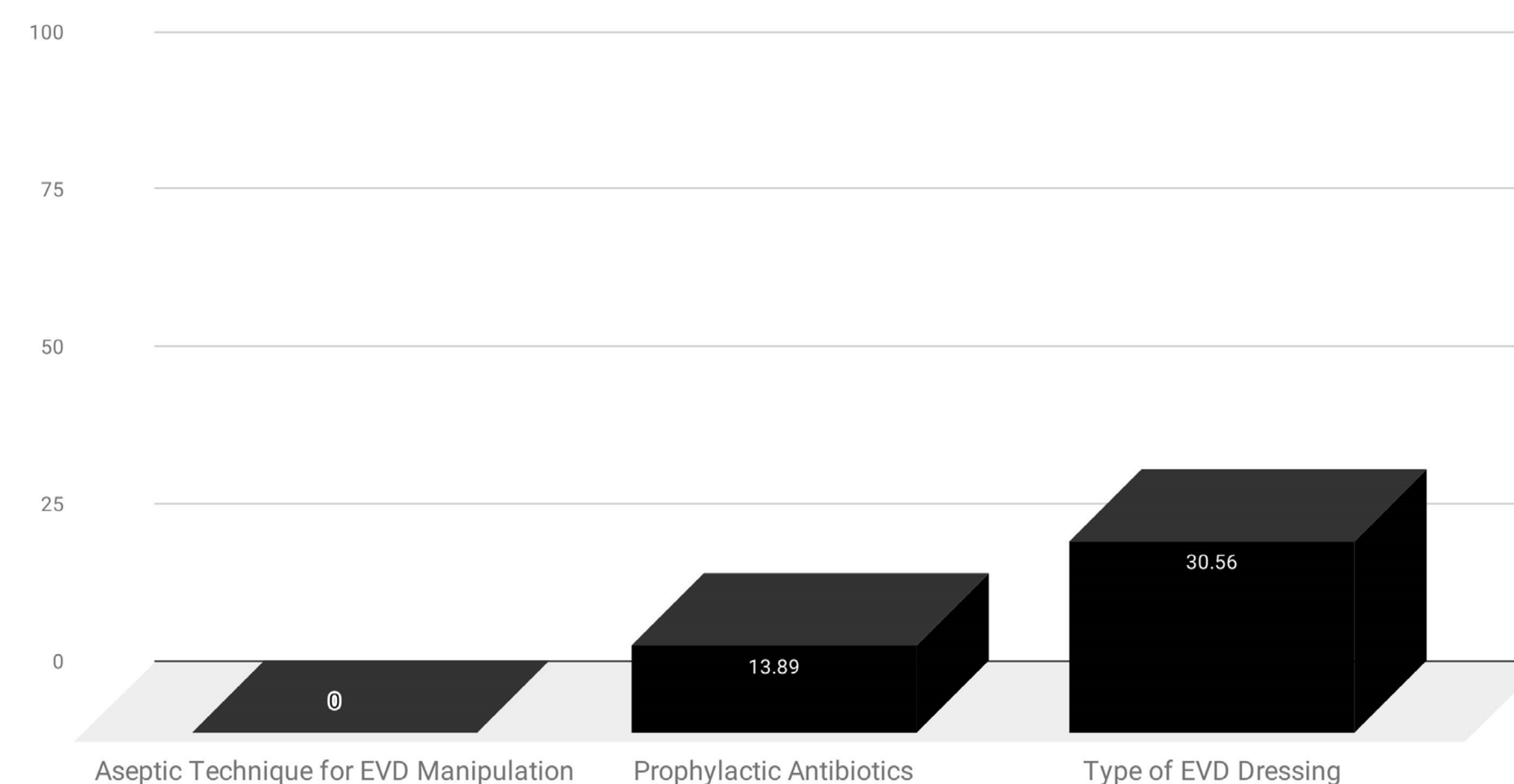
### Key Placement Measures (n=36)

Percentage of ventriculostomy associated infection prevention placement measures that are documented in 36 external ventricular drain placements.

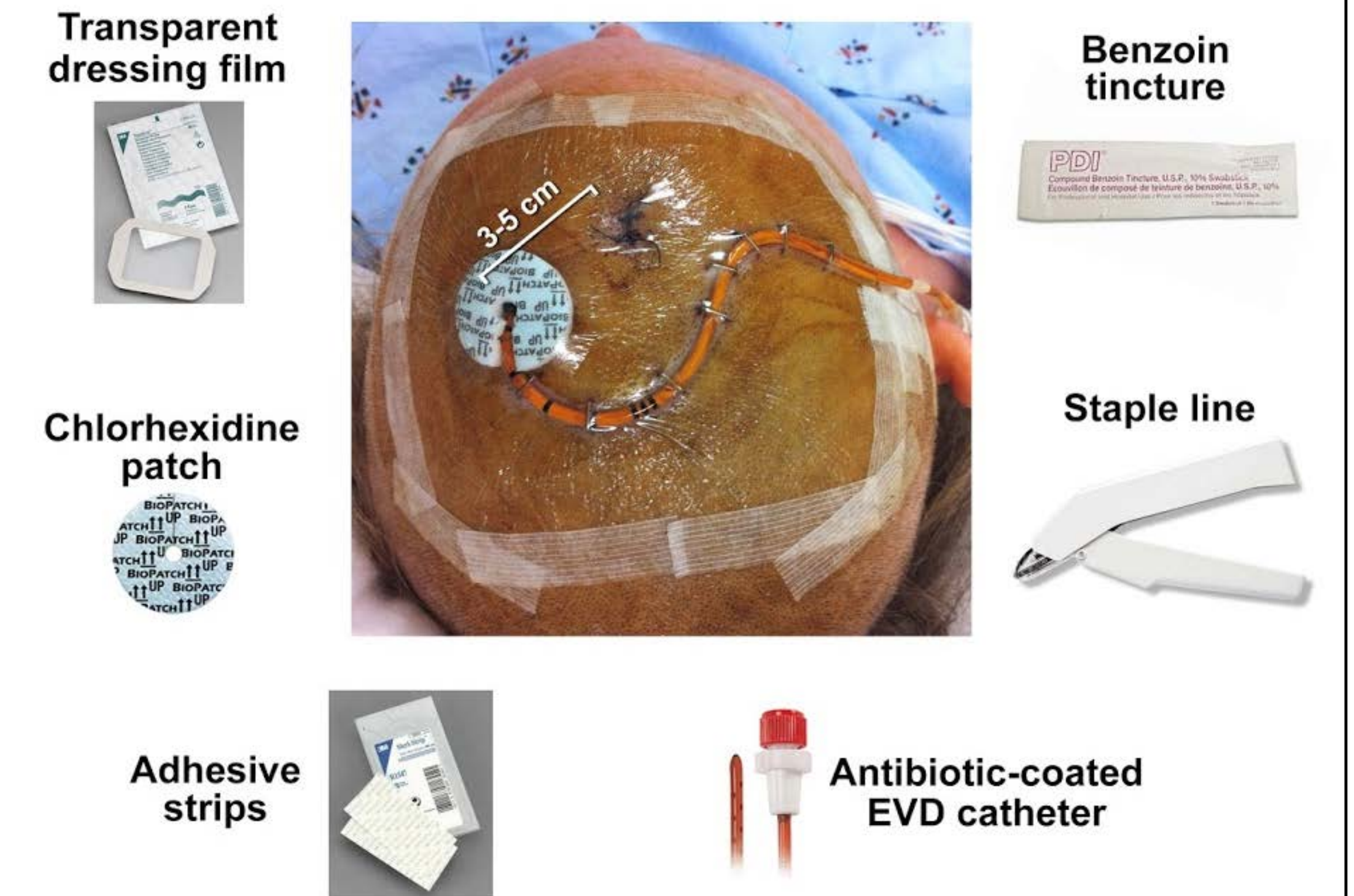


### Key Manipulation Measures (n=36)

Percentage of ventriculostomy associated infection prevention manipulation measures that are documented in 36 external ventricular drains placements.



Source: cleanbrain.org



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## Discussion

- We noted variation in how key information was documented in the procedure reports for EVDs at our hospital.
- Documentation variance challenges efforts to evaluate key factors that contribute to concerning patient outcomes. In this case, developing a VAI.
- The non-standardized fashion of documentation also further increases the difficulty of quality improvement work and impacts the ability to improve patient safety at our institution.
- Further efforts are needed to reduce the documentation variance among best practices in EVD placement and manipulation.

## Next Steps

- Electronic Health Records allow for standardization of documentation and improved patient safety.
- We will comprise a task force to update current providers on best practices for EVD placement and the importance of standardized documentation which can be built into our system as a procedural template.

## References

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