
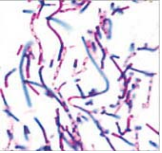






## BIOTERRORISM AGENTS II



WATCH FOR THESE SYMPTOMS
--------------------------

Disease	Signs, Symptoms, and Epidemiology	Incubation Time (Range)	Person-to-Person Transmission	Isolation	Diagnosis	Postexposure Prophylaxis for Non-Pregnant Adults	Treatment for Non-Pregnant Adults
Pneumonic Tularemia; following aerosol release <i>Francisella tularensis</i>  	Sudden onset of acute febrile illness, progressing to pharyngitis, bronchiolitis, pleuropneumonitis, hilar lymphadenitis. Initially flu-like syndrome with fever (38-40°C), chills, headache, coryza, sore throat. Dry or slightly productive cough, substernal tightness, pleuritic pain; hemoptysis rare. X-ray with bronchopneumonia, often with pleural effusions and hilar lymphadenopathy. Other forms of disease: glandular, oculoglandular, pharyngeal, typhoidal ulceroglandular (cutaneous). Endemic in North America, Eurasia	3 - 5 days (1 - 14 days)	None. Laboratory personnel potentially at risk: use BSL-2 for routine diagnostic procedures, BSL-3 if aerosol or droplet production possible.	Standard Precautions	Culture using selective media (BCY, cysteine or S-H enhanced). Blood (rarely positive), sputum, pharyngeal washings; Gram-stain may show poorly stained, pleomorphic, Gram-negative coccobacillus. Serology preferred confirmatory test. Rapid diagnostic tests available.	Prophylaxis for 14 days Doxycycline 100 mg PO q 12h OR Ciprofloxacin* 500 mg PO q 12h  Experimental attenuated strain of <i>F. tularensis</i> ; (IND) available from USAMRIID (301-619-2833) * Not FDA approved use	Treatment for 10-14 days Streptomycin 1 g IM q 12h OR Gentamicin 5 mg/kg/day IV*  Alternatives: Doxycycline 100 mg IV q 12h x 14 days OR Chloramphenicol* 15 mg/kg IV q 6h x 14 days OR Ciprofloxacin* 400 mg IV q 12h x 10 days May change to PO when clinically improved  * Not FDA approved use
Viral Hemorrhagic Fevers <i>Filovirus</i> Ebola hemorrhagic fever Marburg hemorrhagic fever 	Abrupt onset. Initial flu-like syndrome (high fever, headache, myalgia) then pharyngitis, vomiting, diarrhea. Soft-palate reddening spreading to hard palate. Most reliable sign is a non-pruritic, centripetal, erythematous papular rash (onset days 5 to 7). After 24 hrs, develops into large, well demarcated, coalescent macules, that can be hemorrhagic. Progresses to mucous membranes and conjunctival hemorrhage, hematuria, hematemesis, and melana. Septic shock may ensue. Sporadic cases in Africa.	Ebola: 2-21 days  Marburg: 3-14 days	Highly transmissible via contact and droplet exposure from blood and body fluids. Rare airborne transmission. Risk is highest during later disease stages. Significant lab risk, follow BSL-4 practices.	Private room with anteroom preferred. Airborne Precautions with N95 respirators or PAPRs. Contact Precautions (with eye and mucous membrane protection within 3 ft of patient). Impermeable gowns, double gloves, shoe coverings.  Access restricted to essential personnel.	Early post-exposure nasal swabs and induced respiratory secretions for hemorrhagic fever RT-PCR, ELISA EM, and viral isolation (requires BSL-4 laboratory).	Vaccine now being tested.	Aggressive supportive care and management of hypotension. Blood replacement products for DIC.
Viral Hemorrhagic Fevers <i>Arenavirus</i> Old World Lassa fever 	Gradual onset with flu-like syndrome (fever, severe pharyngitis, cough, nausea) plus conjunctivitis, flushing, petechial hemorrhages, and cervical lymphadenopathy. Severe peripheral edema, especially head and neck, due to capillary leak, but early hemorrhage is uncommon. High AST elevation correlates with severity of illness; albuminuria and hemoconcentration are common. Early lymphopenia may be followed by late neutrophilia. Platelet counts moderately depressed but platelet function is abnormal. Geographic location = West Africa.	Lassa: 6-15 days (5-21 days)	Transmitted by contact and droplet exposure from blood and body fluids, including pharyngeal, urine or semen exposure for 3-9 weeks from onset of illness. Risk of airborne transmission unclear.	Private room with anteroom preferred. Airborne Precautions with N-95 respirators or PAPRs.  Contact Precautions (with eye and mucous membrane protection within 3 ft of patient).	ELISA or IFA serology. Culture from blood, urine, or throat washings, or PCR. Viral isolation (requires BSL-4 laboratory).	Oral ribavirin for high risk contacts (direct exposure to body fluids) of Lassa fever patients.	Mass casualty setting Ribavirin 2000 mg PO load, then 600 mg PO q12 (if wt >75kg) Or 1000 mg/d PO (400 mg in AM and 600 mg in PM if wt <75kg).  Contained casualty setting: Ribavirin 30 mg/kg IV (max 2g) load, then 16 mg/kg IV (max 1g) q 6h x 4 d then 8 mg/kg IV (max 500 mg) q 8h x 6d.


<p>Viral Hemorrhagic Fevers New World Junin (Argentinian) Machupo (Bolivian)</p> 	<p>Gradual onset. Initial flu-like syndrome (fever, myalgias, headache, conjunctivitis, vomiting, diarrhea, generalized lymphadenopathy). May develop petechiae, purpura, palatial hyperemia, hemorrhage from mucosal surfaces and central nervous system dysfunction (tremors, seizures). Geographic location = South America</p>	<p>New World: 7-16 days</p>	<p>Uncommonly transmitted via direct contact with blood and body fluids. Risk of airborne transmission unclear.</p>	<p>Private room with anteroom preferred. Airborne Precautions with N-95 respirators or PAPRs.  Contact Precautions (with eye and mucous membrane protection within 3 ft of patient).</p>	<p>ELISA or IFA serology. Culture from blood, urine, or throat washings, or PCR. Viral isolation (requires BSL-4 laboratory).</p>	<p>Junin vaccine is a live, experimental attenuated vaccine (IND) available from USAMRIID (301-619-2833)</p>	<p>For Junin: Respond under investigational protocol with 2 or more units of convalescent plasma containing adequate amounts of neutralizing antibody given within 8 days of onset. (IND)  Ribavirin is likely to be useful; follow protocols above for Lassa fever.</p>
--	--	---------------------------------	---	--	---	--	--

Photo Credits: Pneumonic Tularemia – JAMA 2001;285:2763-2773 ;Ebola/Marburg JAMA 2002 287:2391-2405; Lassa Fever (courtesy of M. Monson, MD) and Argentine Hemorrhagic Fever (J. Maiztegui, MD) Mandell GL, Fekety R, eds. Atlas of Infectious Diseases Vol VIII: External Manifestations of Systemic Infections, Current Medicine, 1997, p 10.13.

References:

- Borio L, Inglesby T, Peters CJ, et al. for the Working Group on Civilian Biodefense. Hemorrhagic Fever Viruses as biological weapons: medical and public health management. JAMA 2002;287:2391-2405.
- Chin J, ed. Control of Communicable Diseases Manual. 17th edition. Washington, DC: American Public Health Association. 2000.
- Dennis DR, Inglesby TV, Henderson DA, et al. for the Working Group on Civilian Biodefense. Tularemia as a biological weapon: medical and public health management. JAMA 2001;285:2763-2773.
- Mandell GL, Fekety R, eds. Atlas of Infectious Diseases Volume VIII: External manifestations of Systemic Infections. Philadelphia Current Medicine, 1997.
- McGovern TW, Christopher GW, Eitzen EM. Cutaneous manifestations of biological warfare and related threat agents. Arch Dermatol;1999;135:311-322.
- Nierengarten MB, Lutwick LI. Vaccines for viral hemorrhagic fevers: filoviruses and arenaviruses Medscape, 2002. [http://www.medscape.com/viewarticle/433535\\_print](http://www.medscape.com/viewarticle/433535_print). Accessed June 4, 2002
- U.S. Army Medical Research Institute of Infectious Diseases. USAMRIID's Medical Management of Biological Casualties Handbook. 4th ed. Fort Detrick, Frederick, Maryland. 2001.

<p style="text-align: center;"><b>NOTIFICATION PROCEDURES IN THE EVENT OF A BIOTERRORIST INCIDENT</b></p> <ol style="list-style-type: none"> <li><b>First call the Public Health Officer at your local health department; after hours contact local Health Director via 911.</b></li> <li><b>If criminal activity is suspected, call your local law enforcement and the FBI in your state.</b></li> </ol> <p style="text-align: center;"><b>FOR MORE INFORMATION ON BIOTERRORISM:</b></p> <p>CDC - Centers for Disease Control and Prevention <a href="http://www.bt.cdc.gov/">www.bt.cdc.gov/</a> APIC - Association for Professionals in Infection Control &amp; Epidemiology <a href="http://www.apic.org/bioterror/">www.apic.org/bioterror/</a> SPICE - North Carolina Statewide Program for Infection Control and Epidemiology <a href="http://www.unc.edu/depts/spice/">www.unc.edu/depts/spice/</a> 919-966-3242 USAMRIID's Medical Management of Biological Casualties Handbook <a href="http://www.usamriid.army.mil/education/bluebook.html">www.usamriid.army.mil/education/bluebook.html</a></p>	<p style="text-align: center;"><b>DECONTAMINATION FOR ALL OF THESE AGENTS</b></p> <ol style="list-style-type: none"> <li>Place clothing from suspected victims in airtight impervious (e.g., plastic) bags and save for law authorities (e.g., FBI, SBI).</li> <li>Use soap and water for washing victim.</li> <li>For environmental disinfection for all of the above, use bleach (standard 6.0% - 6.15% sodium hypochlorite ) in a 0.6% concentration (1 part bleach to 9 parts water). An alternative is to use an EPA-approved phenol disinfectant.</li> <li>For Ebola and Marburg all bedding and clothing must be autoclaved or laundered in hot water and bleach.</li> <li>Healthcare worker should wear PPE (gowns, gloves and respirator) during decontamination of viral hemorrhagic fever diseases.</li> <li>For viral hemorrhagic fever diseases no embalming of deceased, minimal handling in leak-proof material for prompt burial or cremation.</li> </ol>
---	---

**Chart developed by:**

North Carolina Statewide Program for Infection Control and Epidemiology (SPICE)    email: [spice@unc.edu](mailto:spice@unc.edu)  
KK Hoffmann, DJ Weber, EP Clontz, WA Rutala

**Support provided by:**

The North Carolina Institute for Public Health and The North Carolina Center for Public Health Preparedness, in the School of Public Health at The University of North Carolina at Chapel Hill

In view of the possibility of human error or changes in medical sciences, neither the authors, nor the publisher, nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete. Readers are encouraged to confirm the information contained herein with other sources and check drug package insert for warnings and contraindications.

Bioterrorism Agents, copyright 2001, includes the following agents: anthrax, botulism, pneumonic plague, and smallpox.

*copyright 2003 by The University of North Carolina at Chapel Hill. Not to be used for other than non-profit educational purposes without written permission of copyright owner.*