

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 occur 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 -High mortality	Fever, myalgias, flushing, petechiae, bleeding, hypotension, shock, etc.	+Protect caregivers +Intensive supportive care +Vaccine for yellow fever
Toxins	Botulinum toxin (Botulism)	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.	+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	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 inhalation symptoms. +Aggressive treatment for suspected inhalation.
	<i>Yersinia pestis</i> (Plague)	Inhalation	Incubation is 2-10 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.	+Contact the Poison Control Center for the latest information on treatment.
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®

Therapeutic Disclaimer

Questions regarding 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 12.5 g IV; **Child** 7 g/m² IV (maximum 12.5 g), infuse over 10-20 minutes

Atropine Sulfate*

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

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

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)

Adult 30mg/kg (up to 2 gm) IV; follow with infusion: 8 to 10mg/kg/hr
Child 30mg/kg (up to 2 gm) IV; follow with infusion: 10 to 20mg/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 May repeat q 5-10 min as needed for seizures
Child 0.2 to 0.5 mg/kg IV May repeat q 5 to 10 min

Lorazepam (Ativan) alternative to Diazepam

Adult 2 to 4 mg IM May repeat q 5 to 10 min as needed for seizures
Child 0.05 to 0.1 mg/kg 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 16mg; >1 month - 3 years 32mg;
 3 years to 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
 CAUTION 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 Heyltxer 281-395-7040

Adult 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
Child (2 to 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

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

Zn-DTPA (pentetate zinc trisodium) injection - Maintenance

Adult 1 gm IV over 3 to 5 minutes, refer to PI for duration
Child (<12years) 14mg/kg IV over 3 to 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

Radiation

Lewisite

BAL-in-Oil (Dimercaprol)

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

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)

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 (>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 CDC (770) 488-7100

Botulism

Heptavalent Botulinum Antitoxin (HBAT)

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 vial 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 prophylaxis & treatment is 60 days

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

Ciprofloxacin (Cipro®)

Adult 400mg 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 500mg oral or IV q 24 h
Child <50kg 8mg/kg up to 250mg oral or IV q 12 h

Amoxicillin (Amoxil®) (If strain susceptible)

Adult 500 mg PO every 8 hours
Child If ≤ 20 kg: 26.7 mg/kg PO or > 20 kg: 500 mg every 8 hours

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, 15 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, give 2.2 mg/kg IV every 12 hours

Chloramphenicol, 15 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

Ciprofloxacin (Cipro®)

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

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

Levofloxacin (Levaquin®)

Adult 500mg oral or IV q 24 h

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