

OMMRS

Omaha Metro Medical Response System[®]

For Information or References call the Nebraska Regional Poison Center: (402) 955-5555 or 1-800-222-1222

NBC = Nuclear Biological Chemical

NBC Agents Overview[®]

	Name of Agent	Method of Exposure	Rate of Action & Odor	Symptoms	Treatment Plan
Blistering Agents	Sulfur Mustard	Skin contact or Inhalation	Delayed (2-24 hours) <i>-almond, garlic, mustard</i>	No immediate symptoms. Eye pain, gritty eyes, reddened skin, large fluid-filled blisters.	+Protect caregivers; +Decontaminate using water;
	Lewisite	Skin contact or Inhalation	Rapid <i>-garlic</i>	Immediate pain, eye and lung burning, bee-sting blisters, grayish skin.	+Topical BAL may be used for Lewisite; +Prevention of infection using antibiotics;
	Nitrogen Mustard	Skin contact or Inhalation	Rapid <i>-almond, garlic, mustard</i>	Eye pain, gritty eyes, reddened skin, large fluid-filled blisters, respiratory damage; smells like almonds	+Application of lotions or ointments to soothe blisters.
Irritant Gases	Phosgene Ammonia Chlorine	Skin contact or Inhalation	Rapid and Delayed <i>-pungent odor</i>	Extremely irritating to eyes, skin, and upper respiratory system. Can cause delayed onset of pulmonary edema	Administer oxygen, IV fluids, & bronchodilators
Nerve Agents	Tabun Soman	Skin contact or Inhalation	Very rapid for inhalation	Mild: miosis, rhinorrhea, shortness of breath, chest tightness, sweating & fasciculations at site of liquid contact	+Protect caregivers; +Decontaminate; +Ventilation;
	Sarin VX	Skin contact or Inhalation	Delayed up to 18 hours with dermal	Moderate: wheezing, profuse airway secretions, respiratory distress, muscle weakness, vomiting, diarrhea	+Antidotes; +Supportive Therapy;
	Organophosphates (Pesticides)	Skin contact, Inhalation, or Ingestion	<i>-Tabun: fruity -Soman: camphor, fruity -Sarin, VX: odorless -Pesticides: garlic</i>	Severe: unconsciousness, seizures, flaccid paralysis, cyanosis, apnea	+Medical treatment on back.
Cyanide	Cyanide	Ingestion Inhalation	Rapid <i>-almonds</i>	Flushing, headache, tachycardia, resp depression, obtundation, coma, lethargy, death can occurs in <5 min.	+Maintain airway; +Administer oxygen immediately
Viruses	Variola virus (Smallpox)	Inhalation Person contact	Incubation 12 -17 days Pox lesions form 2-3 days <i>Pox are deep, firm/hard, round</i>	Febrile prodrome (fever >102, headache, backache, chills, vomiting, abdominal pain), first lesions appear in oral mucosa, face, forearms	+Protect & vaccinate caregivers & patients
	Viral Hemorrhagic Fevers (Ebola, Marburg)	Inhalation Person contact	Rate of reaction is variable	Fever, myalgias, flushing, petechiae, bleeding, hypotension, shock	+Protect caregivers +Intensive supportive care +Vaccine for yellow fever
Toxins	Botulinum toxin (Botulism)	Ingestion Inhalation Open Wounds	Rapid (24-36 hours) Illness length is 24-72 hrs	Weakness, dizziness, dry mouth, blurred vision, progressive weakness of muscles - to paralysis and abrupt respiratory failure.	+Treatable with antitoxin if administered early
	Ricin Castor Bean Toxin	Inhalation, Ingestion, Injection	18 -24 hours	Inhalation- coughing, chest tightness, weakness, fever Ingestion- Nausea, vomiting, diarrhea, abdominal pain, fever	+Supportive care +Ingestion- charcoal, lavage
Bacteria	<i>Francisella tularensis</i> (Tularemia)	Inhalation Open Wounds	Incubation 1-10 days Illness length 3 weeks	Fever, headache, malaise, general discomfort, irritating cough, weight loss. 30% mortality rate	+Medical treatment on back
	<i>Bacillus anthracis</i> (Anthrax)	Inhalation Ingestion Cutaneous	Incubation is 1-6 days Toxic shock and death within 2-3 days Reactivation of spores up to 60 days	Inhalation: Fever & fatigue, then a slight improvement followed by an abrupt onset of severe respiratory problems (cough, mediastinitis, dyspnea). Ingestion: Abdominal distress with/out bloody vomiting or diarrhea Cutaneous: Presents with a painless black, necrotic, eschar with redness and edema	+Treatable if antibiotics are administered within 24 hours of onset of symptoms. +Aggressive treatment for suspected inhalation.
	<i>Yersinia pestis</i> (Plague)	Inhalation	Incubation is 2-10 days Illness length 1-2 days	Malaise, high fever, tender lymph nodes, skin lesions, chills, headaches, bloody sputum, pneumonia, circulatory failure and death. HIGHLY INFECTIOUS!	+Medical treatment on back
	<i>Brucella suis</i> (Brucellosis)	Inhalation	Incubation is 5-60 days	Flu-like symptoms including fever and chills, headache, appetite loss, mental depression, extreme fatigue, aching joints, sweating, and possibly GI symptoms.	+Medical treatment on back
Radiation	Nuclear Radiation	Amount of time exposed, internal versus external, and distance from the irradiation	Slow progression <i>-Thallium: garlic</i>	Nausea, vomiting, severe burns, fatigue, reduced white blood cells ID of radiation type is crucial for treatment: Iodine, Cesium, Thallium, Plutonium, Americium, Curium	+Protect Caregivers +External decon using water +Medical treatment on back

*NBC Quick Reference Guide: Treatment for Mass Casualties & Post-Exposure Prophylaxis®

Lewisite

BAL-in-Oil (Dimercaprol)

Available from Akorn Inc. 800-932-5676 ext - 6131

Adults & Children - 2-4 mg/kg/dose IM every 4-12 hours
The dose & frequency dependent upon symptom severity
Contraindicated in patients with a PEANUT ALLERGY

OR

Succimer (Chemet)

Adults & Children - 10 mg/kg PO every 8 hours for 5 days, then every 12 hours for the next 14 days

Cyanide

Cyanokit® (Hydroxocobalamin)

Adults - 5 g (2 vials) IV over 15 min. Repeat 5 g (2 vials) if no improvement after first infusion. Reconstitute each vial with 100 ml of NS. Administer through separate IV line. Causes red skin and urine.

Children - 70 mg/kg IV (pediatric dosing not FDA approved)

Sodium Thiosulfate IV can be used as adjunctive treatment
Adult-12.5mg (50mL of 25% solution); Children-1.65mL/kg of 25% solution

Nerve Agents

Atropine Sulfate*

Adults - 2 mg IV or IM q2-5 min. until resolution of muscarinic signs (bronchospasms & XS secretions)

Children - 0.02 mg/kg (minimum of 0.1 mg) until resolution of muscarinic signs.

AtroPEN (atropine) 0.5 mg Auto-Injector

6-18kg (13-40lbs)	1 Pen (0.5mg)
19-28kg (41-62lbs)	2 Pens (1mg)
29-38kg (63-84lbs)	3 Pens (1.5mg)
>38kg (>84lbs)	4 Pens (2mg)

*Repeat entire dose every 5 minutes for muscarinic signs

Pralidoxime Chloride (2-PAM or Protopam)

Adults - 1-2 gm IV or IM

Children - 15-25 mg/kg IV or IM

Administration over 30 minutes may minimize side effects (hypertension, headache, nausea/vomiting, blurred vision)

Mark I Kit/DuoDote (Auto-Injectors)

Mark I Kit consists of 2 auto-injectors; DuoDote is a single auto-injector

Both Contain: Atropine 2 mg & Pralidoxime 600 mg

Adult Dosages ONLY: Mild exposure	1 Kit or DuoDote
Moderate exposure	2 Kits or DuoDotes
Severe exposure	3 Kits or DuoDotes

Diazepam (Valium)

Adults - 5-10 mg IV or IM

May repeat q 5-10 minutes as needed for seizures

Children - 0.2-0.5 mg/kg IV or IM

May repeat q 5-10 minutes as needed for seizures

Radiation

Duration of treatment is until no evidence of radiation exist

Exposure to Iodine radiation

Oral Potassium Iodide (KI or SSKI)

Adult or adult sized adolescents: 130 mg PO or 0.13 mL of SSKI PO

Children: 0-1 month 16mg; >1 month - 3 years 32mg;
3 years - 18 years 65mg

Immediate dosing before or after exposure can block up to 90%

3-4 hours post-exposure dosing can provide only a 50% block

Contraindications: SHELLFISH ALLERGY or PREGNANCY

Exposure to Cesium or Thallium radiation

Oral Prussian Blue (ferric hexacyanoferrate II)

Available from REAC/TS (865) 576-1005 or Heyltech 281-395-7040

Adults - Initially start 3gm PO 3 times a day; reduce dose to 1gm orally 3 times a day once Cesium counts <1Gy or Thallium counts <1mg/24hr

Children (2-12years) - Initially start 1gm orally 3 times a day

*capsules may be opened and sprinkled on food for ease of administration

Exposure to Plutonium, Americium, or Curium radiation

Ca-DTPA (pentetate calcium trisodium) injection - FIRST

Adults - 1 gm IV over 3-5 minutes x 1

Children (<12years) - 14mg/kg IV over 3-5 min not to exceed 1gm

Zn-DTPA (pentetate zinc trisodium) injection - Maintenance

Adults - 1 gm IV over 3-5 minutes, refer to PI for duration

Children (<12years) - 14mg/kg IV over 3-5 min not to exceed 1gm

•Refer to package insert for suggested supplements & duration of treatment

Hemopoietic Syndrome

filgrastim (Neupogen®) - 5mcg/kg SQ daily up to 2 weeks

Smallpox

Live Smallpox Vaccine

Available from the CDC (770) 488-7100 or

Obtain through local County or State Health Departments

Vaccine used prophylactically or for post-exposure up to 96 hours

Contraindications—allergies: latex, polymyxin-B, dihydrostreptomycin, chlortetracycline; **or the following:** eczema, use of systemic corticosteroids (>2mg/kg or >20mg/day prednisone for >2 weeks), use of immunosuppressive drugs, radiation therapy, HIV+, immunosuppressive diseases, pregnancy or household contacts of mentioned disease states

Vaccine Reaction Treatment

Vaccinia IG 0.6mL/kg IM, may increase to 1-10mL/kg IM divided doses depending on symptoms

Available from the CDC (770) 488-7100

Cidofovir 5mg/kg IV over 1 hour; prehydrate with 1 L of NS; give probenecid 2gm 3 hours prior to cidofovir, then repeat with 1gm 2hr and 8hr post-infusion (**do not** use if creatinine >1.5mg/dL)

Botulism

Trivalent Botulinum Antitoxin (ABE)

Available from the CDC (770) 488-7100

Prior to vaccine dose draw diagnostic lab for toxin sub type ABE and test for equine serum reaction

Dose: Administer 1-2 vials slowly I.V. in a 1:10 dilution with 0.9% normal saline (may also give a dose of 1 vial I.M.),

Adverse effects include anaphylaxis and serum sickness

Anthrax

Duration of treatment is 60 days

Doxycycline (Vibramycin®) - preferred

Adults - 100 mg IV or PO every 12 hours

Use IV for Life-threatening illness

Children - If < 45 kg: 2.2 mg/kg PO or IV every 12 hours

If ≥ 45 kg: 100 mg PO or IV every 12 hours

OR

Ciprofloxacin (Cipro®)

Adults - 400mg IV every 12 hours for life-threatening illness

500 mg PO every 12 hours

Children - 15 mg/kg PO or IV every 12 hours

Not to exceed 1 gm/day

OR

Amoxicillin (Amoxil®) (If strain susceptible)

Adults - 500 mg PO every 8 hours

Children - If ≤ 20 kg: 26.7 mg/kg PO every 8 hours

If > 20 kg: 500 mg PO every 8 hours

Children & Pregnant Women:

Use doxycycline for initial therapy. If antibiotic susceptibility testing allows, amoxicillin should be substituted.

Brucellosis

Duration of treatment is 6 weeks

Doxycycline (Vibramycin®)

Adults - 100 mg PO every 12 hours

Use IV for Life-threatening illness

Children - If < 45 kg: 2.2 mg/kg PO or IV every 12 hours

If ≥ 45 kg: 100 mg PO or IV every 12 hours

AND

Rifampin

600mg to 900mg/day for 6 weeks total therapy time

Plague

Duration of treatment is 10 days

Doxycycline (Vibramycin®)

Adults - 100 mg PO or IV every 12 hours

Children - If < 45 kg: 2.2 mg/kg PO or IV every 12 hours

If ≥ 45 kg: 100 mg PO or IV every 12 hours

OR

Ciprofloxacin (Cipro®)

Adults - 500 mg PO every 12 hours or 400mg IV every 12 hours

Children - 15 mg/kg PO or IV every 12 hours

Not to exceed 1gm/day

Tularemia

Duration of treatment is 14 days

Doxycycline (Vibramycin®)

Adults - 100 mg PO or IV every 12 hours

Children - If < 45 kg: 2.2 mg/kg PO or IV every 12 hours

If ≥ 45 kg: 100 mg PO or IV every 12 hours

OR

Ciprofloxacin (Cipro®)

Adults - 500 mg PO every 12 hours or 400mg IV every 12 hours

Children - 15 mg/kg PO or IV every 12 hours

Not to exceed 1gm/day