

REDUCING EXTERNAL VENTRICULAR DRAIN ASSOCIATED VENTRICULITIS: AN IMPROVEMENT PROJECT IN A LEVEL 1 TRAUMA CENTER

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Background

Placement of an external ventricular drains (EVD) may be a lifesaving intervention for patients with severe brain injury; however, the benefits can be offset by catheter-related complications, such as EVD-related ventriculitis infection. Total healthcare costs for patients who developed an EVD-related infection increases by more than \$85,000 per case.¹ These patients also experience a longer critical care unit stay, prolonged overall hospital stay, and mortality has been reported as high as 40.8%.¹⁻³ This quality improvement project describes the successes of clinicians as leaders in implementing interprofessional evidence-based practices to eliminate EVD-related ventriculitis in an academic Level 1 trauma.

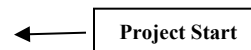
Methods

An interprofessional team comprised of engaged bedside adult and pediatric nurses caring for EVD patients, Neurosurgery, Pharmacy, Quality Improvement, Technical Services Group, and Infection control reviewed the evidence and established an evidence based EVD/Intracranial

Pressure Monitoring Bundle of Care. Key practice changes include utilization of strict asepsis, minimization of line manipulations, standardization of equipment, formal nursing, and provider EVD education and nurse competency validation. Routine EVD culturing practices were discontinued. Innovations implemented to hard wire practice improvements include development of an order set, use of an electronic medical record insertion check list, and daily nurse driven EVD quality rounds using a handheld phone application. Quality outcomes and bundle compliance are shared monthly with the clinical team. Weekly interprofessional EVD rounds are conducted to get ongoing feedback from frontline staff and celebrate successes.

Results

The baseline EVD-related ventriculitis rate was 24.7 in June 2020. The EVD-related ventriculitis rate has sustained at zero for 18 months since EVD-bundle implementation in July 2021. With eight EVD-related ventriculitis cases occurring in the 6-months prior to EVD bundle implementation, a projected fiscal cost avoidance of \$680,000¹ is estimated for the first project implementation year.



Implications for Practice

Quality improvement must be interprofessional. Without the involvement of all who impact the delivery of quality care, the effort fails. Use structure with clearly defined project goals, objectives, and measures. Always take a systems perspective. Review & commit to evidence-based practice and when there is no evidence, innovate. Controlling practice variations early made an immediate and dramatic impact. Meaningful recognition of staff is sustained through interprofessional focused rounding.

Conclusions

Results highlight the tremendous efforts of a dedicated interprofessional team to sustain a remarkable EVD-related ventriculitis free culture of safety in a high-risk setting. Innovation is characteristic of clinicians who are empowered to improve patient outcomes.

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