

# CHEMPACK and SNS Program

# Overview

- Describe SNS and CHEMPACK Programs
- Examine CHEMPACK assets
- Review Threat Perspective
- Review Request Process
- Explain Allocation Strategy
- Describe Nerve Agent Pharmacology

# Preparedness, Response and Recovery

---

- Responsibility:
  - Biological and Chemical Terrorism (white powder)
  - Infectious Disease Outbreaks (H1N1, fungal meningitis)
  - Natural disasters (Hurricane Katrina, Gustav/Flooding)
  - Mass gatherings (UT Football)
  - Other...



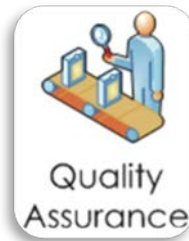


# Role of Healthcare Coalition Partners

- Education/Public Health promotion
- Disease Surveillance
- Dispensing
- Information Sharing
- Mass Care
- Medical Surge

# Strategic National Stockpile

- Program components:
  - Federal Medical Station (FMS) 50-250 bed
  - 12-Hour Push Packages (PPG) 6%
  - Managed Inventory (MI) 94%
  - CHEMPACK
  - Buying capacity



# SNS 12-Hour Push Package

- 130 cargo containers
- Each container 43" W X 60" L
- Tall container 80" H
- Short container 65" H
- Heaviest container 1500lbs
- Total Push Package Weight
- 50 Tons
- Air and ground transportable



TN

Department of  
Health

Knox County  
**Health Department**  
Every Person. A Healthy Person

# Strategic National Stockpile

- Push Pack would be followed within 24-36 hours by “Managed Inventory” (MI)
  - Stored by major pharmaceutical vendors
  - SNS Partners rotate and monitor the MI stock
  - Contains items necessary to deal with a specific threat
- “Federally Owned”

# Strategic National Stockpile

- Antibiotics and Antivirals
- Emergency Medications
  - Airway Supplies
  - Pediatric Supplies
- IV/Medical/Surgical Supplies
  - Vaccines and Antitoxins
- Personal Protective Equipment





# SNS Distribution Plans: Closed Point of Dispensing Sites (PODS)

- Knox County Closed PODS
  - Secondary Distribution Center (SDC) partners – complete SDC paperwork (employee numbers, beds, point of contacts, MOU statement)
  - Notified of event by public health
  - Provided time to report to SDC warehouse
  - Receive supplies and just-in-time training
- East Region Closed PODS
  - Jurisdictional County Health Department Partners. May be directed to the county health department open POD site
  - Notified of event by public health
  - Provided County POD location and reporting time
  - Receive supplies and just-in-time training

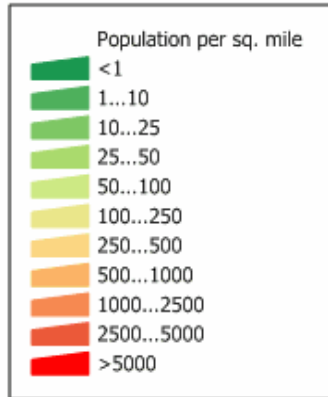
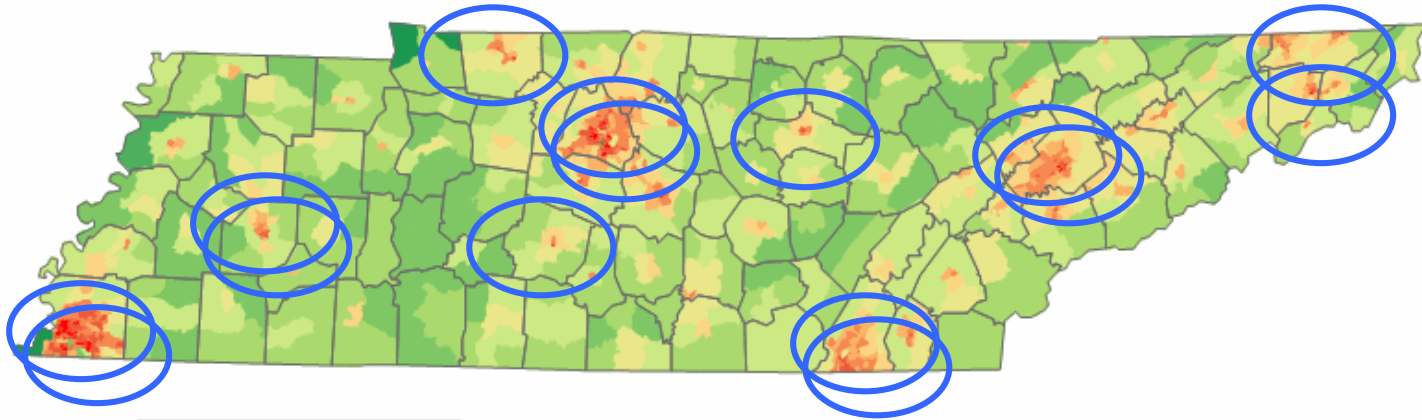
# CHEMPACK Medications



# CHEMPACK



# CHEMPACK Locations



Source: U. S. Census Bureau  
Census 2000 Summary File 1  
population by census tract.

- 15 Locations across the state
- 38 total containers
  - 14 Hospital
  - 24 EMS
- CHEMPACK treatment capacity
  - 24,896

# Threat Perspective

<http://abcnews.go.com/Archives/video/march-20-1995-gas-attack-tokyo-subway-9719213>



# Historical Threat Perspective

---

- Date: March 20, 1995
- Location: Tokyo, Japan
- Time: 0755
  - Rush Hour: 0800-0900
- Event: Sarin (GB) nerve agent attack
  - Subway system (5 commuter cars and 15 stations) Largest nerve agent release in peacetime worldwide
  - Preceded by June 1994 Matsumoto, Japan Sarin release
  - 12 fatalities; >5,500 casualties
- Terrorist Group:
  - Aum Shrinrikyo
  - Religious cult founded by Shoko Asahara



# Attack Timeline

Time	Event
0755	Coordinated release of diluted sarin
0816	First Emergency Call
<b>0825</b>	<b>First victim to ED on Foot</b>
0840	First ambulance arrives
0843	First cardiopulmonary arrest arrives by taxi
0920	Hospital receives 500 patients in 1 <sup>st</sup> hour
0940	Incorrect causative agent named: acetonitrile
<b>1100</b>	<b>Causative agent: sarin announced via tv news</b>
2200	Patient list announced

Source: Okumura T et al. The Tokyo Subway sarin attack: disaster management, Part 2: Hospital response. Acad Emerg Med. 1998; 5:618-24.

# Patient Transport to St. Luke's Hospital

Mode of Arrival	Number of Cases (%)
<b>On Foot</b>	<b>174 (34.9%)</b>
<b>Taxi</b>	<b>120 (24.1%)</b>
Car (good samaritans)	67 (13.5%)
Car (Fire Dept non-ambulance)	64 (12.9%)
Fire Dept ambulance	35 (7%)
Police patrol car	7 (1.4%)
Other	31
<b>TOTAL</b>	<b>498</b>

Source: Okumura T et al. The Tokyo Subway sarin attack: disaster management, Part 1: Community emergency response. Acad Emerg Med. 1998; 5:613-17.



# Casualties at St. Luke's Hospital

Triage Status	Symptom (Sx) Criteria	Number of Patients Day 1
Mild	<b>Ambulatory with only eye Sx</b>	<b>528</b>
Moderate	Non-ambulatory systemic Sx	107
Severe	Mechanically ventilated	4
Dead	Non-reactive to CPR	1
	<b>TOTAL</b>	<b>640</b>

Source: Okumura T et al. The Tokyo Subway sarin attack: disaster management, Part 2: Hospital response. Acad Emerg Med. 1998; 5:618-24.

# Hospital Responder Secondary Exposure

Symptoms	Number of Cases (%)
Eye (miosis/pinpoint pupils)	66 (14%)
Headache	52 (11%)
Throat pain	39 (8.3%)
Dyspnea	25 (5.3%)
Nausea	14 (3%)
Dizziness	12 (2.5%)
Nose pain	9 (1.9%)
(n=472 hospital respondents of 1,063 surveyed) (110/472 (23%) had acute Sx requiring treatment)	

Source: Okumura T et al. The Tokyo Subway sarin attack: disaster management, Part 2: Hospital response. Acad Emerg Med. 1998; 5:618-24.

# Lessons Learned

## Responders safety

- Lack of decontamination
- Secondary exposure: 135/1,364 (9.9%) EMTs acute Sx

## Legal

- Responder protocols (airway management)
- Disaster planning (fire/flood/earthquake focused)

## Medical

- Documentation disorderly/lack of triage process
- Lack of standardized treatment algorithms
- Lack of sufficient medication caches

## Communications

- No coordinating entity or interoperability

# More Recent Threats: 2018 UK Attacks

## Poisoning of Sergei and Yulia Skripal



A forensics tent covers the bench where Sergei and Yulia Skripal fell unconscious.

<b>Location</b>	Salisbury, Wiltshire, England
<b>Date</b>	4 March 2018
<b>Target</b>	Sergei Viktorovich Skripal Yulia Sergeevna Skripal
<b>Weapons</b>	Novichok
<b>Victims</b>	3 admitted to hospital (subsequently discharged): Sergei Skripal Yulia Skripal Det Sgt Nick Bailey of Wiltshire Police. Two other people were poisoned by Novichok later, one died
<b>Suspected perpetrators</b>	Russian state

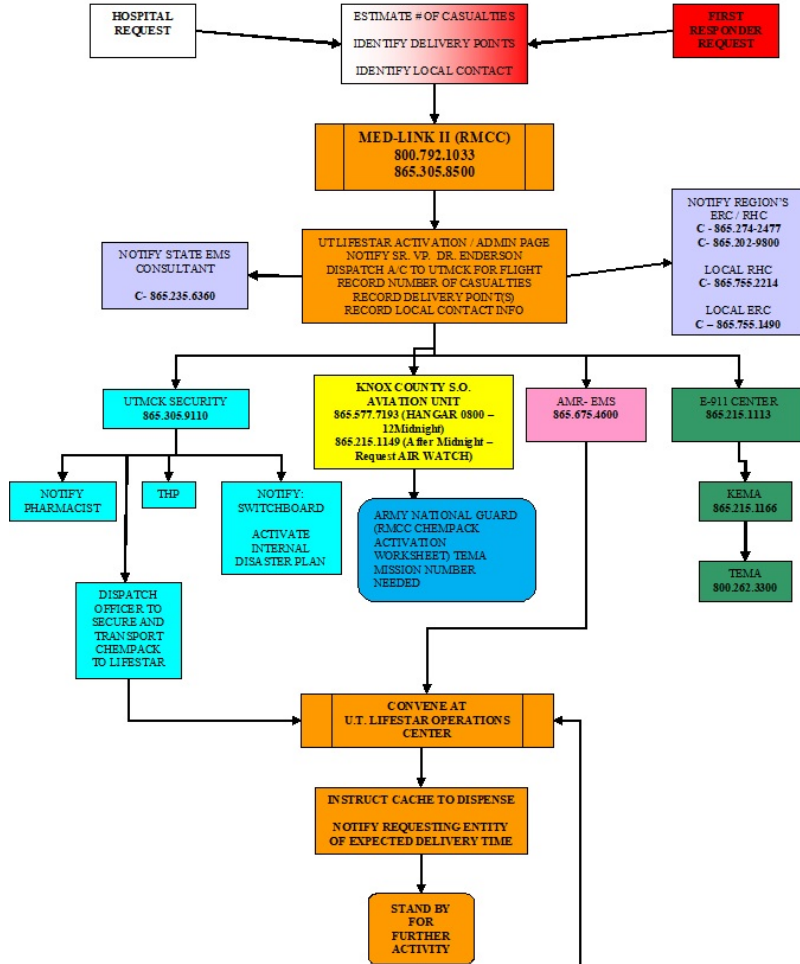
Following the recent nerve agent poisonings in the United Kingdom, the emergency response community has requested information and advice to enhance preparedness. The US Department of Health and Human Services' Office of the Assistant Secretary for Preparedness and Response, Department of Homeland Security's Countering Weapons of Mass Destruction Office, and Department of Transportation's National Highway Traffic Safety Administration Office of Emergency Medical Services and the National Security Council have prepared, "Nerve Agent Information for Emergency Medical Services and Hospitals" which serves as a refresher on standard protocols for recognizing, treating, and protecting oneself from nerve agent exposures. The document also compares and contrasts the clinical effects of nerve agents and opioids as an aid to distinguishing nerve agent exposure from the prevalent opioid overdose cases. Comprehensive follow-up guidance incorporating lessons learned from the United Kingdom incidents will be forthcoming.

# Deployment



- CHEMPACK Caches
  - 15 sites statewide
- Regional Response Plans
  - Partnerships: Hospital, EMS, Fire, Law Enforcement
- Planned Event pre-positioning
  - Example: Bristol Nascar races, Bonnaroo
- EMS Response Caches

# EAST TENNESSEE REGION CHEMPACK ACTIVATION REQUEST



# Allocation Strategy and Plan

Hospital cache  
allocation strategy

Chain of Custody  
form refinement

**YELLOW**

**ORANGE**

**BLUE**

**GREEN**

**Actual Labels**



CDC 8469 SP



# Hospital Allocation Strategy

HOSPITAL CHEMPACK CACHE ALLOCATION		Hospital 1 (Cache Site)	Hospital 2	Hospital 3	Hospital 4
Product	Unit of Measure	Case Quantity	Case Quantity	Case Quantity	Case Quantity
Mark 1 auto-injector	Case	2	0	0	0
Atropine Sulfate 0.4 mg/mL 20mL	Case	3	2	2	2
Pralidoxime 1gm inj 20mL	Case	4	2	2	2
Atropen .5 mg	Case	1	0	0	0
Atropen 1 mg	Case	1	0	0	0
Diazepam 5mg/mL auto-injector	Case	1	0	0	0
Diazepam 5mg/mL vial, 10 mL	Case	1	4	4	4
Sterile water for injection 20 mL vial	Case	7	7	7	7
<b>Total Cases</b>	<b>Case</b>	<b>20</b>	<b>15</b>	<b>15</b>	<b>15</b>
<b>Total Weight</b>	<b>Pounds</b>	<b>268.6</b>	<b>111.8</b>	<b>111.8</b>	<b>111.8</b>
<b>Treatment Capacity</b>	<b>Patients</b>	<b>400</b>	<b>200</b>	<b>200</b>	<b>200</b>

# Chain of Custody



## STRATEGIC NATIONAL STOCKPILE (SNS) CHEMPACK CHAIN OF CUSTODY TRANSFER FORM

Name of Cache Site \_\_\_\_\_ Product deployed to \_\_\_\_\_

The Originating Cache Site will initiate this form for each request.

- Enter cache quantity for each product transferred.
- Keep the bottom copy for your records.
- Each transfer requires a signature.
- The final receiving organization will forward the original with all signatures to the Tennessee Department of Health.

Send original to:  
Tennessee Department of Health  
Emergency Preparedness  
425 9th Ave. North  
111 Floor, Condeell Hall Bldg.  
Nashville, TN 37243  
SNS.Response@tn.gov

ITEM	NDC/Product #	Lot/Serial#	Exp.	QTY
Mark 1 auto-injector				
Atropine Sulfate 0.4mg/ml 20ml				
Prochlorzime 1gm Inj 20ml				
Atropen 0.5 mg				
Atropen 1.0 mg				
Diazepam 5mg/ml auto-injector				
Diazepam 5mg/ml vial, 10ml				
Sterile water for injection (SWFI) 20cc				

GOLD	Transferred From (Print Name)	Organization	Signature	Date (mm/dd/yyyy)	Time (24-Hour)

PINK	#1 Received By (Print Name)	Organization	Signature	Date (mm/dd/yyyy)	Time (24-Hour)
YELLOW	#2 Received By (Print Name)	Organization	Signature	Date (mm/dd/yyyy)	Time (24-Hour)
GREEN	#3 Received By (Print Name)	Organization	Signature	Date (mm/dd/yyyy)	Time (24-Hour)
BLUE	#4 Received By (Print Name)	Organization	Signature	Date (mm/dd/yyyy)	Time (24-Hour)
WHITE	#5 Received By (Print Name)	Organization	Signature	Date (mm/dd/yyyy)	Time (24-Hour)

Cache Copy = GOLD, 1st Transfer = PINK, 2nd Transfer = YELLOW, 3rd Transfer = GREEN, 4th Transfer = BLUE, ORIGINAL = WHITE

# Chain of Custody

- Goal: expedite allocation/distribution
  - Standardized form statewide
  - Pre-completed during annual sustainment
  - Quick simple steps
  - End to end documentation

# Nerve Agent Antidote

DuoDote Autoinjector  
and  
MARK 1 Kit

# MARK I KIT

## OLD SCHOOL



# DUODOTE

## New School



This auto-injector can deliver atropine and 2-PAM to counteract nerve gas or pesticide poisoning.

# DUODOTE KIT/MARK I

- SPRING POWERED INJECTOR
- CONTENT
  - Duodote (two separate chambers)
  - MARK I (two separate syringes)
    - 2.1 MG OF ATROPINE
    - 600 MG PRALIDOXIME (2PAM)
- TREATMENT
  - PESTICIDE POISONING (Organophosphate)
  - NEVER AGENT



Mark I™ Kit



Pralidoxime Chloride Auto-Injector



AtroPen®



Diazepam Auto-Injector



# ADDITIONAL INJECTOR

---

DIAZEPAM – 10 mg

Autoinjector

One (1) per every 3  
Duodote/MARK I



# Nerve Agents

## PHYSICAL PROPERTIES


COMMON NAME	TABUN	SARIN	SOMAN	VX
MILITARY SYMBOL	GA	GB	GD	VX
ODOR	NONE: FRUITY		NONE	NONE: SULFUR
PERSISTENCY	MINUTERS TO HOURS		HOURS	HOURS TO DAYS
RATE OF ACTION	INHALATION - RAPID SKIN SECONDS TO MINUTES			
ROUTE OF ENTRY	INHALATION; SKIN; EYES			
SIGN/SYPTOMS	SALIVATION, LACRIMATION, URINATION, DEFEICATION, GASTROINTESTINAL PAIN, EMESIS, MIOSIS = SLUDGEM			
DECONTAMINATION	REMOVAL, FLUSH WITH WATER, DILUTED BLEACH			




**HOW IT WORKS**

# Putting it together

 Acetylcholine

 Acetylcholinesterase

 Organophosphates

 Atropine

 Pralidoxime



# Putting it together

Acetylcholine

Acetylcholinesterase

Organophosphates

Atropine

Pralidoxime



# Putting it together

Acetylcholine

Acetylcholinesterase

Organophosphates

Atropine

Pralidoxime



# Nerve Agent Sign and Symptoms

<b>Muscarinic</b> -counteracted by both Atropine and Pralidoxime		<b>Nicotinic</b> -counteracted by Pralidoxime only	
<b>SLUDGEM:</b> -Salivation -Lacrimation -Urination -Diarrhea -Gastrointestinal distress -Emesis -Miosis	<b>DUMB BELLS:</b> -Diarrhea -Urination -Miosis -Bradycardia -Bronchorrea -Emesis -Lacrimation -Lethargy -Salivation	<b>Killer B's:</b> -Bradycardia -Bronchorrea -Brochospasm	<b>MTWThF:</b> -Mydriasis -Tachycardia -Weakness (muscle paralysis) -Hyperthermia -Fasciculations

# Mild vs Severe Symptoms

## Mild

- Tightness in chest
- Pinpoint pupils
- Runny Nose and/or teary eyes
- Nausea/vomiting
- Difficulty breathing (wheezing, coughing, increase airway sections,
- acute onset of stomach cramps

## Severe

- Strange or confused behavior
- Copious secretions from airway with difficulty breathing
- Muscular twitching, convulsions, unconsciousness
- Involuntary urination and/or defecation



# How Much Do we Give

**GRAY SAFETY  
RELEASE**  
Do not remove  
until ready to use.



**GREEN TIP NEEDLE END**  
Needle extends rapidly from  
the Green Tip Needle End.  
**NEVER touch Green Tip Needle End  
with fingers!**

**MERIDIAN  
MEDICAL TECHNOLOGIES**

Manufactured By/Distributed By  
**Meridian Medical Technologies, Inc.**  
Columbia, MD 21046, U.S.A.  
A Pfizer Company

DuoDote® is a registered trademark of  
**Meridian Medical Technologies.**  
For product inquiry call 1-800-438-1985

See package insert for dosing information.

For use in  
**NERVE AGENT  
or INSECTICIDE  
POISONING**

For adults and pediatric  
patients weighing

**41kg +**

or 90 lb +

NDC 11704-620-01

**DuoDote®** AUTO-INJECTOR  
(atropine and pralidoxime chloride injection)

Each auto-injector delivers an intramuscular injection of  
**2.1 mg of atropine and 600 mg of pralidoxime chloride  
equivalent to 476.6 mg of pralidoxime**

Store at 25°C (77°F). Excursions permitted to 15-30°C (59-86°F).  
Keep from freezing. Protect from light.

**Rx Only**



**DuoDote®** AUTO-INJECTOR  
(atropine and pralidoxime chloride injection)

For use in **NERVE AGENT  
or INSECTICIDE  
POISONING**

For adults and pediatric  
patients weighing

**41kg +**

or 90 lb +

**IMPORTANT  
INFORMATION  
DUODOTE®  
AUTO-INJECTOR**

- Do Not open the plastic pouch or remove the DuoDote® Auto-Injector from the pouch until ready for use.
- Do Not remove the Gray Safety Release until ready to use.
- Do Not place your fingers on the Green Tip Needle End.
- Upon activation, the needle extends rapidly from the Green Tip Needle End.
- It is okay to inject through clothing.
- Seek medical attention immediately following injection.

Each auto-injector delivers:  
**2.1 mg of atropine injection.**  
(Also contains 12.47 mg glycerin,  
2.8 mg phenol, buffered with  
sodium citrate and citric acid.)  
**600 mg of pralidoxime chloride  
injection.**  
(Also contains 40 mg benzyl  
alcohol, 22.5 mg glycine and  
hydrochloric acid to adjust pH.)



**1**  
Tear open the plastic pouch at any of the notches.  
Remove the DuoDote® Auto-Injector from  
the pouch and place it in your dominant hand.  
(If you are right handed, your right hand is dominant.)



**2**  
Grasp the center of the  
DuoDote® Auto-Injector  
with the Green Tip Needle  
End pointing down.



**3**  
With your  
other hand,  
pull off the  
Gray Safety  
Release.  
The DuoDote® Auto-  
injector is now ready to be  
administered.



**4**  
Move all objects away  
from the injection site  
(the mid-outer thigh).  
Firmly push green tip  
against the injection  
site until you feel the  
DuoDote® Auto-Injector trigger.  
**IMPORTANT: Hold the DuoDote®  
Auto-Injector firmly in place against the  
injection site for approx. 10 seconds  
before removing.**

61 IN - 0031704620013

0001949

**TN** Department of  
**Health**

**Knox County  
Health Department**

Every Person, A Healthy Person

	Mild/Moderate	Severe Symptoms
Infant (0-2 yrs)	Atropine: 0.05 mg/kg IV/IM/IO 2-PAM Cl: 15 mg/kg IV/IM/IO	Atropine: 0.1 mg/kg IV/IM/IO 2-PAM Cl: 25 mg/kg IV/IM/IO
Child (2-10 yrs)	Atropine: 1 mg IV/IM/IO 2-PAM Cl: 15 mg/kg IV/IM/IO	Atropine: 2 mg IV/IM/IO 2-PAM Cl: 25 mg/kg IV/IM/IO
Adolescent (>10 yrs)	Atropine: 2 mg IV/IM/IO/AI; 2-PAM Cl: 15 mg/kg IV/IM/IO	Atropine: 4 mg IV/IM/IO/AI; 2-PAM Cl: 25 mg/kg IV/IM/IO
Adult	Atropine: 2 to 4 mg IV/IM/IO/AI; 2-PAM Cl: 600 mg IV/IM/IO/AI	Atropine: 6 mg IV/IM/IO/AI; 2-PAM Cl: 1800 mg IV/IM/IO/AI
Elderly, Frail	Atropine: 1 mg IV/IM/IO 2-PAM Cl: 10 mg/kg IV/IM/IO	Atropine: 2 to 4 mg IV/IM/IO 2-PAM Cl: 25 mg/kg IV/IM/IO

Assisted ventilation should be started after administration of antidotes for severe exposures.

Repeat atropine (2 mg IV/IM) at 5- 10 minute intervals until secretions have diminished and breathing is comfortable or airway resistance has returned to near normal.



# Administration of MARK I or DuoDote

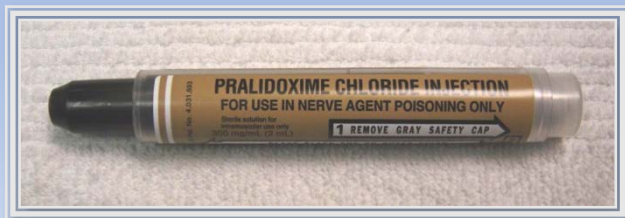
**PERSONAL SAFETY FIRST**

# Administration

## Step 1 MARK I KIT

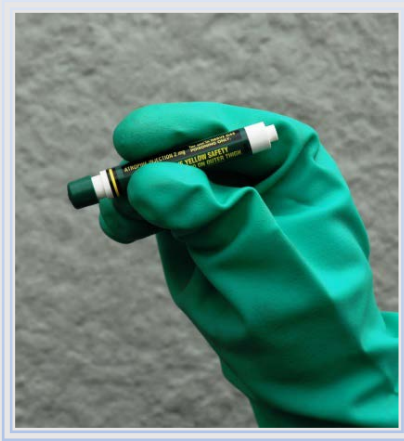


- Remove sleeve from injectors
- Remove Smaller **Green** injector (ATROPINE)
- Give atropine auto-injector **first**



# Administration

## CAUTION

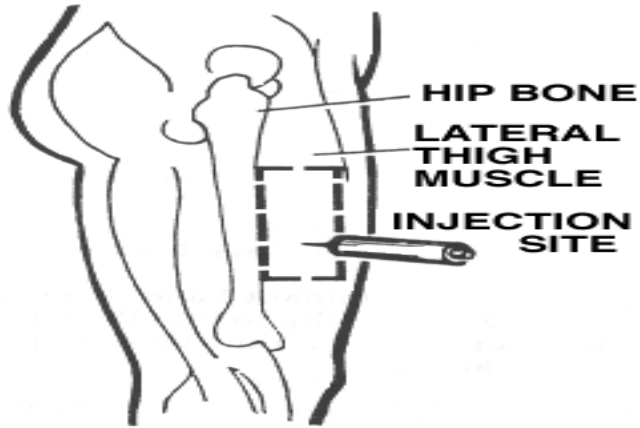


- Hold auto-injector like a pen
- Never put thumb or finger over either end
- Spring-loaded needle can pierce thumb



# Administration

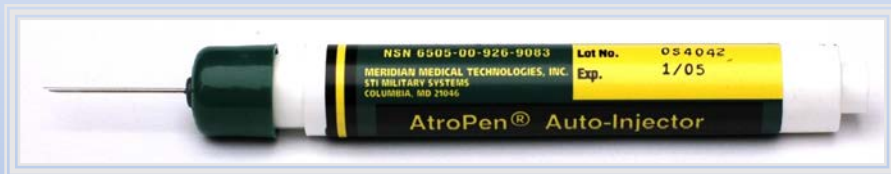
## Step 2 MARK I KIT



- Ensure Injection site is clear of objects
- Can be administered through clothing
- Put colored end of auto-injector on thickest part of quadricep
- Press & hold 10 seconds

# Administration

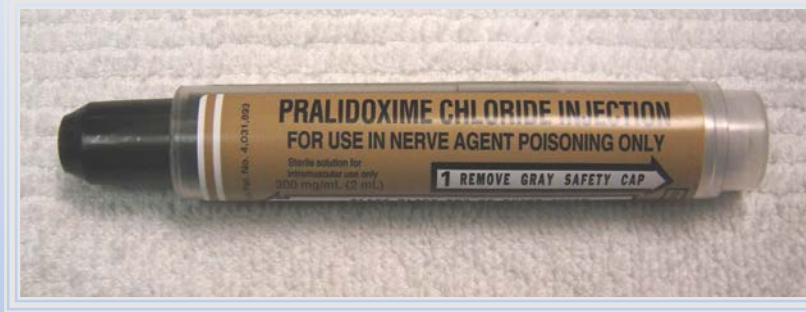
## Step 3 MARK I Kit



- Exposed needle does **not** retract
- Dispose in approved sharps container

# Administration

## Step 4 MARK I Kit



- Administer Pralidoxime auto-injector
- Larger
- Tan
- Same procedure as Atropine



# Administration

- DUODOTE

- Remove injector from box
- Remove **GREY** Cap
- Hold Like PEN
- Ensure Injection Site is Clear
- Can be administered through clothing
- Put **GREEN** TIP of auto-injector on thickest part of quadricep
- Press & hold 10 seconds
- Dispose in approved sharps container





# HOW MANY

- DEPENDS ON SEVERITY OF SIGNS AND SYMPTOMS
  - Mild symptoms
    - One dose
    - Repeat if no improvement (over 5 minutes)
  - Sever symptoms
    - All three dosages
  - Diazepam
    - If Seizures are present



**QUESTIONS**

# Contact Information

- East Region
  - Jack Cochran
    - 865-549-5291
    - [Jack.Cochran@tn.gov](mailto:Jack.Cochran@tn.gov)
  - Wanda Roberts
    - 865-549-5294
    - [Etrhc.health@tn.gov](mailto:Etrhc.health@tn.gov)
- Knox County
  - Larry Hutsell
    - 865-215-5161
    - [Larry.hutsell@knoxcounty.org](mailto:Larry.hutsell@knoxcounty.org)
  - John Brinkley
    - 865-215 5456
    - [john.brinkley@knoxcounty.org](mailto:john.brinkley@knoxcounty.org)
- Emergency Contact to Request Assets:
  - RMCC
    - 865-305-8500
    - 24/7