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New Case Identified: Multistate Investigation of Non-travel Associated *Burkholderia pseudomallei* Infections (Melioidosis) in Four Patients: Georgia, Kansas, Minnesota, and Texas—2021

Summary

The Georgia Department of Public Health, with assistance from the Centers for Disease Control and Prevention (CDC), is investigating a fatal case of *Burkholderia pseudomallei* infection (i.e., melioidosis) identified in late July 2021. Based on genomic analysis, this case in Georgia closely matches the three cases previously identified in Kansas, Minnesota, and Texas in 2021, indicating they all most likely share a common source of exposure. The Kansas Department of Health and Environment, the Minnesota Department of Health, and the Texas Department of State Health Services continue to investigate the three previous cases with assistance from CDC. The four cases include both children and adults. Two cases are female, and two cases are male. The first case, which was fatal, was identified in March 2021 in Kansas. The second and third cases, both identified in May 2021 in Minnesota and Texas, were hospitalized for extended periods of time before being discharged to transitional care facilities. The most recent case died in the hospital and was identified post-mortem in late July 2021 in Georgia. None of the cases had a history of traveling outside of the continental United States. Symptoms of melioidosis are varied and nonspecific, and may include pneumonia, abscess formation, and blood infections. Due to its nonspecific symptoms, melioidosis can initially be mistaken for other diseases such as tuberculosis, which can delay proper treatment. *B. pseudomallei* may also be misidentified by some automated identification methods in laboratory settings. This Health Alert Network (HAN) Health Update serves as an update to [HAN Health Advisory Multistate Investigation of Non-travel Associated *Burkholderia pseudomallei* Infections \(Melioidosis\) in Three Patients: Kansas, Texas, and Minnesota—2021](#) that CDC issued on June 30, 2021.

Background

Initial presentation for the four recently identified melioidosis cases ranged from cough and shortness of breath to weakness, fatigue, nausea, vomiting, intermittent fever, and rash on the trunk, abdomen, and face. Two of the cases, one of them fatal, had several risk factors for melioidosis, including chronic obstructive pulmonary disease (COPD) and cirrhosis. The other two cases had no known risk factors for melioidosis. Genomic analysis of the strains strongly suggests a common source, such as an imported product or animal; however, that source has not been identified to date despite environmental sampling, serological testing, and family interviews.

Burkholderia pseudomallei, the causative agent of melioidosis, is a [Tier 1 select agent](#) that can infect animals and humans. Cases are most common in areas of the world with tropical and sub-tropical climates. Most cases in the United States occur in persons returning from a country where the disease is endemic. These four cases are unusual because no recent travel outside the United States has been identified.

Melioidosis symptoms are nonspecific and vary depending on the type and site of infection. Symptoms may include localized pain or swelling, fever, ulceration, abscess, cough, chest pain, high fever, headache, anorexia, respiratory distress, abdominal discomfort, joint pain, disorientation, weight loss, stomach or chest pain, muscle or joint pain, and seizures. Mortality varies depending on disease severity

and clinical presentation, with case fatality ranging between 10-50% worldwide.¹ People with certain conditions are at higher risk of disease when they come in contact with the bacteria. The most common factors that make a person more likely to develop disease include diabetes, kidney disease, chronic lung disease, and excessive alcohol use. Melioidosis is confirmed by culture. Testing must be conducted by trained personnel because some automated identification methods in clinical laboratories may misidentify *B. pseudomallei* as a different bacterium. Treatment of melioidosis requires long-term antibiotic therapy.

B. pseudomallei is not considered to be transmitted via air or respiratory droplets in non-laboratory settings. Person-to-person transmission risk is considered extremely low as there have only been a few documented cases of person-to-person transmission; contact of damaged skin with polluted soil or water is the most frequent route for natural infection. Healthcare personnel are generally not at risk if they follow standard precautions.² However, laboratory personnel are at increased risk because some lab procedures may aerosolize particles and release *B. pseudomallei* into the air. Laboratory personnel can reduce their risk of exposure by following good laboratory practices.³ Laboratory staff who may have been exposed to *B. pseudomallei* should refer to existing CDC guidance.⁴

Recommendations

- Consider melioidosis diagnosis in patients with a compatible illness, even if they do not have a travel history to a disease-endemic country.
- Culture of *B. pseudomallei* from any clinical specimen is considered diagnostic for melioidosis. Ideal specimens for culture include blood, urine, throat swab, and, when relevant, respiratory specimens, abscesses, or wound swabs.
- When ordering specimen cultures to diagnose melioidosis, advise the laboratory that cultures may grow *B. pseudomallei*, and that appropriate laboratory safety precautions should be observed by the laboratory personnel.
- Laboratory testing involving automated identification algorithms (e.g., MALDI-TOF, 16s, VITEK-2) may misidentify *B. pseudomallei* as another bacterium. The isolate from the Texas case was initially misidentified as *B. thailandensis* by MALDI-TOF. Consider re-evaluating patients with isolates identified on automated systems as *Burkholderia* spp. (specifically *B. cepacia* and *B. thailandensis*), *Chromobacterium violaceum*, *Ochrobactrum anthropi*; and, possibly, *Pseudomonas* spp., *Acinetobacter* spp., and *Aeromonas* spp.
- Treat melioidosis with IV antibiotics (e.g., ceftazidime or meropenem) for at least two weeks. Depending on the response to therapy, IV treatment may be extended for up to eight weeks. Intravenous treatment is followed by oral trimethoprim-sulfamethoxazole (TMP/SMX) for three to six months to prevent relapse. Amoxicillin/clavulanic acid can be used in persons with a contraindication to, or who cannot tolerate, TMP/SMX.⁵
- If *B. pseudomallei* is identified or an organism is suspicious for *B. pseudomallei*, contact your state or local public health department immediately. The health department can facilitate forwarding the isolate for confirmation to the closest reference laboratory and initiate a public health investigation.

For More Information

- Contact your local health department if you have any questions or suspect a patient may be infected with *Burkholderia pseudomallei*.
- Visit [CDC-INFO](https://www.cdc.gov/cdc-info) or call CDC-INFO at 1-800-232-4636
- CDC 24/7 Emergency Operations Center (EOC) 770-488-7100
- CDC Bacterial Special Pathogens Branch: email bspb@cdc.gov or call 404-639-1711
- **Kansas**
Kansas Department of Health and Environment
KDHE.EpiHotline@ks.gov or 877-427-7317

- **Minnesota**
Health.communications@state.mn.us or 651-201-4989
- **Texas**
[Disease Reporting Contacts](#)
[Laboratory Response Network](#)
- **Georgia**
Georgia Department of Public Health: 404-657-2588
- [Signs and Symptoms | Melioidosis | CDC](#)
- Sample Submission Information
[Zoonoses and Select Agent Laboratory \(ZSAL\) | Bacterial Special Pathogens Branch | DHCPP | NCEZID | CDC](#)

References

- ¹ Epidemiology of Melioidosis:
[Cheng, A. C. & Currie, B. J. Melioidosis: epidemiology, pathophysiology, and management. *Clin. Microbiol. Rev.* **18**, 383–416 \(2005\).](#)
- ² Precautions for Healthcare Providers:
[Healthcare Response Activities | Melioidosis | CDC](#)
- ³ Biosafety in Microbiological and Biomedical Laboratories:
[Biosafety in Microbiological and Biomedical Laboratories—6th Edition \(cdc.gov\)](#)
- ⁴ Management of laboratory exposures:
[Management of Accidental Laboratory Exposure to *Burkholderia pseudomallei* and *B. mallei* - Volume 14, Number 7—July 2008 - Emerging Infectious Diseases journal - CDC](#)
- ⁵ Treatment of Melioidosis:
 - [Sullivan RP, Marshall CS, Anstey NM, et al. 2020 Review and revision of the 2015 Darwin melioidosis treatment guideline; paradigm drift, not shift. *PLOS Neglected Tropical Diseases*](#)
 - [Workshop on Treatment of and Postexposure Prophylaxis for *Burkholderia pseudomallei* and *B. mallei* Infection, 2010 - Volume 18, Number 12—December 2012 - Emerging Infectious Diseases journal - CDC](#)
 - [Melioidosis | Nature Reviews Disease Primers](#)

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