<table>
<thead>
<tr>
<th>Name of Agent</th>
<th>Method of Exposure</th>
<th>Rate of Action (t- Odor)</th>
<th>Signs/Symptoms</th>
<th>Treatment Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur Mustard</td>
<td>Skin contact or</td>
<td>Delayed (2-24 hours)</td>
<td>No immediate symptoms. Eye pain, red skin, fluid-filled blisters within 2-24 hours. Dyspnea, pulmonary edema within 24 hrs.</td>
<td>+Level B PPE +Decon with soap &amp; water +Pruritus: Topical steroids or compound calamine lotion +Antibiotics for infection</td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
<td>-almond, garlic, mustard</td>
<td></td>
<td>+Lewisite Antidote (back)</td>
</tr>
<tr>
<td>Lewisite</td>
<td>Skin contact or</td>
<td>Rapid</td>
<td>Immediate pain, eye and lung burning, blistering blisters, grayish skin</td>
<td>+Oxygen, bronchodilators +Nebulized 3.75% sodium bicarbonate for chlorine inhalation</td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
<td>-garlic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen</td>
<td>Skin contact or</td>
<td>Rapid</td>
<td>Eye pain, gritty eyes, reddened skin, large fluid-filled blisters, respiratory damage; smells like almonds</td>
<td>+Inhalation: Admin oxygen immediately +Med treatment on back</td>
</tr>
<tr>
<td>Mustard</td>
<td>Inhalation</td>
<td>-almond, garlic, mustard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosgene</td>
<td>Skin contact or</td>
<td>Rapid and Delayed</td>
<td>Ammonia &amp; Chlorine: immediately irritating to eyes, skin, &amp; upper resp. tract. All can cause delayed onset of pulmonary edema within 72 hours.</td>
<td>+Infection control +PPE = N95 mask +Intensive supportive care</td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
<td>-Ammonia &amp; Chlorine:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td></td>
<td>-pungent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td></td>
<td>-Phosgene: mohn hay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tabun Soman</td>
<td>Inhalation (most</td>
<td>Very rapid Dermal: Delay up to 18 hrs</td>
<td>Mild: miosis, rhinorhoea, mild chest tightness, mild shortness of breath, sweating, lacrimation</td>
<td>+Level B PPE (Level A if concern for vapor exposure) +Decon with soap &amp; water +Reactive Skin Decon. Lotion (RSDL) if available +DO NOT Decon with alcohol +Aggressive Resp. Support +Intubation/Ventilation (avoid succinylcholine) +Antidotes (on back)</td>
</tr>
<tr>
<td>Sarin</td>
<td>likely since volatile)</td>
<td>or Skin contact</td>
<td>Moderate: vomiting, diarrhea, severe chest tightness, wheezing, profuse airway secretions, respiratory distress, muscle weakness, Bradycardia</td>
<td></td>
</tr>
<tr>
<td>Organophosphate</td>
<td>Inhalation, Ingestion,</td>
<td>Rapid</td>
<td>Severe: unconsciousness, seizures, paralysis, cyanosis, respiratory failure, apnea</td>
<td></td>
</tr>
<tr>
<td>Insecticides</td>
<td>or Skin contact</td>
<td>-Tabun: fruity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Soman: camphor, fruity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novichok</td>
<td>Skin contact, Ingestion (Inhalation is less likely)</td>
<td>Rapid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Insecticides: garlic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyanide</td>
<td>Ingestion</td>
<td>Rate of RXN=Rapid</td>
<td>Headache, dizziness, lethargy, tachycardia, hypotension, resp. depression, coma, death may occur in &lt;5 mins</td>
<td>+Maintain airway; Admin oxygen immediately +Med treatment on back</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-almonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-smoke inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smallpox</td>
<td>Inhalation</td>
<td>Incubation 12-17 days</td>
<td>HIGHLY INFECTIOUS! Febrile proctode (fever &gt;102, headache, backache, chills, vomiting, abdominal pain), first lesions appear in oral mucosa, face, forearms</td>
<td>+PPE=PAPR or N95 mask +Intensive supportive care</td>
</tr>
<tr>
<td>Variola virus</td>
<td>Person contact</td>
<td>Pox lesions form 2-3 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pox are deep, firm/hard, round</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incubation 17 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pox are superficial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ebola, Marburg</td>
<td>Inhalation</td>
<td>Rate of reaction=variable</td>
<td>HIGHLY INFECTIOUS! Fever, myalgia, flushing, vomiting, diarrhea, petechiae, bleeding, hypotension, shock</td>
<td>+PPE=PAPR or N95 mask +Intensive supportive care</td>
</tr>
<tr>
<td>Viral Hemorrhagic Fevers</td>
<td>Person contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botulism</td>
<td>Ingestion</td>
<td>*Rapid (24-36 hours)</td>
<td>Dizziness, vomiting, double vision, ptosis, dysphagia, progressive weakness of muscles to paralysis and respiratory failure</td>
<td>+Aggressive Resp. Support +Rapid use of antitoxin +Med treatment on back</td>
</tr>
<tr>
<td>Botulinum toxin</td>
<td>Inhalation Open Wounds</td>
<td>*Illness length may be prolonged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricin</td>
<td>Ingestion, Injection</td>
<td>18-24 hours</td>
<td>Inhalation - coughing, chest tightness, weakness, fever</td>
<td>+Supportive care +For Infection - charcoal</td>
</tr>
<tr>
<td>Caster Bean Toxin</td>
<td>Ingestion, Injection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tularemia</td>
<td>Inhalation Open Wounds</td>
<td>Incubation 1-10 days</td>
<td>No person-to-person transmission Fever, headache, malaise, general discomfort, irritating cough, weight loss. 30% mortality rate</td>
<td>+PPE = N95 mask +Completely protect skin &amp; mucous membranes +Med treatment on back +Aggressive treatment for suspected inhalation</td>
</tr>
<tr>
<td>Franciscella tularensis</td>
<td>Ingestion Open Wounds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthrax</td>
<td>Inhalation</td>
<td>Incubation is 1-6 days</td>
<td>No person-to-person transmission Contact with spores may cause illness</td>
<td>+PPE = N95 mask +Completely protect skin &amp; mucous membranes +Med treatment on back +Aggressive treatment for suspected inhalation</td>
</tr>
<tr>
<td>Bacillus anthracis</td>
<td>Ingestion</td>
<td>Toxic shock and death within 2-3 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plague</td>
<td>Inhalation</td>
<td>Incubation is 2-10 days</td>
<td>HIGHLY INFECTIOUS! Malaise, fever, tender lymph nodes, skin lesions, chills, headaches, bloody sputum, pneumonia, circulatory failure and death</td>
<td>+PPE = N95 mask +Completely protect skin &amp; mucous membranes +Med treatment on back +Aggressive treatment for suspected inhalation</td>
</tr>
<tr>
<td>Yersinial pestis</td>
<td>Ingestion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation</td>
<td>Amount of time exposed, internal versus external, and distance from the irradiation</td>
<td>Slow progression</td>
<td>Nausea, vomiting, severe burns, fatigue, reduced white blood cells ID of radiation type is crucial for treatment: Iodine, Cesium, Thallium, Plutonium, Americium, Curium</td>
<td>+External decon with water +Med treatment on back</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Thallium: garlic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**CBRN Quick Reference Guide**

**Treatment for Mass Casualties & Post-Exposure Prophylaxis®**

Please contact the poison center for patient-specific treatment recommendations (1-800-222-1222)

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### Botulism

**Hydroxocobalamin (Cyanokit®)**
- 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 NS. Administer through separate IV.
- Causes red skin and urine; interferes with some lab tests (e.g., CoHb)

**Thiostiluate IV** can be used as adjunctive
- DO NOT administer through same IV line as Cyanokit
- Adult: 50 mL 25% solution IV; Child: 1 mL/kg 25% solution IV, over 10-20 min.

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### Cyanide

**Atropine Sulfate**
- Adult: 2 mg IV or IM q 2-5 min. until resolution of muscarinic signs (bronchospasm & excess secretions)
- Child: 0.02 mg/kg (minimum of 0.1 mg IV/IM until resolution of muscarinic signs (bronchospasm & excess secretions)

**AtroPEN (atropine) 0.5 mg IM Auto-injector**
- Adult: 30 mg (up to 2 gm) IV; follow with infusion: 8 to 10 mg/kg/hr
- Child: 30 mg (up to 2 gm) IV; follow with infusion: 10 to 20 mg/kg/hr

**Pralidoxime Chloride (2-PAm or Protopam)**
- Adult: 2 mg IV or IM q 2-4 hours post exposure
- Child: 1 mg/kg IV or IM q 2-4 hours post exposure

**Mark I Kit/DuoDote/ATNA (Auto-Injectors)**
- Mark I Kit (in CHEMPACKS) consists of 2 auto-injectors; DuoDote and ATNAAs are single auto-injectors
- All-Contain: Atropine 2 mg & Pralidoxime 600 mg

**Nerve Agents**

**Duration of treatment is until no evidence of radiation exists**

**Exposure to Radioactive Iodine**

**Oral Potassium Iodide (KI or SSKI [1 gm/mL])**
- Adult or adult sized adolescents: 130 mg PO or 0.13 mL of SSKI PO
- Child: 0-1 month: 16 mg; >1 month to 3 years: 32 mg
- 3 years to 18 years: 65 mg

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

**Exposure to Radioactive Cesium or Thallium**

**Oral Prussian Blue (Radiogardase 0.5 gm per capsule)**
- Adult: Initially start 3 gm PO 3 times a day; reduce to 1 gm orally 3 times a day once Cesium counts <1 Gyr or Thallium counts <1 mg/24hr
- Child (2 to 12 years) – Initially start 1 gm orally 3 times a day

**Internal Contamination with Plutonium, Americium, or Curium**

**C-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 to not exceed 1 gm

**Zn-DTPA (pentetate zinc trisodium) injection**
- Maintenance
  - Adult: 1 gm IV over 3-5 min, refer to PI for duration
  - Child (≤12 years) 14 mg/kg IV over 3 to 5 min to not exceed 1 gm

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

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### Radiation

**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

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### Botulism

**BAL-in-Oil (Dimercaprol)**
- Adult & Child: 2 to 4 mg/kg/dose IM every 4 to 12 hours
- The dose & frequency dependent upon symptom severity

**Sucimer (Chemet)**
- Adult & Child: 10 mg/kg PO every 8 hours for 5 days, then every 12 hours for the next 14 days

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### Smallpox

**Tecovirimat (TPXPO)**
- Available from the CDC: 770-488-7100
- Adult or Child ≥ 40 kg: 600 mg PO every 12 hours for 14 days
- Child 25 to <40 kg: 400 mg PO every 12 hours for 14 days
- Child 13 to <25 kg: 200 mg PO every 12 hours for 14 days

**Live Smallpox Vaccine**
- Available from the CDC: 770-488-7100 or Obtain through county or state health departments

**Use prophylactically or for post-exposure up to 96 hours**

**Contraindications—allergies**: latex, polyvinyl-B, dihydrostreptomycin, chlorotetracycline; 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 10%**: 0.6 mL/kg IM, may increase to 1-10 mL/kg IM divided doses depending on symptoms Available from the CDC: 770-488-7100

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### Anthrax

**Anthrax Duration of Treatment and Prophylaxis is 60 days Contained Treatment**

**Suspected Meningitis**
- Adult: ciprofloxacin 400 mg IV every 8 hours + meropenem 2 gm IV every 8 hours + linezolid 600 mg IV every 12 hours
- Child: ciprofloxacin 20-30 mg/kg/day divided q 12 hours + meropenem 60-90 mg/kg/day divided q 8 hours + linezolid 20-30 mg/kg/day divided q 8 hours

**Can transition to PO after 2-3 weeks to complete 60 total days**

**Without Meningitis**
- Adult: ciprofloxacin 400 mg IV every 12 hours + linezolid 600 mg IV every 12 hours or clindamycin 900 mg every 8 hours
- Child: ciprofloxacin 20-30 mg/kg/day divided q 12 hours + clindamycin 10-20 mg/kg/day divided q 12 hours

**Can transition to PO after 2 weeks to complete 60 total days**

**PLUS Anthrax Vaccine Adsorbed (BioThrax) in adults 18-65 years**

**Anthrax Vaccine for people 18 through 65 years of age**

**Ciprofloxacin (Cipro)**
- Adult: 500 mg PO or 400 mg IV every 12 hours for 60 days
- Child: 15 mg/kg PO or 10 mg/kg IV every 12 hours for 60 days OR **DOXYCYCLINE (Vibramycin)**
- Adult: 100 mg every 12 hours for 60 days
- Child: <45 kg: 2.2 mg/kg every 12 hours; ≥45 kg 100 mg every 12 hours

**PLUS Anthrax Vaccine Adsorbed (BioThrax) in adults 18-65 years**

**Ciprofloxacin 400 mg IV every 12 hours**
- Adult: 500 mg PO or 400 mg IV every 12 hours for 60 days
- Child: 15 mg/kg PO or 10 mg/kg IV every 12 hours for 60 days

**PLUS**

**Anthrax Vaccine Adsorbed (BioThrax) in adults 18-65 years**

**Blacklegged Tick-Borne Relapsing Fever**

**Vaccinia 10%**: 0.6 mL/kg IM, may increase to 1-10 mL/kg IM divided doses depending on symptoms Available from the CDC: 770-488-7100

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### Plague

**Plague Duration of treatment is 10 days Contained Treatment**

**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 IV 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 Post-Exposure 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 400 mg IV every 12 hours
- Child: 15 mg/kg PO or IV every 12 hours OR **DO NOT exceed 1gm/day**

**Levofloxacin (Levaquin)**
- Adult: 500 mg PO or IV q 24 h
- Child: <50 kg: 11.25 mg/kg up to 250 mg PO or IV every 12 hours
- Child: ≥50 kg: 2 mg/kg up to 1.25 gm PO or IV every 12 hours

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