



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	Provider Protection +Level B PPE +Decon with water +Prevent infections with antibiotics +Apply lotions/ointments to soothe blisters
	Lewisite	Skin contact or Inhalation	Rapid <i>-garlic</i>	Immediate pain, eye and lung burning, bee-sting blisters, grayish skin	+Prevent infections with antibiotics +Apply lotions/ointments to soothe blisters
	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	
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	Provider Protection +Level B PPE +Decontaminate
	Sarin VX	Skin contact or Inhalation	Delayed up to 18 hours with dermal	Moderate: wheezing, profuse airway secretions, respiratory distress, muscle weakness, vomiting, diarrhea	+Ventilation +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	+Med treatment on back
Cyanide	Cyanide	Ingestion Inhalation	Rate of RXN=Rapid <i>-almonds -Smoke inhalation</i>	Flushing, headache, tachycardia, resp. depression, obtundation, coma, lethargy, death can occur in <5 min.	+Maintain airway; Admin oxygen immediately +Med treatment on back
Viruses	Smallpox <i>Variola virus</i>	Inhalation Person contact	Incubation 12 -17 days Pox lesions form 2-3 days <i>Pox are deep, firm/hard, round</i>	HIGHLY INFECTIOUS! Febrile prodrome (fever >102, headache, backache, chills, vomiting, abdominal pain), first lesions appear in oral mucosa, face, forearms	Protect ALL & Vaccinate +Do NOT Vaccinate pregnant +PPE = N95 mask +Completely protect skin & mucous membranes
	Ebola, Marburg <i>Viral Hemorrhagic Fevers</i>	Inhalation Person contact	Rate of reaction= variable High mortality	HIGHLY INFECTIOUS! Fever, myalgias, flushing, petechiae, bleeding, hypotension, shock	Provider Protection +PPE=N-95 mask +Completely protect skin & mucous membranes +Intensive supportive care
Toxins	Botulism <i>Botulinum toxin</i>	Ingestion Inhalation Open Wounds	*Rapid (24-36 hours) *Illness length may be prolonged	Weakness, dizziness, dry mouth, blurred vision, progressive weakness of muscles - to paralysis and abrupt respiratory failure	+Aggressive Resp. Support +Rapid use of antitoxin +Med treatment on back
	Ricin <i>Castor Bean Toxin</i>	Inhalation, Ingestion, Injection	18 -24 hours	Inhalation -coughing, chest tightness, weakness, fever Ingestion -Nausea, vomiting, diarrhea, abdominal pain, fever	+Supportive care +For Ingestion - charcoal
Bacteria	Tularemia <i>Francisella tularensis</i>	Inhalation Open Wounds	Incubation 1-10 days	No person-to-person transmission Fever, headache, malaise, general discomfort, irritating cough, weight loss. <i>30% mortality rate</i>	+Med treatment on back
	Anthrax <i>Bacillus anthracis</i>	Inhalation Ingestion Cutaneous	Incubation is 1-6 days Toxic shock and death within 2-3 days Reactivation of spores up to 60 days	No person-to-person transmission Contact with spores may cause illness Inhalation: Fever & fatigue, then a slight improvement then an abrupt onset of resp 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	Provider Protection from spores +PPE = N95 mask +Completely protect skin & mucous membranes +Med treatment on back +Aggressive treatment for suspected inhalation.
	Plague <i>Yersinia pestis</i>	Inhalation	Incubation is 2-10 day	HIGHLY INFECTIOUS! Malaise, high fever, tender lymph nodes, skin lesions, chills, headaches, bloody sputum, pneumonia, circulatory failure and death	Provider Protection +PPE = N95 mask +Completely protect skin & mucous membranes +Med treatment on back
Radiation	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	Provider Protection +External decon with water +Med treatment on back

*NBC Quick Reference Guide

Treatment for Mass Casualties & Post-Exposure Prophylaxis®

Therapeutic Disclaimer

Questions regarding treatment, alternative drugs or dosing recommendations for infants, pediatrics or other specialized populations should be referred to the Nebraska Regional Poison Center **402-955-5555** or **800-222-1222** for the most current guidelines.

Cyanide

Cyanokit® (Hydroxocobalamin)

Adult 5 grams IV over 15 min. Repeat 5 grams if no improvement
Child 70 mg/kg IV (pediatric dosing not FDA approved)
 Reconstitute each vial with 200 ml of NS. Administer through separate IV
 Causes red skin and urine

Sodium Thiosulfate IV can be used as adjunctive

DO NOT administer through same IV line as Cyanokit
Adult 50 mL 25% solution IV; **Child** 1.65 mL/kg 25% solution IV, over 10-20 min.

Atropine Sulfate*

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

Child 0.02 mg/kg (minimum of 0.1 mg) IV/IM until resolution of muscarinic signs (bronchospasms & XS secretions)

AtroPEN (atropine) 0.5 mg IM Auto-Injector

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

*Repeat entire dose every 5 minutes for muscarinic signs

Pralidoxime Chloride (2-PAM or Protopam)

Adult 30 mg/kg (up to 2 gm) IV; follow with infusion: 8 to 10 mg/kg/hr
Child 30 mg/kg (up to 2 gm) IV; follow with infusion: 10 to 20 mg/kg/hr
 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) Lorazepam is better absorbed for IM route

Adult 5 to 10 mg IV/IM May repeat q 5-10 min as needed for seizures
Child 0.2 to 0.5 mg/kg IV/IM May repeat q 5 to 10 min

Lorazepam (Ativan) Alternative to Diazepam

Adult 2 to 4 mg IV/IM May repeat q 5 to 10 min as needed for seizures
Child 0.05 to 0.1 mg/kg IV/IM May repeat q 5 to 10 min

Nerve Agents

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

Immediate dosing before or after exposure can block up to 90%
 3-4 hours post-exposure dosing can provide only a 50% block
 CAUTIOUS USE with SHELLFISH ALLERGY or PREGNANCY

Exposure to Cesium or Thallium radiation

Oral Prussian Blue (ferric hexacyanoferrate II)

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

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

Child (2 to 12 years) - Initially start 1 gm 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

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

Zn-DTPA (pentetate zinc trisodium) injection - Maintenance

Adult 1 gm IV over 3 to 5 minutes, refer to PI for duration
Child (<12 years) 14 mg/kg IV over 3 to 5 min not to exceed 1 gm
 •Refer to package insert for suggested supplements & duration of treatment

Hemopoietic Syndrome

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

Radiation

Lewisite

BAL-in-Oil (Dimercaprol)

Available from Akorn Inc. 800-932-5676 ext. 7

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

Succimer (Chemet) OR

Adult & Child 10 mg/kg PO every 8 hours for 5 days, then every 12 hours for the next 14 days

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:** heart disease, eczema, use of systemic corticosteroids (>2 mg/kg or >20 mg/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 0.6 mL/kg IM, may increase to 1-10 mL/kg IM divided doses depending on symptoms Available from CDC (770) 488-7100

Botulism

Heptavalent Botulinum Antitoxin (HBAT)

Available from the CDC (770) 488-7100

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

Dose: Administer 1 vial slowly IV in a 1:10 dilution with 0.9% normal saline (may also give a dose of 1 vial IM),

Adverse effects include anaphylaxis and serum sickness

Anthrax

Duration of prophylaxis & treatment is 60 days

Treatable if Antibiotics started within 24 hours

Doxycycline (Vibramycin®)

Adult 100 mg IV or PO every 12 hours
 Use IV for Life-threatening illness

Child If < 45 kg: 2.2 mg/kg PO or IV every 12 hours
 If ≥ 45 kg: 100 mg PO or IV every 12 hours

Alternative Choices

Ciprofloxacin (Cipro®)

Adult 400 mg IV every 12 hours for life-threatening illness
 500 mg PO every 12 hours

Child 15 mg/kg PO or IV every 12 hours
 Not to exceed 1 gm/day

Levofloxacin (Levaquin®)

Adult 750 mg PO or IV q 24 h
Child <50 kg 8 mg/kg up to 250 mg PO or IV q 12 h

Amoxicillin (Amoxil®) (If strain susceptible)

Adult 1 gram PO every 8 hours
Child If ≤ 20 kg: 25 mg/kg PO or >20 kg: 1 gram every 8 hours

Anthrax Immune Globulin (Anthraxil™): adjunctive for inhal anthrax

Tularemia & Plague

Plague Duration of treatment is 10 days

Tularemia Duration of treatment is 14 days

Contained Treatment ONLY

Gentamicin PREFERRED

Adult Gentamicin, 5 mg/kg IM or IV every 24 hours

Alternative Choices

Doxycycline, 100 mg IV every 12 hours

Chloramphenicol, 25 mg/kg IV every 6 hours

Ciprofloxacin, 400 mg IV every 12 hours

Child Gentamicin, 2.5 mg/kg IM or IV every 8 hours

Alternative Choices

Doxycycline: If weight ≥ 45 kg, 100 mg IV; every 12 hours

If weight < 45 kg, 2.2 mg/kg IV every 12 hours

Chloramphenicol, 25 mg/kg IV every 6 hours

Ciprofloxacin, 15 mg/kg IV every 12 hours

Mass Casualty Setting and Postexposure Prophylaxis

Doxycycline (Vibramycin®)

Adult 100 mg PO or IV every 12 hours

Child If <45 kg: 2.2 mg/kg, If ≥45 kg: 100 mg PO or IV every 12 hours
 OR

Ciprofloxacin (Cipro®)

Adult 500 mg PO every 12 hours or 400 mg IV every 12 hours

Child 15 mg/kg PO or IV every 12 hours *Not to exceed 1gm/day**
 OR

Levofloxacin (Levaquin®)

Adult 500 mg to 750 mg PO or IV q 24 h

Child <50 kg 8 mg/kg up to 250 mg PO or IV every 12 hours

DO NOT REVISE. Copyrighted. Contact Kathy Jacobitz, MHA, BSN, RN, CSPI at Nebraska Regional Poison Center, kjacobitz@nebraskamed.com, 402-384-4040, for permission to copy, distribute, or to provide suggestions for updates.

Check www.nebraskapoisson.com for the most recent version

*NBC N=Nuclear; B=Biological; C=Chemical
 Version 12, December 2016