

## Melioidosis reported from three states

The Centers for Disease Control and Prevention (CDC) and health departments in Kansas, Minnesota and Texas are investigating three cases of melioidosis. *Burkholderia pseudomallei* is a tier 1 select agent found in tropical environments (southeast Asia and Northern Australia). These cases are unusual as no international travel has been noted and that they appear to be closely related by genomic analysis. Melioidosis may have non-specific presentations that may resemble tuberculosis or other infections. Furthermore, some laboratory methods may misidentify this organism. Laboratory testing should be performed by trained personnel. Providers should consider melioidosis in patients presenting with a compatible illness. Suspected cases should be immediately reported to the North Dakota Department of Health, where coordination for testing can occur. To report possible cases providers can call 701-328-2378. For laboratory support and questions providers can call 701-328-6272.

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#### **Multistate Investigation of Non-travel Associated *Burkholderia pseudomallei* Infections (Melioidosis) in Three Patients: Kansas, Texas, and Minnesota—2021**

##### **Summary**

The Kansas Department of Health and Environment, the Texas Department of State Health Services, and the Minnesota Department of Health, with assistance from the Centers for Disease Control and Prevention (CDC), are investigating three cases of *Burkholderia pseudomallei* (melioidosis) infections. Based on genomic analysis, these three cases (one male, two females; two adults and one child) may share a potential common source of exposure. The first case, identified in March 2021, was fatal. Two other patients were identified in May 2021, one of whom is still hospitalized. One has been discharged to a transitional care unit. None of the patients' families reported a history of traveling outside of the continental United States.

Symptoms of melioidosis are varied and nonspecific and may include pneumonia, abscess formation, and/or blood infections. Due to its nonspecific symptoms, melioidosis can initially be mistaken for other diseases such as tuberculosis, and proper treatment may be delayed.

## Background

Initial presentation among the three patients ranged from cough and shortness of breath, to weakness, fatigue, nausea, vomiting, intermittent fever, and rash on the trunk, abdomen, and face, later diagnosed with infectious encephalitis. The fatal case had several risk factors for melioidosis including chronic obstructive pulmonary disease (COPD) and cirrhosis and died ten days after being hospitalized. Genomic analysis of the strains suggests a common source, such as an imported product or animal; however, that source has not been positively identified to date.

*Burkholderia pseudomallei*, the causative agent of melioidosis, is a [Tier 1 select agent](#) which can affect both 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 three cases are unusual because no recent travel outside the United States has been identified.

Melioidosis symptoms are nonspecific and vary depending on the type 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, and muscle pain or joint pain and seizures. Mortality varies depending on disease severity and clinical presentation, with case fatality ranging between 10-50%. 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 alcoholism. Melioidosis is confirmed by culture and with testing conducted by trained personnel since some automated identification methods in clinical laboratories may misidentify *B. pseudomallei* as another bacterium.

Melioidosis is not considered to be transmitted person-to-person via air or respiratory droplets in non-laboratory settings. There have only been a few documented cases of person-to-person transmission; percutaneous inoculation is probably the most frequent route for natural infection. In contrast to other healthcare personnel, laboratory personnel are at risk because some procedures may aerosolize particles and release *B. pseudomallei* into the air. Laboratory personnel can reduce their risk of exposure by following good laboratory practices<sup>1</sup>. Laboratory staff who may have been exposed to *B. pseudomallei* should refer to existing CDC guidance<sup>2</sup>.

## Recommendations

- Consider melioidosis 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. If melioidosis is suspected, culture 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 the laboratory personnel should observe appropriate laboratory safety precautions.
- Treatment of melioidosis consists of IV antibiotics (i.e., 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 3-6 months to prevent relapse. Amoxicillin/clavulanic acid can be used in persons with a contraindication to or who cannot tolerate TMP/SMX<sup>3</sup>.
- 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. 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

- If *B. pseudomallei* is identified or an organism is suspicious for *B. pseudomallei*, contact your 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](#) 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](mailto:bspb@cdc.gov) or 404-639-1711
- **Kansas**  
Kansas Department of Health and Environment  
[KDHE.EpiHotline@ks.gov](mailto:KDHE.EpiHotline@ks.gov) or 877-427-7317
- **Minnesota**  
[Reporting melioidosis](#) or 651-201-5414
- **Texas**  
[Disease Reporting Contacts](#)  
[Laboratory Response Network](#)
- Select Agent List: Tier 1 Pathogens:  
[Security Plan Guidance: Section 11\(f\) – Tier 1 Security | Compliance | Federal Select Agent Program](#)
- Symptoms of Melioidosis:  
[Signs and Symptoms | Melioidosis | CDC](#)
- Sample submission information:
  - [Zoonoses and Select Agent Laboratory \(ZSAL\) | Bacterial Special Pathogens Branch | DHCPP | NCEZID | CDC](#)

#### **References**

<sup>1</sup>Biosafety in Microbiological and Biomedical Laboratories:

- [Biosafety in Microbiological and Biomedical Laboratories—6th Edition \(cdc.gov\)](#)

<sup>2</sup>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](#)

<sup>3</sup>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](#)

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