

A microscopic view of red blood cells, showing several cells in various stages of division or movement. The cells are bright red and spherical, set against a dark grey background. A diagonal line separates the dark grey area on the left from a white area on the right. The text is positioned on the dark grey background.

Exposure Risks and Recognition of Illnesses associated with Select Agents

Bacillus anthracis

- Infectious Dose
 - LD50 8,000-10,000 spores
- Signs and symptoms
 - Cutaneous
 - Raised itchy bump turns into a fluid-filled vesicle which ruptures to form a painless ulcer with an eschar
 - Lymph glands in affected area will swell
 - Gastrointestinal (2 types)
 - Oropharyngeal
 - Edema and swelling in the neck, pharyngitis and fever, necrotic ulcers covered in pseudomembrane
 - Intestinal
 - Nausea, loss of appetite, vomiting, fever, abdominal pain, vomiting of blood, severe diarrhea and hemorrhagic ascites
 - Inhalational
 - Fever, malaise, fatigue, nonproductive cough, mild chest discomfort
 - Short period of improvement, followed by abrupt development of severe respiratory distress
 - Dyspnea, diaphoresis, stridor, cyanosis, widened mediastinum on chest x-ray
- Treatment
 - Vaccine for military only
 - Treatment is available

Francisella tularensis

- Infectious Dose
 - Low infectious dose, <10 organisms
- Signs and symptoms
 - Ulceroglandular
 - Formation of an ulcer at the site of infection followed by swollen and painful lymph glands
 - Glandular Infection
 - Swollen and painful lymph glands without the development of ulcers
 - Oculoglandular
 - Pain, redness, swelling and discharge of the eyes
 - Oropharyngeal
 - Sore throat, vomiting, diarrhea, and possible swelling of the glands in the neck
 - Pneumonic and Typhoidal
 - Abrupt onset of fever, chills, headache, muscle aches (predominately lower back), joint pain, dry cough, nasal discharge and progressive weakness
- Treatment
 - No vaccine
 - Treatment is available

Brucella species

- Infectious Dose
 - Low infectious dose, 10-100 organisms
- Signs and symptoms
 - Acute disease is characterized by fever (usually at night), profuse sweating, malaise, headache, muscle pain, and usually back pain.
 - Chronic disease is characterized by chronic fatigue, depression, ocular damage and spondylitis.
- Treatment
 - No human vaccine available
 - Treatment is available

Yersinia pestis

- Infectious Dose
 - Low infectious dose
- Signs and symptoms
 - Bubonic
 - Sudden onset of fever, headache, chills, weakness and one or more swollen, tender and painful lymph nodes
 - Septicemic
 - Fever, chills, extreme weakness, abdominal pain ,shock, and possible bleeding into the skin and other organs.
 - Skin and other tissues may turn black and die, especially on fingers, toes and the nose
 - Pneumonic
 - Fever headache, weakness, and a rapidly developing pneumonia with shortness of breath, chest pain, cough and sometimes bloody or watery mucous
- Treatment
 - No vaccine
 - Treatment is available
 - Early treatment of pneumonic plague is essential

Burkholderia mallei

- Infectious Dose
 - Unknown
- Signs and symptoms - Glanders
 - Fever with chills and sweating
 - Muscle aches and tightness
 - Chest pains
 - Headache
 - Nasal discharge
 - Light sensitivity
 - 4 types of infection
 - Localized, pulmonary, bloodstream and chronic
- Treatment
 - No vaccine
 - Treatment is available

Burkholderia pseudomallei

- Infectious Dose
 - Unknown
- Signs and symptoms – Melioidosis (‘The Great Imitator’)
 - Acute localized infections
 - Gray or white, firm nodules or ulcers
 - Pulmonary disease
 - Fever, coughing, pleuritic chest pain, severe weight loss
 - Septicemia
 - Fever, severe headache, disorientation, pharyngitis, upper abdominal pain, diarrhea, jaundice, muscle tenderness
 - Chronic melioidosis
 - Abscesses and suppurative lesions which occur in a variety of organs
- Treatment
 - No vaccine
 - Treatment is available
 - Infected patients can remain asymptomatic for years

Smallpox (Variola Virus)

- Infectious Dose
 - Unknown
- Signs and symptoms
 - Fever, malaise, headache, backache, 2-3 days later feel better, then the rash appears starting on the face, hands, and forearms progressing to the trunk
 - Rash progresses from macules to papules to vesicles to pustules
 - Scabs separate around day 19 after eruption
- Treatment
 - Vaccine is available
 - No antivirals but treatment with supportive care

Ricinus communis

- Infectious Dose
 - Human lethal dose has not been established rigorously
- Signs and symptoms
 - Inhalation
 - Respiratory distress, fever, cough, nausea, tightness in chest, heavy sweating and pulmonary edema.
 - Ingestion
 - Bloody vomiting and diarrhea, severe dehydration, seizures, blood in the urine
- Treatment
 - No vaccine is available
 - No antidote only supportive medical care

Mycobacterium tuberculosis

- Infectious Dose
 - As little as 10 organisms by inhalation
- Signs and symptoms
 - Cough, phlegm, chest pain, weakness, weight loss, fever, chills and sweating at night
- Treatment
 - There is a vaccine available, but is not widely used in the United States
 - Treatment is available

Chikungunya Virus

- Infectious Dose
 - unknown
- Signs and symptoms
 - 3-7 days after bitten
 - Common symptoms are fever and joint pain
 - Other symptoms: headache, muscle pain, joint swelling, & rash
- Treatment
 - No medicine to treat the infection
 - Get rest, drink fluid, use ibuprofen, naproxen, and acetaminophen to relieve fever or pain

Ebola Virus

- Infectious Dose
 - unknown
- Signs and symptoms
 - 2-21 days after exposure
 - Common symptoms are fever & abdominal pain
 - Other symptoms: headache, muscle pain, weakness, and diarrhea
- Treatment
 - No vaccine or medicine is available for Ebola
 - Basic interventions can improve survival
 - (IV) and balancing electrolytes (body salts).
 - Maintaining oxygen status and blood pressure.
 - Treating other infections if they occur

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Please take the quiz online: Passing grade is 80%

Questions?

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