

**This is an official**  
**CDC HEALTH UPDATE**

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**Important Updates on Outbreak of Fungal Meningitis in U.S. Patients  
Who Underwent Surgical Procedures under Epidural Anesthesia in  
Matamoros, Mexico**

**Summary**

The Centers for Disease Control and Prevention (CDC) is issuing this Health Alert Network (HAN) Health Update to supplement the CDC HAN Health Advisory issued on [May 17, 2023](#). This Health Update provides updates on the status of the ongoing fungal meningitis outbreak and highlights interim recommendations for diagnosis and treatment.

As of June 1, 2023, a multistate outbreak of fungal meningitis is ongoing among patients who underwent procedures under epidural anesthesia in the city of Matamoros, Tamaulipas, Mexico, at two clinics: River Side Surgical Center and Clinica K-3. Three U.S. laboratories (CDC Mycotic Diseases Branch's Laboratory, UCSF Clinical Microbiology Laboratory, and UW Medicine Molecular Microbiology laboratory) and the Mexican national laboratory (InDRE) have detected fungal signals consistent with the *Fusarium solani* species complex from the cerebrospinal fluid (CSF) of patients receiving follow-up care in Mexico or the United States. In addition, elevated levels of beta-D-glucan, a biomarker of fungal infection, have been detected in the CSF of at least six patients. A total of 212 residents in 25 U.S. states and jurisdictions have been identified who might be at risk of fungal meningitis because they received epidural anesthesia at the clinics of interest in 2023. Among these patients, 14 suspected, 11 probable, and two confirmed U.S. cases have been diagnosed (see case definitions below); three patients (two probable cases and one confirmed case) have died. Efforts by public health officials are ongoing to find and notify additional patients who might be at risk.

Healthcare providers, public health officials, and the public should be aware that all patients, including those without symptoms, who underwent medical or surgical procedures under epidural anesthesia at River Side Surgical Center or Clinica K-3 in Matamoros, Mexico, since January 1, 2023, should be evaluated for fungal meningitis as soon as possible. Evaluation for fungal meningitis includes a lumbar puncture (LP, also known as spinal tap) and magnetic resonance imaging (MRI) of the brain.

**Background**

On May 8, 2023, CDC, the Texas Department of State Health Services, and the Cameron County Health Department were notified through the [Emerging Infections Network](#) of two people hospitalized in Texas with symptoms consistent with meningitis (e.g., headache, fever, photophobia, stiff neck) after receiving cosmetic procedures under epidural anesthesia at River Side Surgical Center in Matamoros, Tamaulipas, Mexico. Since then, public health officials have identified a multistate outbreak of fungal meningitis among patients who received procedures under epidural anesthesia at River Side Surgical Center or Clinica K-3. The most updated information about the outbreak, including case counts, case locations, and recommendations for the public, public health officials, and clinicians, is available on [CDC's website](#).

Note: All patients, regardless of symptoms, who received procedures under epidural anesthesia at River Side Surgical Center or Clinica K-3 since January 2023 should be evaluated for fungal meningitis including an LP or spinal tap and MRI of the brain.

### Case Definitions

**In patients who underwent a procedure with epidural anesthesia in Matamoros, Mexico, since January 1, 2023:**

**Person under investigation:**

- No symptoms, or symptomatology unknown.  
AND
- LP results not yet available

**Suspected case:**

- Patient has symptoms suggesting CNS infection (e.g., fever, headache, stiff neck, nausea/vomiting, photophobia, or altered mental status).  
AND
- LP results not yet available

**Probable case:**

- CSF profile with  $>5$  WBCs/mm<sup>3</sup>, accounting for the presence of RBCs (i.e., subtracting 1 white cell for every 500 RBCs present)  
AND
- Fungus has not been detected from CSF or tissue by culture, PCR, or mNGS

**Confirmed case:**

- Fungus has been detected from CSF or tissue by culture, PCR, or mNGS

Abbreviations: LP = lumbar puncture; CNS = central nervous system; CSF = cerebrospinal fluid; WBC = white blood cell; RBC = red blood cell; PCR = polymerase chain reaction; mNGS = metagenomic next-generation sequencing

### Recommendations for Healthcare Providers and Public Health Officials

- Recommendations for diagnosis and management of patients with possible fungal meningitis associated with epidural anesthesia administered in Matamoros, Mexico, are available on [CDC's website](#), which will be updated as new information becomes available.
  - Current recommendations state that *regardless of symptoms*, all patients who underwent a medical or surgical procedure under epidural anesthesia in Matamoros, Mexico, after January 1, 2023, should receive magnetic resonance imaging [MRI] (to assess for meningeal enhancement, vasculitis, stenosis, hemorrhage, or ischemia) and a diagnostic LP unless contraindicated (e.g., because of skin infection over the puncture site, brain mass causing increased intracranial pressure).
    - This recommendation is based on the high case-fatality rate ( $>40\%$ ) of central nervous system *Fusarium* infections observed during a recent healthcare-associated outbreak of fungal meningitis in Durango, Mexico (1, 2), and the finding that some patients during that outbreak who had few or no symptoms were still found to have fungal meningitis based on CSF test results (data not published).
    - Early detection and treatment of fungal meningitis is critical to improving patient outcomes, particularly because patients whose symptoms are initially mild or absent may quickly worsen without treatment (3).
    - At least six patients have had high positive CSF beta-D-glucan values, which suggests fungal infection. Accordingly, clinicians should consider ordering this test. **Detailed information on this and other CSF laboratory tests to order are available on this website: [Interim Recommendations](#).**

- Patients with a normal LP result should continue to monitor themselves for symptoms for at least 4 weeks and return to the emergency room if they develop new or worsening symptoms. Clinicians can consider repeating the LP at 2 weeks after the initial first LP to ensure that an infection has not developed.

**Healthcare providers should immediately report possible fungal meningitis cases possibly related to this outbreak to their state or local health department. Contact information for jurisdictional healthcare-associated infection program coordinators is available at the [HAI/AR Programs: Recipient Health Departments and Funding](#) website.**

- If fungal meningitis is suspected, treatment should be initiated as soon as possible after obtaining CSF; treatment should not be withheld because of negative fungal culture or (1,3)-beta-D-glucan results. Consultation with an infectious disease specialist is recommended. To be connected with infectious disease clinicians with experience in treating fungal meningitis, clinicians and public health officials can contact CDC's Mycotic Diseases Branch ([fungaloutbreaks@cdc.gov](mailto:fungaloutbreaks@cdc.gov)).
- Treatment should involve broad-spectrum antifungal medications that have adequate central nervous system penetration. See [Interim Recommendations](#).
- Public health officials who are concerned about potential cases of fungal meningitis associated with this outbreak should contact CDC's Mycotic Diseases Branch ([fungaloutbreaks@cdc.gov](mailto:fungaloutbreaks@cdc.gov)) during regular business hours or CDC's Emergency Operations Center ([eocreport@cdc.gov](mailto:eocreport@cdc.gov); 770-488-7100) outside of regular business hours for assistance with recommendations and testing.

#### Recommendations for the Public

- Recommendations for the public will be updated on [CDC's website](#) as more information becomes available.
- All patients, with or without symptoms, who had *epidural (spinal) anesthesia in Matamoros, Mexico, at River Side Surgical Center or Clinica K-3 from January 1 to May 13, 2023*, should go to the nearest emergency room. If there are significant barriers to reaching an emergency room (e.g., distance), people with potential exposure may consider calling their local health center or urgent care facility to see if these diagnostic tests are available. In most situations, the emergency room will be the best or only option.
  - It can take weeks for symptoms to develop, and they may be very mild or absent at first. - However, once symptoms start, they can quickly become severe and life-threatening. Early testing and treatment can save lives (3).
- Patients are also encouraged to contact their state or local health department if they believe they might be at risk for fungal meningitis based on the criteria above; however, seeking urgent medical evaluation should be the first priority.
- Please share this notice with anyone you know who may be at risk. CDC and partners are still trying to find and notify patients who might be at risk of fungal meningitis. Some patients have been identified through word of mouth by other members of the public.
- Cancel any elective procedure that involves an epidural injection in Matamoros, Mexico, until there is evidence that there is no longer a risk for infection at these clinics. [Travel Health Notice](#).
- Patients should be aware that [unsafe injection practices](#) can be a serious threat to their health.
- All medical and surgical procedures carry some risk, and complications can occur regardless of where treatment is received. If patients travel to another country for a procedure, they should not delay seeking medical care if they suspect any complication during travel or after returning home. Immediately obtaining medical care can lead to earlier diagnosis and treatment and a better outcome.
- Learn how to minimize risks if you are considering [traveling to another country for medical care](#).

#### For More Information

- [Fungal meningitis outbreak CDC website](#)
- [Fungal Infections Following Surgical Procedures in Mexico – Alert – Level 2, Practice Enhanced Precautions – Travel Health Notices | Travelers' Health | CDC](#)
- [Detailed interim recommendations](#) (clinicians)

- [Mexico Traveler Health](#)
- [Medical Tourism CDC Yellow Book 2024](#) (clinicians)
- [Traveling Abroad for Medical Care](#) (travelers)
- Visit [CDC-INFO](#) or call CDC-INFO at 1-800-232-4636

## References

1. Pan American Health Organization. Technical Note: Meningitis of unknown origin Mexico. <https://www.paho.org/en/documents/technical-note-meningitis-unknown-origin-mexico>.
2. Pulice, C. Death toll from mysterious meningitis outbreak in Mexico at 35. Reuters. <https://www.reuters.com/business/healthcare-pharmaceuticals/death-toll-mysterious-meningitis-outbreak-mexico-35-2023-02-06/>. February 6, 2023.
3. Schwartz S, Kontoyiannis DP, Harrison T, Ruhnke M. Advances in the diagnosis and treatment of fungal infections of the CNS. *Lancet Neurol*. 2018 Apr;17(4):362-72.

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<b>Health Advisory</b>	Requires immediate action. Provides important information about a public health event.
<b>Health Update</b>	May require immediate action. Provides updated information about a public health event.