

Transmission Routes of Potential Bioterrorism Agents

Last Updated: May 1, 2005

Respiratory

These agents are transmitted through the air. This includes fluids aerosolized from a person or animal (i.e., sneezing or coughing) as well as dust from the soil or environment.

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| • Anthrax
<i>Bacillus anthracis</i> | • Brucellosis
<i>Brucella</i> spp. | • Q Fever
<i>Coxiella burnetii</i> |
| • Botulism
<i>Clostridium botulinum</i> toxin | • Glanders
<i>Burkholderia mallei</i> | • Toxins
<i>Clostridium perfringens</i>
<i>Ricinus communis</i>
<i>Staph. aureus</i> |
| • Plague
<i>Yersinia pestis</i> | • Melioidosis
<i>Burkholderia pseudomallei</i> | • Nipah virus |
| • Tularemia
<i>Francisella tularensis</i> | • Psittacosis
<i>Chlamydia psittaci</i> | • Hantavirus |
| | | • Hendra virus |

Vector

These agents are transmitted by an arthropod vector.

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| • Fleas
• Plague - <i>Yersinia pestis</i> | • Mosquitoes
• Tularemia - <i>Francisella tularensis</i> |
| Lice
• Typhus - <i>Rickettsia prowazekii</i> | • Viral encephalitis - VEE, EEE, WEE |
| • Ticks
• Tularemia - <i>Francisella tularensis</i> | • West Nile fever virus |
| • Q Fever - <i>Coxiella burnetii</i> | • Rift Valley fever virus |

Direct Contact

These agents can be acquired by directly touching a person or animal or by contact with fluids (urine, feces, vomit, saliva) or tissues from an infected person or animal.

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|---|---|--|
| • Anthrax
<i>Bacillus anthracis</i> | • Tularemia
<i>Francisella tularensis</i> | • Melioidosis
<i>Burkholderia pseudomallei</i> |
| • Plague
<i>Yersinia pestis</i> | • Brucellosis
<i>Brucella</i> spp. | • Q Fever
<i>Coxiella burnetii</i> |
| • Smallpox
<i>Variola major</i> | • Glanders
<i>Burkholderia mallei</i> | • Nipah virus |
| | | • Hendra virus |
| | | • Rift Valley fever virus |

Food

These agents can potentially be spread through a food source (ingestion). Many agents are killed by heat and therefore proper cooking measures can help to prevent disease through this route.

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|---|--|---|
| • Anthrax
<i>Bacillus anthracis</i> | • Brucellosis
<i>Brucella</i> spp. | • Food Safety
<i>Salmonella</i> spp.
<i>E. coli</i> O157:H7
<i>Campylobacter</i> spp. |
| • Botulism
<i>Clostridium botulinum</i> toxin | • Toxins
<i>Clostridium perfringens</i>
<i>Ricinus communis</i>
<i>Staph. aureus</i> | |
| • Tularemia
<i>Francisella tularensis</i> | | |

Water

These agents can potentially be spread through a water source. This includes contact with contaminated water (i.e., open wounds) as well as drinking contaminated water.

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| • Melioidosis
<i>Burkholderia pseudomallei</i> | • Toxins
<i>Clostridium perfringens</i>
<i>Ricinus communis</i>
<i>Staph. aureus</i> | • Brucellosis
<i>Brucella</i> spp. |
| • Tularemia
<i>Francisella tularensis</i> | | • Water Safety
<i>Cryptosporidium parvum</i>
<i>Vibrio cholerae</i> |



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