

UAMS MEDICAL CENTER
TRAUMA and CRITICAL CARE SERVICES MANUAL

SUBJECT: Antibiotic Prophylaxis for Traumatic Pneumocephalus

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APPROVAL: 4/26/2023

CONCURRENCE(S): All

EFFECTIVE: 4/26/2023

PURPOSE: To facilitate appropriate management of patients with traumatic pneumocephalus

BACKGROUND:

Skull fractures can place the central nervous system (CNS) into contact with the paranasal sinuses, nasopharynx, and/or middle ear.¹ Common bacteria located in this area include *s. pneumoniae* and *h. influenzae*.^{2,3} Exposure of the CNS to these pathogens increases the risk for developing meningitis; however, the use of prophylactic antibiotics in this setting is controversial.

Theoretical benefits of prophylactic antibiotics include maintenance of CSF sterility until dura closure and eradication of bacterial colonization.¹ However, this may lead to the development of resistant pathogens.⁴ The efficacy of antibiotics is also hindered by poor penetration into the CSF in the absence of meningeal inflammation.⁴

Meta-analyses describing the use of prophylactic antibiotics in the setting of basilar skull fractures have failed to show a decrease in the incidence of meningitis compared to no antibiotics.^{1,5} However, clinical data suggests that the presence of a CSF leak is an additional risk factor for developing meningitis, and patients who present with a CSF leak may benefit from antibiotic prophylaxis.^{6,7}

INDICATIONS FOR ANTIBIOTIC TREATMENT:

Patients with traumatic pneumocephalus will receive antibiotic prophylaxis only when they have a documented cerebrospinal fluid (CSF) leak as evidenced by CSF otorrhea or rhinorrhea.

TREATMENT:

Ceftriaxone 2 g every 24 hours for 48 hours

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