Virginia Department of Health
Glanders: Overview for Healthcare Providers

Organism	• Caused by bacterium *Burkholderia mallei* (formerly *Pseudomonas mallei*) • Primarily infects horses, donkeys, and mules; can also infect other mammals, including humans • Gram-negative coccobacilli
Reporting to Public Health	Suspected or confirmed cases require immediate notification to the local health department (LHD). See https://www.vdh.virginia.gov/health-department-locator/
Infectious Dose	Undetermined, but presumed to be very low if aerosolized
Occurrence	• Sporadic reports globally • In the United States there have been no naturally occurring cases in humans since 1945; in 2000, one case occurred in a research laboratory worker
Natural Reservoir	• Primarily horses, donkeys, and mules • Goats, monkeys, dogs, cats, rabbits, hamsters, and guinea pigs can also become infected
Route of Infection	• Direct contact with tissues or body fluids of infected animals with entry into the body through skin cuts or abrasions and through mucosal surfaces • Ingestion of contaminated food or water • Inhalation of contaminated aerosols
Communicability	Person-to-person transmission is rare and has not been reported in the United States
Risk Factors	• Exposure to animals in endemic areas (veterinarians, caretakers, abattoir workers, farmers) • Working in a laboratory where the organism is handled
Case-fatality Rate	• Without treatment: high case fatality rate (>90%) for septicemic and pulmonary forms • With treatment: ~20% for localized infection, ~40%–50% for pulmonary and septicemic forms, and up to ~50% for chronic infection
Incubation Period	Varies depending on route of infection: in general, 1–14 days; if inhaled, 10–14 days; if direct skin contact, 1–5 days
Clinical Description	• Localized infection: Might be limited to nodules, abscesses, or ulcers in the skin or mucous membrane at site of entry. Enlarged lymph nodes might be present. Infections involving the eyes, nose or respiratory tract can have mucus production from affected area. Infections can disseminate to other locations (e.g., lungs, spleen, or liver) 1–4 weeks after infection and a papular or pustular rash might be present. • Septicemia: Might occur at any point in illness and signs and symptoms might include fever, chills, myalgia, headache, chest pain, and enlarged lymph nodes. Multiple abscesses involving spleen, liver, and lungs or granulomatous or necrotizing lesions in any organ might occur; jaundice, diarrhea or a generalized papular rash that progresses to a pustular rash might occur. • Pulmonary infection: Might include cough, fever, dyspnea, mucopurulent discharge, pneumonia, pulmonary abscesses, pleural effusion, or symptoms described for septicemia • Chronic infection: Might include multiple abscesses, nodules, or ulcers in the muscles and skin, or in other organs (lungs, liver, spleen). Weight loss and lymph node enlargement are usually present. Characterized by remissions and exacerbations and can persist for years.
Differential Diagnosis	Variable depending on form

Radiography	Chest x-ray might show segmental or lobar pneumonia, bronchopneumonia, cavitating lesions, or nodular densities; consolidation might be present
Specimen Collection and Laboratory Testing	• **Alert lab if glanders is suspected so that appropriate precautions are taken during testing** • Available tests include culture of clinical specimens (e.g., blood, urine, abscess material, sputum, tissue specimens) and PCR • If glanders is suspected, notify LHD immediately. If VDH approves public health testing, specimens may be sent to Division of Consolidated Laboratory Services (DCLS). • For questions about collecting specimens, contact the DCLS Emergency Duty Officer available 24/7 at 804-335-4617
Treatment during a Public Health Emergency*	• **Initial Intensive-Phase Therapy:** Generally, 10–14 days, ≥4 weeks may be necessary if severe • Uncomplicated cases: Ceftazidime 50 mg/kg (up to 2 g) IV every 8 hours or 6 g/day by continuous infusion after a 2-g bolus • Persistent bacteremia or in the ICU: Meropenem 25mg/kg (up to 1g) IV every 8 hours • **Oral Eradication-Phase Therapy:** Following IV antibiotic treatment, prolonged (≥ 12 weeks) oral antibiotic treatment is recommended to ensure complete eradication of organism • TMP-SMX (agent of first choice) Adult, >60 kg: 160 mg TMP/800 mg tablets: 2 tablets every 12 hours Adult, 40–60 kg: 80 mg/400 mg tablets: 3 tablets every 12 hours Adult, <40 kg: 160 mg/800 mg tablets: 1 tablet every 12 hours or 80 mg/400 mg tablets: 2 tablets every 12 hours Child: 8 mg/40 mg/kg; maximum dose 320 mg/1,600 mg every 12 hours **or** • Amoxicillin/clavulanic acid (co-amoxiclav) Adult, ≥60 kg: 500 mg/125 mg tablets: 3 tablets every 8 hours Adult, <60 kg: 500 mg/125 mg tablets: 2 tablets every 8 hours Child: 20 mg/5 mg/kg every 8 hours; maximum dose 1,000 mg/250 mg every 8 hours • For additional information on dosing, please consult the reference for treatment recommendations* and the package insert
Postexposure Prophylaxis during a Public Health Emergency*	• Trimethoprim-sulfamethoxazole for 21 days (agent of first choice) Adult, >60 kg: 160 mg/800 mg tablets: 2 tablets every 12 hours Adult, 40–60 kg: 80 mg/400 mg tablets: 3 tablets every 12 hours Adult, <40 kg: 160 mg/800 mg tablets: 1 tablet every 12 hours or 80 mg/400 mg tablets: 2 tablets every 12 hours Child: 8 mg/40 mg/kg; maximum dose 320 mg/1,600 mg every 12 hours **or** • Amoxicillin/clavulanic acid (co-amoxiclav) for 21 days Adult, ≥60 kg: 500 mg/125 mg tablets: 3 tablets every 8 hours Adult, <60 kg: 500 mg/125 mg tablets: 2 tablets every 8 hours Child: 20 mg/5 mg/kg every 8 hours; maximum dose 1,000 mg/250 mg every 8 hours • For additional information on dosing, please consult the reference for PEP recommendations* and the package insert
Vaccine	No vaccine available for humans or animals
Infection Control	Use Standard and Airborne Precautions when caring for patients with glanders

*Source of treatment and postexposure prophylaxis recommendations: Lipsitz, R, Garges, S, Aurigemma, R, et al. (2010). Workshop on Treatment of and Postexposure Prophylaxis for *Burkholderia pseudomallei* and *B. mallei* Infection, 2010. Emerging Infectious Diseases. 18(12): e2. Available at https://wwwnc.cdc.gov/eid/article/18/12/12-0638_article (Accessed April 12, 2023).