

Fungal Meningitis Outbreak after Epidural Anesthesia in Mexico

- Public health officials are investigating a multinational fungal meningitis outbreak linked to procedures under epidural anesthesia in Mexico at: Riverside Surgical Center and Clinica K-3.
- ~185 U.S. residents exposed; several have died from meningitis.
- ***Fusarium solani*** species complex was detected by U.S. and Mexico laboratories; a highly-resistant strain was isolated.
- **An LP is recommended for all exposed patients, even those without symptoms**, because: (1) 50% *Fusarium* fungal meningitis fatality rate; and (2) infection may have mild or no symptoms at first. Early antifungals can improve morbidity and mortality.

Testing at-risk patients

1. **Verify patient** received epidural anesthesia from January 1, 2023 to May 13, 2023 at Riverside Surgical Center or Clinica in K-3, in Matamoros, Mexico.
2. **Perform fungal meningitis CSF diagnostic testing**
 - Even if asymptomatic, patients should receive an initial LP (unless contraindicated, e.g., puncture site skin infection, brain mass causing increased intracranial pressure).
 - If LP results are abnormal, CSF testing should include beta-d-glucan (Fungitell®), as well as pan-fungal PCR or next-generation metagenomic sequencing
 - Normal LP results: WBC count ≤ 5 cells/mm³ (subtract 1 WBC for every 500 RBCs).
 - Abnormal LP results: >5 WBCs/mm³ (subtract 1 WBC for every 500 RBCs).
3. **Normal initial LP results**
 - Consider repeat LP 2 weeks after the initial LP.
 - If new or worsening meningitis symptoms within 30 days of initial LP, patient should immediately go to the ED for reevaluation, including an urgent repeat LP.
4. **Abnormal LP results**
 - a. **Combination antifungal therapy** with IV liposomal amphotericin B (AmBisome®), voriconazole, and fosmanogepix (requires IND). At least 3 months antifungal therapy recommended, but >6 months needed for severe cases.
 - b. Check serum voriconazole trough level (minimum target 4–5 mcg/ml) day 5 of voriconazole (and at least weekly thereafter)
 - c. **MRI with and without contrast** for meningeal enhancement, vasculitis, stenosis, hemorrhage, and/or ischemia.
 - d. If available, **consult infectious disease specialist, pharmacist, and/or neurologist** to help management and patient follow-up due to:
 - Antifungal therapy side effects and voriconazole therapeutic drug monitoring.
 - Potential complications of fungal meningitis include elevated intracranial pressure, CNS vasculitis, brain edema, strokes, and intracranial hemorrhage.
 - e. Adjust treatment, monitor for symptoms, and manage complications; clinicians should anticipate the need for outpatient antimicrobial therapy and close outpatient follow-up.

Communications and resources

- Full [Interim Recommendations](#)
- Notify and update local or state public health officials on suspected cases, including HAI coordinators at [HAI/AR Programs: Recipient Health Departments and Funding](#) website.
- State and local health departments and the Centers for Disease Control (CDC) (FungalOutbreaks@cdc.gov), are available to assist with case reporting and guidance.
- Updated information at [CDC website describing fungal meningitis outbreak](#).