

## Fentanyl: Exposure Symptoms and Treatment Methods

*Fentanyl and other opioids could possibly be used as an incapacitating agent to impair a person's ability to function. It is odorless and exposure to it can be fatal.*

### Signs and Symptoms of Exposure

#### • Time Course Based on Type of Exposure

- **Intravenous (IV):** peak analgesia occurs within several minutes; this single dose can last 30 to 60 minutes
- **Dermal:** exposure to fentanyl results in absorption over hours to days
- **Oral:** occurs in two phases; initial exposure occurs within a few minutes, with absorption through the intestinal tract occurring over 2 hours
- **Inhalation:** results in rapid absorption

• **Effects of Short-Term (Less than 8-hours) Exposure:** Can produce delayed respiratory depression and respiratory arrest. With IV exposure, rigidity of the chest muscles ("wooden chest syndrome") may occur, interfering with normal breathing. A rise of blood pressure in the brain along with muscle rigidity and spasms have been reported following fentanyl use.

#### • Ingestion/Inhalation Exposure Symptoms

- Contracted or pinpoint pupils (miosis) which may later become dilated
- Reduced level of consciousness (CNS depression)
- Reduced respiratory function (respiratory depression)
- Reduced blood oxygen content (hypoxia)
- Accumulation of acid in the blood (acidosis)
- Low blood pressure (hypotension)
- Slow heart rate (bradycardia)
- Shock
- Slowing of muscular movement of the stomach (gastric hypomotility) with intestinal obstruction due to lack of normal muscle function (ileus)
- Accumulation of fluid in the lungs (pulmonary edema)
- Lethargy
- Coma
- Death

• **Skin Exposure Symptoms:** In addition to the symptoms listed above for ingestion/inhalation exposure, skin exposure can exhibit the following symptoms:

- May contribute to whole-body (systemic) toxicity
- Absorption increases with skin temperature (based on medical use of transdermal patch)

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### **Decontamination of a First Responder**

The purpose of decontamination is to make an individual and/or their equipment safe by physically removing toxic substances quickly and effectively. Care should be taken during decontamination, because absorbed agent can be released from clothing and skin as a gas. Your Incident Commander will provide you with decontaminants specific for the agent released or the agent believed to have been released. Steps should include:

- Begin washing PPE of the first responder using soap and water solution and a soft brush. Always move in a downward motion (from head to toe). Make sure to get into all areas, especially folds in the clothing. Wash and rinse (using cold or warm water) until the contaminant is thoroughly removed.
- Remove PPE by rolling downward (from head to toe) and avoid pulling PPE off over the head. Remove the SCBA after other PPE has been removed.
- Place all PPE in labeled durable 6-mil polyethylene bags.

### **First Aid**

Treatment consists of administration of the antidote and aggressive support of respiratory function. The antidote, Naloxone (Narcan), in doses of 0.4 to 2.0 mg has been recommended for treatment of opioid overdose. Naloxone is commonly given intravenously. The onset of effect following IV naloxone administration is 1 to 3 minutes; maximal effect is observed within 5 to 10 minutes. Doses may be repeated as needed to maintain effect. Administration of naloxone may also reverse the "wooden chest syndrome."

- **Eyes:** Immediately remove the patient/victim from the source of exposure and wash eyes with large amounts of tepid water for at least 15 minutes. Seek medical attention immediately.
- **Ingestion:** Immediately remove the patient/victim from the source of exposure and ensure that they have an unobstructed airway. Do not induce vomiting (emesis). Administer naloxone under physician's direction or by following applicable EMS protocol. Administer charcoal as a slurry (240 mL water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents, 25 to 50 g in children (1 to 12 years), and 1 g/kg in infants less than 1 year old. Seek medical attention immediately.
- **Inhalation:** Immediately remove the patient/victim from the source of exposure and evaluate respiratory function and pulse. Ensure that the patient/victim has an unobstructed airway. If shortness of breath occurs or breathing is difficult (dyspnea), administer oxygen. Assist ventilation as required. Always use a barrier or bag-valve-mask device. If breathing has ceased (apnea), provide artificial respiration. Monitor the patient/victim for signs of whole-body (systemic) effects and administer symptomatic treatment as necessary. If signs of whole-body (systemic) poisoning appear, see the Ingestion section for treatment recommendations. Seek medical attention immediately.
- **Skin:** Immediately remove the patient/victim from the source of exposure. Monitor the patient/victim for signs of whole-body (systemic) effects. If signs of whole-body (systemic) poisoning appear. Seek medical attention immediately.

### **Who to Contact in an Emergency**

In the event of a poison emergency, call the poison center immediately at: 1-800-222-1222. If the person who is poisoned cannot wake up, has a hard time breathing, or has convulsions, call 911 emergency services.

#### *References.*

1. "FENTANYL : Incapacitating Agent." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 28 Nov. 2016. Web.