

## SECTION 6. RESPIRATORY SUPPORT AND USE OF MARK I KITS


### 6.1 Objectives


At the end of Section 6, the student should be able to:

1. Describe the procedures for respiratory support of persons with severe nerve agent poisoning.
2. Describe the MARK I kit and how to administer the antidote in the kits.

VOICE	SCREEN	NOTES
<b>6.2 Respiratory Support</b>		
<p>In addition to administering atropine and 2-PAM Chloride, respiratory support may be required and should be anticipated as part of the treatment for severe nerve agent poisoning.</p>		
<p>In cases of severe poisoning, it may not be possible to correct respiratory difficulty until enough atropine has been given to relieve bronchoconstriction and heavy secretions.</p>		
<p>Respiratory failure is the main cause of death in cases of severe nerve agent poisoning. If the patient has been exposed to a moderate to heavy dose of nerve agent, it is likely that respiratory support will be necessary. This may include supplying oxygen, assisting ventilation, and suctioning secretions as needed.</p>		


VOICE	SCREEN	NOTES
<p>If you are qualified, you may need to insert an endotracheal tube to provide ventilation for the patient. Remember that high pressures are required to overcome resistance of the narrowed airways and heavy secretions. Some respirating devices that are commonly found on ambulances pop off at 40 to 45 centimeters H<sub>2</sub>O and will not deliver the pressure needed. You may need to increase the pressure to over 70 centimeters H<sub>2</sub>O to ventilate severely exposed patients.</p>		
<p>If breathing has stopped, give artificial respiration using an approved mask-bag oxygen delivery system. If the symptoms don't abate after administration of the antidote, verify the effectiveness of decontamination and repeat if necessary.</p>		

VOICE	SCREEN	NOTES
<p><b>6.3 Description of Mark I kit</b></p> <p>A MARK I Chemical Agent Treatment kit is an alternative way to administer atropine and 2-PAM Chloride.</p> <p>A MARK I Chemical Agent Treatment kit contains two auto-injectors. One unit contains 2 milligrams of atropine, and the other contains 600 milligrams of 2-PAM Chloride. An auto-injector consists of a tube that contains a drug filled ampule, an unexposed hypodermic needle, and a spring. Protocols normally allow you to administer up to three MARK I kits IM to a patient who has been exposed to nerve agent. However, this protocol may vary from state to state.</p> <p>The adult-size atropine and 2-PAM Chloride injectors should never be given to infants. A single 2-PAM Chloride injector contained in</p>	 The image shows two auto-injectors. The top one is labeled '2-PAM Chlorid 600m' and the bottom one is labeled 'Atropine 2mg'. Both are green and yellow devices with a needle and a spring mechanism.	<p><b>Note:</b> State and local protocols will determine who may administer the Mark I kit.</p>

VOICE	SCREEN	NOTES
<p>the MARK I kit can be given to children over 50 pounds and adults in conjunction with atropine.</p>	 A person wearing a full-body hazmat suit and mask is shown using an auto-injector on the mid-thigh of a patient. The patient is wearing blue denim jeans. The person in the hazmat suit is holding the auto-injector against the patient's thigh and pressing down on the base. The auto-injector is a small, handheld device with a needle and a safety clip.	

#### 6.4 Administration of auto-injectors

To use the auto-injector, remove the safety clip, place the head of the injector against the side of the mid thigh and press down the base until the spring drives the needle through the seal and into the muscle, injecting the medication. Any large muscle, such as the buttocks, may be substituted, but the thigh muscle is the muscle of choice. Clothing does not have to be removed— injections can be made directly through clothing, including BDOs.

VOICE	SCREEN	NOTES
<p>The injectors are in a plastic holder and numbered one and two. The atropine injector, Injector Number 1, is administered first. Then Injector Number 2, the 2-PAM Chloride follows. The injector units must be held in position for at least 10 seconds to allow the medication to be fully injected.</p>		<p><b>Note:</b> Generally, medical protocols recommend that all sharps (needles) be placed in a sharps container for proper disposal to protect workers from exposures to bloodborne illnesses. Because needlestick injuries are a major cause of these exposures, it is important to recognize that there are work practices and engineering controls that help prevent needlesticks in environments outside of a hospital, clinical laboratory, or research laboratory. According to 1910.1030 (d)(2)(vii) through 1910.1030 (d)(2)(vii)(B), contaminated sharps can be bent if the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical or dental procedure.</p>
<p><b>6.5 Needle disposal</b></p>		
<p>Be careful handling used auto-injector units because communicable diseases such as hepatitis and HIV can be spread through accidental needle sticks. The usual procedure to reduce the chance of accidental needle sticks is to bend the needle back against a hard surface at a 180-degree angle.</p>		<p>(continued on next page)</p>

VOICE	SCREEN	NOTES
		<p><b>Note:</b> (continued from previous page)</p>
		<p>The Mark I kit will be used primarily in areas outside of hospitals, clinical or research laboratories. It is prudent and a required procedure (i.e., using a one-handed technique) of the U.S. Army to bend the needle from the Mark I kit to permanently blunt the exposed sharp until they can be disposed of properly according to 1910.1030.</p>

