

Prophylactic Antibiotics
for patients with
External Ventricular Drains

PROPHYLACTIC ANTIBIOTICS WITH INTRACRANIAL PRESSURE MONITORS AND EXTERNAL VENTRICULAR DRAINS: A REVIEW OF THE EVIDENCE

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- Meta-Analysis and Questionnaire
 - 85 total articles: 2 studies qualified for MA, neither of statistically significant size
 - 37% returned questionnaires
 - 75% used prophylactic Abx, 25% did not

The Efficacy and Cost of Prophylactic and Periprocedural Antibiotics in Patients with External Ventricular Drains

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- Retrospective review of 308 pts with EVDs for >3 days
- 2 groups
 - 209 pts received Abx (IV cefuroxime) for duration
 - 99 pts received only periprocedural Abx

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- Overall rate of ventriculitis was 3.9%
- Group A rate 3.8%
- Group B rate 4.0%
- No statistics performed (Low rate of infection, not enough sample size)
- Savings of over \$80,000 per year

It is difficult to understand the rationale for prophylactic use of antibiotics in this situation, and numerous potentially serious short- and long-term consequences accompany the use of antibiotics. Before it becomes infected, a ventricular drain must first be colonized with bacteria. These may arise on the outside or the inside of the catheter. The outside may be colonized by skin organisms, spread of contiguous infection, or hematogenous seeding of the catheter from a distant site. The inside generally is colonized only if the system is opened for injection or changing of the drain bag. Administration of antibiotics might contribute only to the prevention of hematogenous seeding, but this will have minimal impact on the infection rate, because 75 to 90% of colonization comes from the skin (2, 3). Chronic administration of an antibiotic may reduce the number of bacteria present that are susceptible to that antibiotic. In the intensive care setting, however, the skin is rapidly colonized by numerous gram-negative bacteria and increasingly by antibiotic-resistant bacteria. No overall reduction in bacterial counts on the skin may be achieved. The best methods to achieve reduction in the local skin bacterial count are local; they include sterile technique, skin antisepsis, use of monofilament nylon suture rather than braided silk, and perhaps treatment of catheters with antibacterial cuffs or antibiotics (3).

R. Loch Macdonald
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Infection related to intracranial pressure monitors in adults: analysis of risk factors and antibiotic prophylaxis

Jill A Rebuck, Kellie R Murry, Denise H Rhoney, Daniel B Michael, William M Coplin

- Retrospective review of 215 charts of patients with ICP monitors or EVDs
- CSF infection occurred in 16 patients that had received Abx
 - 7 had periprocedural Abx alone
 - 3 had Abx for duration of monitoring
 - Not statistically significant

Risk Factors

- ICH with IV extension
- ICP>20mmHg
- Duration of monitoring (5 days?)
- NSG operation
- Irrigation of system
- CSF leak
- Other infections

Not Risk Factors

- Insertion in ICU (instead of OR)
- Previous EVD
- CSF drainage
- Use of steroids

CSF antibiotic prophylaxis for neurosurgical patients with ventriculostomy: a randomised study.

Poon WS, Ng S, Wai S.

Department of Surgery, Prince of Wales Hospital, Chinese University of Hong Kong, Shatin, New Territories, Hong Kong.

- Randomized study of 228 patients with EVDs
 - Group 1: perioperative Unasyn alone
 - Group 2: Unasyn and Aztreonam for duration of EVD
- Infections
 - G1: 3%, G2: 11% (significant)
- Organisms
 - G1: Staph, E.Coli, Klebsiella
 - G2: MRSA, Candida

Ventriculostomy-related infections. A prospective epidemiologic study

CG Mayhall, NH Archer, VA Lamb, AC Spadora, JW Baggett, JD Ward, and RK Narayan

- NEJM article: prospective analysis of 172 consecutive patients with ventriculostomies
- Infection in 19 pts (11%)
- Only discussed risk factors; no mention of antibiotic

Questions

- Antibiotics
 - Preprocedural?
 - Prophylactic postprocedural?
- Impregnated Catheter?