



pupillary response

4. Precautions for pralidoxime chloride administration:
 - a. Although Duodote® and ATNAA® contains atropine, the primary antidote for an acetylcholinesterase inhibitor agent poisoning, the inclusion of pralidoxime chloride in the auto-injector can present challenges if additional doses of atropine are warranted by the patient condition and other formulations of atropine are unavailable:
 - i. **Pediatrics:** an overdose of pralidoxime chloride may cause profound neuromuscular weakness and subsequent respiratory depression
 - ii. **Adults:** Especially for the geriatric victim, excessive doses of pralidoxime chloride may cause severe systolic and diastolic hypertension, neuromuscular weakness, headache, tachycardia, and visual impairment
 - iii. **Geriatrics:** victim who may have underlying medical conditions, particularly impaired kidney function or hypertension, the EMS clinician should consider administering the lower recommended adult dose of intravenous pralidoxime chloride
5. Considerations during the use of auto-injectors
 - a. If an auto-injector is administered, a dose calculation prior to administration is not necessary
 - b. For atropine, additional auto-injectors should be administered until secretions diminish.
 - c. Mark 1 kits, Duodote® and ATNAA® have not been approved for pediatric use by the Food and Drug Administration (FDA), but they can be considered for the initial treatment for children of any age with severe symptoms of an acetylcholinesterase inhibitor agent poisoning especially if other formulations of atropine are unavailable
 - d. Pediatric Atro-Pen® auto-injectors are commercially available in a 0.25 mg auto-injector (**yellow**) and a 0.5 mg auto-injector (**red**). Atro-Pen® auto-injectors are commercially available in a 1 mg auto-injector (**blue**) and a 2 mg auto-injector (**green**)
 - e. A pralidoxime chloride 600 mg auto-injector may be administered to an infant that weighs greater than 12 kg

Notes/Educational Pearls

Key Considerations

1. Clinical effects of acetylcholinesterase inhibitor agents
 - a. The clinical effects are caused by the inhibition of the enzyme acetylcholinesterase which allows excess acetylcholine to accumulate in the nervous system
 - b. The excess accumulated acetylcholine causes hyperactivity in muscles, glands, and nerves
2. Organophosphates Insecticides
 - a. Can be legally purchased by the general public
 - b. Organophosphate pesticides penetrate tissues and bind to the patient's body fat producing a prolonged period of illness and ongoing toxicity even during aggressive treatment
3. Nerve agents
 - a. Traditionally classified as weapons of mass destruction (WMD)
 - b. Not readily accessible to the general public
 - c. Extremely toxic and rapidly fatal with any route of exposure
 - d. GA (tabun), GB (sarin), GD (soman), GF, and VX are types of nerve agents and are WMDs