

Human Disease From Potential Bioterrorist Agents

CDC Category	Disease or Agent	Route of Transmission	● = Potential System Affected						Incubation Period (days)	Person to Person	Prominent Clinical Signs
			Septicemia	Respiratory	Intestinal	Cutaneous	Ocular	Neurological			
A	Anthrax <i>Bacillus anthracis</i>	infected animal; inhalation; contaminated food	●	●	●	●			1-7	NO	Flu-like signs; pustules; scabs; respiratory distress; wide mediastinum on x-ray; bloody vomit and diarrhea; abdominal distress; sepsis; shock; death
A	Botulism <i>Clostridium botulinum</i> toxin	contaminated food; inhalation	●	●	●	●		●	1-5	NO	Weakness; dizziness; dry mouth; nausea; vomiting; cranial nerve deficits: double vision, drooping eyes, slurred speech; symmetrical paralysis; respiratory paralysis; death
A	Plague <i>Yersinia pestis</i>	fleas; infected animal; inhalation	●	●					1-6	YES	Flu-like signs; enlarged tender lymph nodes ('buboes'); rapid pneumonia; respiratory failure; toxemia; shock; death
A	Smallpox <i>Variola major</i>	infected human; inhalation				●			7-17	YES	Flu-like signs; vomiting; rash to pustules (skin, throat, mouth); death
A	Tularemia <i>Francisella tularensis</i>	arthropods: ticks, deer fly, mosquito; inhalation; infected animal tissue; contaminated food; contaminated water	●	●	●	●	●		1-14	NO	Flu-like signs; exhaustion; ulcerative lesions; enlarged painful lymph nodes; painful purulent conjunctivitis; abdominal pain; diarrhea; vomiting; chest pain; respiratory distress; pneumonia; sepsis; death
A	Viral Hemorrhagic Fevers <i>Ebola, Marburg, Lassa, Machupo</i>	varies with virus; mosquitoes, ticks; infected human; rodents	●			●		●	2-21	YES	Flu-like signs; fever; headache; vomiting; diarrhea; petechiae; maculopapular to hemorrhagic rash; hepatic damage; renal failure; seizures; shock; coma; death
B	Brucellosis <i>Brucella species</i>	contact with infected animal tissue; inhalation; contaminated food	●					●	1-21	Rare	Flu-like signs; cyclic fever; arthritis; orchitis; epididymitis; hepatomegaly; Chronic: neurological; endocarditis
B	Glanders <i>Burkholderia mallei</i>	infected animal; inhalation; wound contamination	●	●	●	●	●	●	1-14	YES	Flu-like signs; diarrhea; chest pain; pulmonary signs; pustules; ulcerations; swollen lymph nodes; photophobia
B	Melioidosis <i>Burkholderia pseudomallei</i>	inhalation; infected body fluids; wound contamination	●	●		●			2 days to years	Rare	Flu-like signs; pustules; chronic and prostatic abscesses; chest pain; pneumonia; bronchitis; acute sepsis; death
B	Psittacosis <i>Chlamydia psittaci</i>	inhalation of dust from infected bird dander, droppings or secretions		●		●		●	7-28	NO	Flu-like signs; rash; extensive pneumonia; endocarditis, myocarditis; encephalitis

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B	Q Fever <i>Coxiella burnetii</i>	arthropods: ticks; inhalation; infected animal body fluids (urine, milk, blood, birthing)		●					10-40	NO	Flu-like signs; severe sweats; weakness; retrobulbar headache; pneumonitis but no cough or chest pain; granulomatous hepatitis; osteomyelitis; arteritis; endocarditis; neurologic signs
B	Typhus Fever <i>Rickettsia prowazekii</i>	human body louse; fleas from flying squirrels	●	●	●	●			7-14	YES	Flu-like signs; macular eruptions on upper trunk then body, not face, palms or soles of feet; cough; chest pain; pneumonia; abdominal pain; toxemia
B	Viral encephalitis <i>VEE, EEE, WEE</i>	arthropods: mosquitoes			●			●	2-6	NO	Flu-like signs; nausea; vomiting; conjunctival congestion; encephalitis; disorientation; seizures; coma; death
B	Toxins <i>Clostridium perfringens</i> <i>Ricinus communis</i> <i>Staph. aureus</i>	contaminated food; inhalation		●	●	●	●	●	< 1	NO	Flu-like signs; vomiting; bloody diarrhea; abdominal cramps; kidney failure; shock; death
C	Nipah <i>Nipah virus</i>	infected animal; inhalation, ingestion		●				●	3-18	YES	Flu-like signs; drowsy; disoriented; neurological signs; seizures; respiratory distress; death
C	Hantavirus <i>Hantavirus</i>	inhalation of aerosolized rodent urine, feces or saliva	●	●	●	●	●		4-42	Rare	HPS: Flu-like signs; back pain; myalgia; cough; shortness of breath; dyspnea; tachypnea; tachycardia; death; HFRS: Fever; hypotension; petechiae; conjunctival injection; oliguria followed by polyuria; shock; convalescence
	West Nile Fever <i>West Nile virus</i>	arthropod: mosquitoes			●	●	●	●	3-12	YES	Flu-like signs; vomiting; lymphadenopathy; periocular pain; conjunctivitis; encephalitis; death
	Hendra <i>Hendra virus</i>	infected animal; inhalation		●				●	3-14	NO	Flu-like signs; severe acute respiratory signs; neurological signs; death
	Rift Valley Fever <i>Rift Valley fever virus</i>	arthropod: mosquitoes; infected animal tissue				●	●	●	3-12	NO	Flu-like signs; petechiae; hemorrhage; fever; retinopathy; encephalitis; death
	Transmissible Spongiform Encephalopathy <i>vCJD</i>	consumption of infected animal tissue						●	Many years	NO	Depression; schizophrenia; other neurological signs; ataxia; dementia; involuntary muscle spasms; death

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Animal Disease From Potential Bioterrorist Agents

CDC Category	Disease or Agent	Severity of disease in potentially affected species									Incubation Period	Source: The Merck Veterinary Manual, 8 th ed. Prominent Clinical Signs
		Cattle	Sheep	Goats	Pigs	Horses	Dog	Cat	Birds	Other		
A	Anthrax <i>Bacillus anthracis</i>	●	●	●	▲	●	▲	▲		wild herbivores and carnivores, guinea pig	3-7 days	Sudden death from septicemia with lack of rigor mortis; blood fails to clot; excitement followed by depression or stupor; blood from mouth, nose, anus; edema, especially throat and shoulders
A	Botulism <i>Clostridium botulinum</i> toxin	●	●	●	■	●	■	■	●	foxes, mink	24-72 hours	Muscle paralysis; progressive symmetrical to flaccid; disturbed vision; unable to swallow or chew; death from respiratory or cardiac paralysis
A	Plague <i>Yersinia pestis</i>						■	●		rodents, rock and ground squirrel, prairie dog	Variable, several days	High fever; extremely swollen lymph nodes ("buboes"); severe pneumonia; septicemia
A	Tularemia <i>Francisella tularensis</i>		●		■	▲	■	■		rabbits, rodents, aquatic animals	1-10 days	Sudden high fever with lethargy and anorexia; stiffness; reduced mobility; tachycardia; tachypnea; prostration and death; miliary white necrotic foci of liver, spleen or lymph node
A	Viral Hemorrhagic Fevers <i>Ebola; Marburg; Lassa; Machupo</i>									non-human primates	2-16	Fever; petechiae; bleeding from orifices and internal organs; skin rash; splenomegaly
B	Brucellosis <i>B. melitensis</i>	■	●	●						wild ruminants	Variable	Abortions, stillborn or weak newborns; retained placentas; placentitis; orchitis; epididymitis; arthritis; lameness; Goats: May also have mastitis
B	Brucellosis <i>B. abortus, B. ovis, B. suis, B. canis</i>	●	●	●	●	■	▲			wild ruminants, buffalo, bison, elk	Variable	Abortions, stillborn or weak newborns; placentitis; orchitis; epididymitis; arthritis; lameness; Horses: suppurative bursitis ("fistulous withers")
B	Glanders <i>Burkholderia mallei</i>			■		●	■	▲		donkeys, mules, guinea pigs, hamsters	2 weeks	Ulcerated nodules on skin, upper respiratory tract, lungs; septicemia; high fever; thick mucopurulent nasal discharge; respiratory signs
B	Melioidosis <i>Burkholderia pseudomallei</i>	■	●	●	●	▲	■	■		rodents, rabbits, kangaroos, other zoo animals, fish	Variable; Latency	Signs vary with site of lesion; suppurative or caseous lesions in lymph nodes, lungs, and viscera; pneumonia; possibly nasal discharge; possibly arthritis and lameness; Horses: neurological; colic; Goats: mastitis
B	Psittacosis <i>Chlamydoiphila psittaci</i>							■		parakeets, parrots, love birds	3-10 days	Nasal and ocular discharges; conjunctivitis; yellow-green droppings; inactivity and ruffled feathers; inappetence; weight loss

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B	Q Fever <i>Coxiella burnetii</i>	▲	▲	▲			■	■			rodents, rabbits	1-3 weeks	Typically asymptomatic. Sheep, Goats: abortion; anorexia; Cattle: infertility; sporadic abortion; Dog, Cat: subclinical; abortions
B	Typhus fever <i>Rickettsia prowazekii</i>										flying squirrels	12 days	Asymptomatic
B	Viral encephalitis <i>VEE, EEE, WEE</i>					●				■	rodents	1-14 days	CNS dysfunction: altered mentation, impaired vision, wandering, head pressing, circling, unable to swallow; ataxia; paresis; paralysis; convulsions; death
B	Toxins <i>Clostridium perfringens, Ricinus communis, Staph. aureus</i>	▲	▲	▲	■	▲	■	■	■			12-72 hours	Ricin: violent vomiting; bloody diarrhea; salivation; trembling; incoordination; Clostridium: necrotic enteritis; bloody diarrhea; septicemia; acute death, esp in young; Staph: diarrhea; vomiting; pulmonary edema
C	Nipah <i>Nipah virus</i>			▲	●	■	▲	▲				7-14 days	Severe respiratory distress; harsh "barking" cough; open mouth breathing; possibly neurological signs; head pressing
C	Hantavirus <i>Hantavirus</i>										rodents		Asymptomatic carriers
	West Nile Fever <i>West Nile virus</i>	■	■	■		●	■	■		●	many mammals and reptiles	3-14 days	Fever; encephalitis; altered mentation; impaired vision; circling; head pressing; ataxia; weakness of limbs; partial paralysis; death
	Hendra <i>Hendra virus</i>					●		▲			guinea pigs	6-18 days	Acute respiratory syndrome; nasal discharge; head pressing; ataxia
	Rift Valley Fever <i>Rift Valley fever virus</i>	●	●	●			▲	▲			monkeys, camels	12-36 hours in young	Abortion storms; hepatic necrosis; high mortality in young; fever
	Transmissible Spongiform Encephalopathy (TSE) <i>BSE, CWD, Scrapie, FSE, TME</i>	●	●	●				▲			deer, elk, mink	unknown > 2 years	Neurological and behavioral changes: increased nose licking, sneezing, snorting, teeth grinding, exaggerated menace and corneal reflex, increased startle response; ataxia; hypermetria; paresis

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Additional High Consequence Livestock Pathogens

Disease or Agent	Humans Affected	Species Affected	Incubation Period	Mode of Transmission	Prominent Clinical Signs in Livestock
African horse sickness virus	No	horses, zebras, donkeys, mules, camels	5-7 days	<i>Culicoides</i> midges, mechanically by other insects	Variable forms; fever; severe dyspnea, spasmodic cough, serosanguinous nasal discharge; edema of supraorbital fossa, head, neck, and chest; profuse sweating; hydrothorax, hydropericardium
African swine fever virus	No	domestic and wild pigs	5-15 days	direct contact with body fluids, especially blood, fomites, ticks	High fever, recumbency, skin reddening, cyanotic blotching on ear, tail or legs, enlarged friable spleen; hemorrhagic lymph nodes, swollen tonsils, petechiae, fibrinous pericarditis; death
Akabane virus	No	cattle, sheep, goats	1-6 days	unknown, thought to be various species of mosquitoes	Adults: asymptomatic, abortions, stillbirths, dystocia. Young: congenital abnormalities, (arthrogryposis, ankylosis; hydranencephaly); nystagmus, blindness; death.
Avian influenza virus (highly pathogenic)	Yes	chicken, turkey, water fowl, cats, dogs	3-7 days	aerosol, body fluids, fomites, ingestion	Depression; respiratory signs (coughing, sneezing, nasal discharge); ataxia, green watery diarrhea, swollen, cyanotic combs and wattles; edema of eyes and neck, hemorrhage of legs, decreased egg production, death.
Bluetongue virus (exotic)	No	sheep, goats, cattle, deer, elk, antelope	5-10 days	<i>Culicoides</i> midges, ticks, sheep keds; fomites	Erosions and ulcers of mucous membranes, cyanotic tongue, salivation, dyspnea; fever; petechiae; edema of head, lameness, hyperemic coronary bands; abortion, "dummy lambs"
Bovine spongiform encephalopathy	Yes	cattle	4-5 years	ingestion of infected cattle products (meat, bone-meal, nervous tissue)	Neurological and behavioral changes, nose licking, sneezing, teeth grinding, exaggerated menace and corneal reflex, ataxia, hypermetria, paresis, coma death
Classical swine fever virus (hog cholera)	No	pigs	2-14 days	ingestion (uncooked garbage), fomites, aerosol, direct contact	Variable. Fever, dullness; ataxia; constipation followed by diarrhea; cyanosis of abdomen and ears; abortions, stillbirths, mummification, congenital malformations; death
Coccidioides immitis	Yes	cattle, horses, sheep, pigs, mammals	1-4 weeks	inhalation	Inapparent to benign; chronic respiratory disease; focal lesions in lungs and thoracic lymph nodes
Contagious bovine pleuropneumonia <i>Mycoplasma mycoides mycoides</i>	No	cattle	20-123 days	close contact with respiratory droplets and other body fluids	Dyspnea, tachypnea, cough, fever; calves may have polyarthritis with or without pneumonia. Post mortem lesions: fibrinous, thickened, hyperemic "marbled" lung tissue; thickened interlobular septa
Contagious caprine pleuropneumonia <i>Mycoplasma capricolum/M. F38/M. mycoides capri</i>	No	goats	6-10 days	direct contact with respiratory droplets	Respiratory signs (coughing, labored respiration, frothy nasal discharge); fever; septicemia, lethargy; anorexia; death. Post mortem lesions: fibrinous pneumonia, no thickening of interlobular tissue
Foot-and-mouth disease virus	Yes	cattle, sheep, goats, pigs	1-5 days	aerosol, direct contact, ingestion, fomites	Fever, vesicles and erosions in mouth, nares, muzzle, and feet (coronary band, interdigital) or teats; depression, anorexia; salivation; nasal discharge; sloughing of hoof, abortion
Goat pox virus Sheep pox virus	No	goats, sheep	8-13 days	aerosol, direct contact, fomites, mechanically by insects	Fever; macules and papules with edema and hemorrhage which become depressed, gray and necrotic and have hard, sharply demarcated scabs; conjunctivitis, rhinitis, dyspnea, lymphadenopathy, death

Note: The information provided in this chart is intended to provide information on possible signs seen with foreign animal diseases. If you suspect a foreign animal disease, contact your state or federal veterinarian immediately.

Additional High Consequence Livestock Pathogens



Iowa State University • College of Veterinary Medicine
Ames, IA 50011 • Phone: 515-294-7189
E-mail: cfsph@iastate.edu • <http://www.cfsph.iastate.edu>

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Heartwater <i>Ehrlichia (Cowdria) ruminantium</i>	No	cattle, sheep, goats, wild ruminants	7-16 days	ticks	Fever, respiratory distress, lacrimation, neurologic signs (tongue protrusion, circling, high stepping gait); convulsions, death. Post mortem lesions: hydropericardium, ascites, hydrothorax, petechiae
Japanese encephalitis virus	Yes	horses, pigs	8-10 days	mosquitoes	Horse: fever, lethargy, ataxia, stupor, teeth grinding, blindness, coma, death. Pigs: SMEDI (stillbirth, mummification, embryonic death, infertility)
Lumpy skin disease virus	No	cattle	2-5 weeks	mosquitoes, flies body fluids	Inapparent; fever; painful, deep, skin nodules (1-5 cm diameter) with inverted conical necrosis , scabs and crusts; lymphadenopathy
Malignant catarrhal fever virus (exotic)	No	cattle, wild ruminants	9-77 days	aerosol, close contact	Sudden death; depression; diarrhea; dysentery; DIC; dyspnea; bilateral corneal opacity; oculonasal discharge; hyperemic oral mucosa; ulcerated, scabbed skin
Menangle virus	Yes	pigs	Un-known	respiratory secretion	Reproductive signs such as decreased litter size, mummified or stillborn fetus, congenital deformities (arthrogryposis, degeneration of brain and spinal cord).
Newcastle disease virus (velogenic)	Yes	poultry, other avian species	2-15 days	direct contact with feces and respiratory droplets, fomites,	Respiratory signs (coughing, gasping); neurological signs (muscle tremors, circling, paralysis), green watery diarrhea, decreased egg production
Peste des petits ruminants virus	No	goats, sheep	3-10 days	close contact with body fluids; aerosol, fomites	Sudden death; fever, restless, nasal discharge, respiratory distress; bronchopneumonia; necrotic stomatitis, diarrhea, death
Rinderpest virus	No	cattle, sheep, goats, pigs	3-15 days	direct or close contact with body fluids	High fever, tachypnea, tachycardia, oculonasal discharge, oral erosions and necrosis, watery to hemorrhagic diarrhea, abdominal pain, weakness, recumbency, sudden death
Screwworm Myiasis <i>Cochliomyia hominivorax</i>	Yes	mammals, birds	5-7 days	eggs laid in wounds	Variable diameter openings containing migrating larvae, death can occur from toxicity or secondary infections
Swine vesicular disease virus	Yes	pigs	2-7 days	ingestion of contaminated meat, direct contact (nasal, oral, feces)	Fever; vesicles, erosions in oral cavity, snout, mammary glands, coronary band and interdigital; congestion of mucous membranes; dyspnea; diarrhea, lameness, no abortion
Vesicular stomatitis virus (exotic)	Yes	horses, donkeys, mules, cattle, pigs	1-21 days	sand flies and black flies, direct contact, fomites, aerosol	Fever, vesicles in oral cavity and coronary band, interdigital (for cloven hoof), salivation, lameness

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Chart created by Glenda Dvorak DVM, MPH on 3/6/03, revised 9/26/08

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