

# Reduction of infection rates in adult hydrocephalus patients after standardized shunt infection prevention protocol

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Researchers at the University of Calgary, Alberta, Canada, have investigated the implementation of a standardized shunt infection

prevention bundle, a set of evidence-based practices termed the Calgary Adult Shunt Infection Prevention Protocol (CASIPP) to prevent ventriculoperitoneal (VP) shunt infections within an adult hydrocephalus patient population. The initial implementation of the CASIPP resulted in infection reduction, and then the rate of infections was dramatically reduced after the preoperative skin antiseptic was replaced with 2% chlorhexidine gluconate in 70% isopropyl alcohol.

Detailed findings of this study are described in the article "A standardized [infection prevention](#) bundle for reduction of CSF shunt infections in adult ventriculoperitoneal shunt surgery performed without antibiotic-impregnated catheters," by Sandeep Muram et al., published today in the *Journal of Neurosurgery*.

VP shunt insertions are among the most common procedures performed by neurosurgeons, and unfortunately, shunt infections in adults often cause severe illness and usually require additional surgical procedures, prolonged intravenous antibiotic treatment, and extended hospital stays, with average direct hospital costs per infection of \$50,000 to \$100,000 USD.

The investigators at the University of Calgary undertook a single-surgeon quality improvement study in July 2013, at which time there was no standardized infection control protocol at their institution and the rate of shunt infection was 5.8%. When the CASIPP was implemented on July 1, 2013, the rate of shunt infection decreased to 4.0% in 621 consecutive shunt surgeries. Then, on July 1, 2015, the routine use of povidone-iodine as a preoperative skin antiseptic was replaced with 2% [chlorhexidine gluconate](#) in 70% isopropyl alcohol, which resulted in an infection rate of 0% in 379 consecutive procedures. The authors note that larger multicenter studies should be completed to verify the effectiveness of the protocol demonstrated in this preliminary study.

When asked about the study, Dr. Mark G. Hamilton said, "Infection associated with ventriculoperitoneal shunt surgery is a common clinically significant but modifiable operative complication. The Calgary Adult Shunt Infection Prevention Protocol (CASIPP) or bundle of preoperative and intraoperative strategies, which included using 2% chlorhexidine gluconate in 70% isopropyl alcohol for skin antisepsis without using antibiotic-impregnated catheters or intrathecal antibiotics, is a simple but highly effective and inexpensive strategy to reduce the risk of shunt infection."

**More information:** Sandeep Muram et al, A standardized infection prevention bundle for reduction of CSF shunt infections in adult ventriculoperitoneal shunt surgery performed without antibiotic-impregnated catheters, *Journal of Neurosurgery* (2022); [DOI: 10.3171/2022.5.JNS22430](https://doi.org/10.3171/2022.5.JNS22430) [thejns.org/doi/10.3171/2022.5.JNS22430](https://www.thejns.org/doi/10.3171/2022.5.JNS22430)

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