RECOGNIZING BIOTERRORISM-RELATED ILLNESSES

Healthcare providers should be alert to illness patterns and diagnostic clues that might signal an act of bioterrorism (BT). The following clinical and epidemiological clues are suggestive of a possible BT event:

- A rapidly increasing disease incidence
- An unusual increase in the number of people seeking care, especially with fever, respiratory, or gastrointestinal symptoms
- Any suspected or confirmed communicable disease that is **not endemic** in New York (e.g., plague, anthrax, smallpox or viral hemorrhagic fever)
- Any unusual age distributions or clustering of disease (e.g., chickenpox or measles in adults)
- Simultaneous outbreaks in human and animal populations
- Any unusual temporal and/or geographic clustering of illness (e.g., persons who attended the same public event)

Any unusual illness or disease clusters should be reported immediately to your county health department.

PHONE NUMBERS

New York State Department of Health

Communicable Disease Control	**518-473-4436**
After hours: Duty Officer	**1-866-881-2809**
New York State Biodefense Laboratory	**518-474-4177**

New York City Department of Health and Mental Hygiene

Communicable Disease Program	**212-788-9830**
After hours: within Manhattan	**212-764-7667 (212-POISONS)**
outside Manhattan	**1-800-222-1222**
NYC Public Health Laboratories	**212-447-1091**

Your County Health Department

Consult phone book blue pages under "County Offices"

RECOGNIZING AND DIAGNOSING ILLNESSES POSSIBLY DUE TO BIOTERRORISM – Table 1

Disease	Incubation Period	Early Symptoms	Clinical Syndrome	Diagnostic Samples	Diagnostic Tests
Inhalational Anthrax	1-7 days (possibly up to 60 days)	Non-specific: fever, malaise, cough, dyspnea, headache, vomiting, abdominal and chest pain.	Widened mediastinum, pleural effusion on chest x-ray. Rapid onset of severe respiratory distress, respiratory failure, and shock.	Blood, serum, CSF, pleural or ascitic fluids.	Gram stain or Wright stain; blood culture Specialized labs: IHC, serology, DFA, PCR
Cutaneous Anthrax	1-12 days	Painless or pruritic papule	Papule evolves into a vesicular or ulcerative lesion, then forms a black eschar after 3-7 days.	Swab of lesion, skin biopsy, blood.	Gram stain, culture of lesion; blood culture Specialized labs: PCR, serology
Botulism	Foodborne: 12-72 hours range, 2 hours – 8 days Inhalational: 12-80 hours	Usually none. If foodborne, possibly nausea, vomiting, abdominal cramps or diarrhea.	Afebrile, ptosis, diplopia, dysarthria, dysphonia, dysphagia, symmetrical descending paresis or flaccid paralysis. Generally normal mental status. Progresses to airway obstruction and respiratory failure.	Nasal swab (if obtained immediately following inhaled exposure), serum, gastric aspirate, stool, food sample when indicated.	Specialized labs: Mouse bioassay for toxin

RECOGNIZING AND DIAGNOSING ILLNESSES POSSIBLY DUE TO BIOTERRORISM – Table 2

Disease	Incubation Period	Early Symptoms	Clinical Syndrome	Diagnostic Samples	Diagnostic Tests
Brucellosis	Very variable, 5-60 days	Fever (often intermittent), headache, chills, heavy sweats, arthralgias.	Systemic illness, may become chronic with fever and weight loss. May have suppurative lesions. Bone/joint lesions common.	Blood, serum, bone marrow, tissue.	Culture, serology, PCR
Equine Encephalitides (Eastern, Western, Venezuelan)	2-6 days, Venezuelan 5-15 days, others	Non-specific: Sudden onset of malaise, fever, rigors, severe headache, photophobia, myalgias of legs and back.	Fever, headache, stiff neck, nausea, vomiting, sore throat, diarrhea lasting several days often followed by prolonged period of weakness and lethargy. Central nervous system symptoms may develop.	Serum, CSF	Viral culture, serology, PCR
Pneumonic Plague	1-6 days	Non-specific: high fever, cough, chills, dyspnea, headache, hemoptysis, nausea, vomiting, diarrhea.	Fulminant pneumonia, often with hemoptysis, rapid progression of respiratory failure, septicemia and shock. Presence of hemoptysis may help distinguish from inhalational anthrax.	Blood, sputum, lymph node aspirate, serum.	Gram, Wright, or Wayson stain; culture Specialized labs: Serology, DFA, PCR

RECOGNIZING AND DIAGNOSING ILLNESSES POSSIBLY DUE TO BIOTERRORISM – Table 3

Disease	Incubation Period	Early Symptoms	Clinical Syndrome	Diagnostic Samples	Diagnostic Tests
Q fever	10-40 days	Fever, headache, chills, heavy sweats, arthralgias.	Self-limited febrile illness lasting 2 days to 2 weeks, may present like atypical pneumonia (Legionella).	Serum, sputum	Serology, Culture difficult.
Ricin (toxin from castor bean oil)	18-24 hours	Inhalation: fever, weakness, cough, hypothermia, hypotension, cardiac collapse.	In high doses, short incubation and rapid onset suggestive of chemical agent.	Blood, tissue	Serology, IHC staining of tissue.
Smallpox	12 days; range: 7-17 days	Non-specific: fever, malaise, headache, prostration, rigors, vomiting, severe backache.	Maculopapular, vesicular, then pustular lesions all at same developmental stage in any one location. Begins on face, mucous membranes, hands and forearms; may include palms and soles.	Vesicular or pustular fluid, pharyngeal swab, scab material, serum.	Specialized labs: PCR, viral culture, electron or light microscopy, serology.

RECOGNIZING AND DIAGNOSING ILLNESSES POSSIBLY DUE TO BIOTERRORISM – Table 4

Disease	Incubation Period	Early Symptoms	Clinical Syndrome	Diagnostic Samples	Diagnostic Tests
Staphylo-coccal enterotoxin B	3-12 hours for inhalation. Minutes to hours for ingestion.	Inhalation: Fever, chills, headache, myalgias, cough, nausea. Short incubation and rapid onset suggestive of chemical agent.	Inhalation: Dyspnea, retrosternal pain may develop Ingestion: nausea, vomiting, diarrhea	Inhalation: serum, urine Ingestion: stool, vomitus	Specialized Labs: Ag-ELISA, Ab-ELISA serology.
Tularemia	3-5 days; range. 1–14 days	Non-specific: fever, fatigue, chills, cough, malaise, body aches, headache, chest discomfort, GI symptoms.	Pneumonitis, ARDS, pleural effusion, hemoptysis, sepsis. Ocular lesions, skin ulcers, oropharyngeal or glandular disease possible.	Serum, urine, blood, sputum, pharyngeal washing, fasting gastric aspirate, other.	Gram stain, culture; DFA or IHC staining of secretions, exudates or biopsy specimens.
Viral hemorrhagic fevers (Ebola, arenavirus, filoviruses)	2-21 days; varies among viruses	Fever, myalgias, petechiae, easy bleeding, red itchy eyes, hematemesis.	Febrile illness complicated by easy bleeding, petechiae, hypotension, and shock.	Serum, blood	Viral culture, PCR, serology.

TREATMENT AND PROPHYLAXIS - Table 1

AGENT	TREATMENT	PROPHYLAXIS
Anthrax Inhalation/Cutaneous	Ciprofloxacin; doxycycline Combination therapy of ciprofloxacin or doxycycline, plus one or two other antimicrobials should be considered with inhalation anthrax. PCN should be considered if strain is susceptible.	Ciprofloxacin or doxycycline, with or without vaccination. If susceptible, PCN or amoxicillin should be considered.
Botulism	Supportive care – ventilation may be necessary. Trivalent equine antitoxin (serotypes A,B,E – available from CDC) should be administered immediately following clinical diagnosis.	None
Brucellosis	Doxycycline plus streptomycin or rifampin. Alternatives: ofloxacin plus rifampin; doxycycline plus gentamicin; TMP/SMX plus gentamicin.	Doxycycline plus streptomycin or rifampin
Equine Encephalitides (Eastern, Western, Venezuelan)	Supportive care – analgesics, anticonvulsants as needed.	None

TREATMENT AND PROPHYLAXIS - Table 2

AGENT	TREATMENT	PROPHYLAXIS
Pneumonic Plague	Streptomycin; gentamicin. Alternatives: doxycycline; tetracycline; ciprofloxacin; and chloramphenicol.	Tetracycline; doxycycline; ciprofloxacin
Q-Fever	Tetracycline; doxycycline	Tetracycline; doxycycline (may delay but not prevent illness).
Ricin	Supportive care. Treatment for pulmonary edema. Gastric decontamination if toxin is ingested.	None
Smallpox	Supportive care. Cidofovir shown to be effective in vitro.	Vaccination given within 3-4 days of exposure can prevent or decrease the severity of disease.
Staphylococcal Enterotoxin B	Supportive care.	None
Tularemia	Streptomycin; gentamicin. Alternative: ciprofloxacin	Tetracycline; doxycycline; ciprofloxacin
Viral Hemorrhagic Fevers	Supportive care. Ribavirin may be effective for Lassa fever, Congo-Crimean hemorrhagic fever, Rift Valley fever.	Ribavirin may be effective for Lassa fever, Congo-Crimean hemorrhagic fever, Rift Valley fever.

INFECTION CONTROL PRECAUTIONS FOR BIOLOGICAL AGENTS

AGENT	PRECAUTION CATEGORY *See other side for explanation of each precaution	PERSONAL PROTECTIVE EQUIPMENT GL=Gloves GO=Gowns M=Mask	PRIVATE ROOM
Anthrax	Standard. Contact precautions for cutaneous and gastrointestinal anthrax if diarrhea is not contained.	GL=when entering the room GO=if likely contact with patient,equipment or environment	No
Botulism	Standard precautions.		No
Brucellosis	Standard precautions.		No
Plague (pneumonic)	Standard. Droplet precautions until on appropriate therapy for 72 hours. Contact precautions if draining buboes present.	GL=when entering the room GO=if likely contact with patient,equipment or environment M=surgical mask	Yes Cohort if necessary
Q fever	Standard precautions.		No
Smallpox	Standard, contact and airborne precautions.	GL, GO=when entering the room M=N-95 respirator	Yes Negative pressure
Tularemia	Standard. Contact precautions if lesions present.	GL=when entering the room GO=if likely contact with patient,equipment or environment	No
Viral Hemorrhagic Fever	Standard and contact precautions. Airborne precautions, especially in late stages.	GL, GO=when entering the room M=N-95 respirator	Yes Negative pressure
Venezuelan Equine Encephalitis	Standard precautions.		No

INFECTION CONTROL PRECAUTIONS:

Standard Precautions: Standard precautions apply to blood, all body fluids, secretions, nonintact skin, mucous membranes and excretions, except sweat. Gloves and gowns should be used to prevent exposure to blood and other potentially infectious fluids. Mask and eye protection or face shield should be used during procedures or activities that are likely to generate splashes or sprays of blood, body fluids, secretions or excretions. Appropriate hand hygiene is always necessary.

Additional Precautions for the following:

Droplet Precautions: Private room or cohort patients with same infectious agent. Use a mask if within 3 feet of a patient.

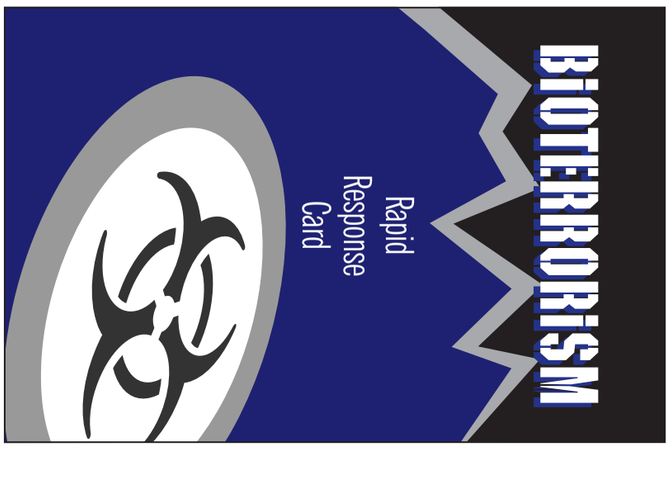
Contact Precautions: Private room or cohort patients with same infectious agent. Use gloves when entering the room and a gown if clothing is likely to have contact with patient, environmental surfaces or patient care equipment.

Airborne Precautions: Requires a negative pressure isolation room and appropriate respiratory protection such as the N95 respirator which has been fit-tested.

Reference: Garner JS, Hospital Infection Control Practices Advisory Committee. Guidelines for Isolation Precautions in Hospitals. Infection Control Hospital Epidemiology 1996;17:53-80.

DECONTAMINATION GUIDELINES:

In general, persons exposed to a biological agent need only to remove clothing, if heavily contaminated, and use shampoo, soap, and water on themselves (shower). The clothing should be bagged and laundered normally in hot water. No precautions for effluent water are needed. Dilute bleach solutions should NEVER be used on people, only environmental surfaces.



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