The Capitol Region Metropolitan Medical Response System
Hartford, Connecticut

Revised 08/2006

DELIVERABLE 2a
The Capitol Region MMRS Pharmaceutical Plan
Contract Number 233-02-0020

Submitted for the Capitol Region Council of Governments

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Introduction to the Capitol Region MMRS

Mass casualty events, regardless of cause, can quickly overwhelm our local medical systems and deprive us of the most basic community health services. Accordingly, our regional medical institutions are developing emergency response systems to deal with these events. To be effective, such in-house systems must be based on a realistic and thorough assessment of present capabilities, including staffing levels, the presence of trained personnel to respond to a community-wide event, the existence of adequate personal protective equipment and pharmaceuticals for staff, and other special equipment requirements.

The Capitol Region Metropolitan Medical Response System (CR-MMRS) is designed to support the process by which the Hartford regional healthcare community examines its current capabilities, identifies its strengths and deficiencies, and acts to augment and improve its capabilities. The goal of CR-MMRS is to facilitate the efforts of healthcare institutions and agencies across the region in developing an integrated, systematic and coordinated response to a mass casualty event that maximizes individual contributions while focusing on the benefits of inter-agency and inter-community cooperation.

All of the various plans and protocols developed by CR-MMRS are compliant with the National Incident Management System (NIMS), and are designed for seamless integration into the appropriate state and federal response plans as they are developed.

Geographic Area Covered

The implementation of the Capitol Region Metropolitan Medical Response System program is managed by the Capitol Region Council of Governments (CRCOG).

The Capitol Region MMRS includes the 41 Hartford-area communities that participate in the Capitol Region Council of Governments, as well as those towns who are generally dependent on the existing Hartford regional healthcare system. The Capitol Region Council of Governments (CRCOG) is the largest of Connecticut's fifteen regional planning organizations, and is established under the Connecticut General Statutes as a voluntary association of municipal governments serving the City of Hartford and 29 surrounding suburban and rural communities. CRCOG is a Connecticut-chartered not-for-profit corporation without 501(c)3 status. The CRCOG operational area is 760 square miles in size and it includes approximately 1,200,000 people.

Major hospital facilities in the Capitol Region include the following institutions:*

- Bristol Hospital
- Connecticut Children's Medical Center
- Day Kimball Hospital
- Hartford Hospital
- John Dempsey Hospital
- Johnson Memorial Hospital
- Manchester Hospital
- New Britain General Hospital
- Rockville General Hospital
- St. Francis Hospital & Medical Center

* The Capitol Region MMRS also includes other healthcare facilities including nursing homes, well-care centers, and other specialized caregivers.

** Hartford Hospital is one of two CT hospitals designated a Center of Excellence by the CT Commissioner of Public Health
The Capitol Region MMRS Pharmaceutical Plan

The Capitol Region Metropolitan Medical Response System (CR-MMRS) has developed and is implementing a pharmaceutical plan that is designed to protect the region’s first responders and their families in the 41 communities of the Capitol Region. All of the various plans and protocols developed by CR-MMRS are compliant with the National Incident Management System (NIMS), and are designed for seamless integration into the appropriate state and federal response plans as they are developed, including the Strategic National Stockpile (SNS) Plan of Distribution.

There are four components of the CR-MMRS Pharmaceutical Plan:
1. Purchase of pharmaceuticals consistent with the mission of the MMRS
2. System for storage, security, and distribution of the CR-MMRS pharmaceutical cache
3. Development of a training protocol to ensure the competencies of the region’s first responders when utilizing the pharmaceuticals
4. Distribution of chemical and/or biological antidotes to the first responder workforce

These components are detailed as follows:

I. Pharmaceutical Purchase:

According to the requirements of the MMRS program, the CR-MMRS shall purchase an adequate supply of pharmaceuticals to treat 1,000 victims of a weapons of mass destruction (WMD) event resulting from the use of a chemical agent. The CR-MMRS pharmaceutical inventory is intended to protect up to 1,500 first responders during the first 24 hours of a WMD event, and is not a complete inventory of all supplies needed to achieve that goal.

A. Plan for Treating Exposure to a Chemical Incident

The CR-MMRS Pharmaceutical Plan is maintained primarily for the protection of CREPC first responders in the event of exposure to a chemical agent. The CR-MMRS chemical antidote stockpile also includes protection for the following response teams: the Capitol Region Medical Reserve Corps, the CT-1 DMAT, and the CTNG 1st Civil Support Team. Other response agencies may be added from time to time as determined by the CR-MMRS Medical Response Coordinator or the CR-MMRS Medical Director. The CR-MMRS pharmaceutical plan is stated as follows:

1. Specific Antidotes for Chemical Agents:
   - Organophosphates/Nerve Agents:
     a. Atropine
     b. Pralidoxime Chloride (2-PAM chloride)
     c. Diazepam (valium)

2. Population Covered By Pharmaceutical Plan:
   This plan assumes that 1,500 first responders may be involved in a chemical incident. Furthermore, it is assumed that persons involved will be affected in varying degrees (minimal to severe) based upon their exposure to agent. The following is an estimation of the clinical outcomes of an incident involving 1,000 persons:
- 10% (100) Dead
- 30% (300) Physically Affected by Exposure
- 60% (600) Not Physically Affected by Exposure (Worried Well)

3. Antidote Requirements At Scene:

Type and Formulation:
The only antidotes that are necessary for treatment of affected individuals at an incident involving chemical agents (nerve agents or organophosphates) are Atropine and Pralidoxime Chloride (2-PAM chloride), with the preferred method of administration being intramuscularly (IM) via an auto-injector. Emphasis at the scene shall be on decontamination, stabilization, and transportation of symptomatic patients to healthcare facilities for treatment.

Quantity:
The Capitol Region MMRS has purchased approximately 3,000 Mark I Nerve Agent antidote auto-injectors and 1,000 Diazepam auto-injectors. These auto-injectors may be carried on the person of first responders, on first responder apparatus, and/or distributed to area hospital Emergency Departments, where applicable.

NOTE: The 3,000 Nerve Agent Antidote Kits and the 1,000 diazepam auto-injectors require replacement periodically upon reaching their expiration dates. Additional funding will be required to replace these medications at that time.

4. Antidote Requirements At Hospital Emergency Departments:

Type and Formulation:
The full complement of antidotes should be available at the region’s hospital Emergency Departments for treating patients. Emphasis shall be on decontamination and stabilization of patients before antidote administration, when possible. Atropine and 2-PAM will be needed in both IV and IM (Mark I auto-injector) forms, with the latter reserved for initial treatment of seriously ill patients before IV access can be established. Diazepam shall be available in IV / IM form (10 mg single-dose vials).

Quantity:
Each hospital shall determine its own requirement as to the size of its chemical incident pharmaceutical cache, based on the following standard:
- Atropine and 2-PAM Mark I auto-injectors shall be supplied by each hospital in sufficient quantity to enable ED staff to safeguard their personnel and to begin treatment of seriously ill patients
- Diazepam shall be available in sufficient quantity to serve as adjunct treatment for nerve agent and organophosphate exposures
- Other pharmaceuticals may be necessary to treat patients that have been traumatized or exposed to chemical agents. These include:
  - albuterol sulfate
  - calcium gluconate
  - morphine sulfate
  - silver sulfadiazine
  - sodium bicarbonate
• saline
• tetracaine
• cyanide antidote kits

Though these additional pharmaceuticals and supplies may not be needed immediately at each hospital due to base stocking levels in each facility, these pharmaceuticals shall be cached for deployment to locations requiring them for mass-casualty incidents.

B. Plan for Treating Exposure To a Biologic Agent

1. Specific Antidotes for Biological Agents:
   - For Anthrax, Plague, Tularemia, and Brucellosis, the antidotes of choice are:
     - Doxycycline
     - Levaquin

2. Population covered by the CR-MMRS Biological Agent Plan:
   - This plan assumes that 40,000 persons will be involved in an incident involving exposure to a biological agent. Furthermore, it is assumed that persons involved will be affected in varying degrees (minimal to severe) based upon their exposure to the particular agent.
   - The antibiotics identified in this Pharmaceutical Plan shall be sufficient to begin treatment of at least 60,000 people during the first twenty-four hours following an identified biological incident.
   - There is an assumption that the antibiotics required to treat additional patients will be acquired through the delivery of the Strategic National Stockpile (24 to 48 hours post-request).

3. Antibiotic Requirements for Prophylaxis and Treatment:

   Type and Formulation:
   Doxycycline (100 mg tabs) shall be used for initial treatment of seriously ill patients and for the initial prophylaxis of the first responder community (i.e. Fire Fighters, EMS, Law Enforcement, Public Health). A small quantity of Ciprofloxacin will be included for those who may be unable to take the doxycycline.
   - This cache of antibiotics shall be securely stored at:
     Department of Pharmacy
     Hartford Hospital
     80 Seymour Street
     Hartford, CT 06102

   Upon receipt of the CR-MMRS pharmaceuticals, all controlled medications shall be securely stored at Hartford Hospital under the direction of the Department of Pharmacy. All controlled medications shall be stored in such manner as to comply with state and federal regulations concerning the storage of scheduled medications. Hartford Hospital has adequate security
and monitoring in place as well as emergency power resources to maintain consistent temperature control in order to satisfy current shelf-life extension program requirements.

- Ordering, Inventory Maintenance, and Stock Rotation:
  a. A Connecticut-licensed pharmacist shall be assigned by Hartford Hospital to manage the CR-MMRS pharmaceutical stockpile with the title of CR-MMRS Pharmaceutical Property Officer. This individual's duties shall include but not be limited to:
     - Maintaining the MMRS pharmaceutical supply
     - Monitoring the storage conditions
     - Inventorying the products and verifying the expiration dates
     - Approving and complying with any required shelf life extension programs
     - Storing of the CR-MMRS cache in such manner as to expedite rapid distribution in the event of a chemical or biological incident
  
  b. Every effort shall be made to rotate the CR-MMRS stock through the hospital’s normal utilization process, with the exception of any pharmaceuticals stored as auto-injectors. Hartford Hospital shall issue bi-monthly reports to the CR-MMRS to ensure that all requirements have been satisfied. A spreadsheet program shall be used to identify the expiration dates of the various pharmaceuticals and supplies.

The primary Pharmaceutical Property Officer for the Capitol Region MMRS is:
Ralph J. Frank Jr. R.Ph., M.P.H.
Pharmacy Services Manager
Hartford Hospital
Department of Pharmacy Services
80 Seymour St P.O. Box 5037
Hartford, CT 06102-5037
Phone (office): 860-545-2491
Pager: 860-825-0581
E-mail: rfrank@harthosp.org

The designated alternate Pharmaceutical Property Officer is:
Greg Gousse, MS, RPh
Director of Pharmacy Services
Hartford Hospital
Phone (office): 860-545-2912
Phone (home): 860-633-8696
Pager: 860-825-5290
Cell: 860-716-3159
E-mail: ggousse@harthosp.org
II. Access To and Distribution of MMRS-Supplied Resources

- The Department of Pharmacy at Hartford Hospital is available 24 hours each day. In the event of a disaster that requires activation of the MMRS Plan and distribution of the CR-MMRS pharmaceutical cache, the hospital’s CR-MMRS Pharmaceutical Property Officer, or a designee, shall activate the Hartford Hospital Disaster Plan and notify the needed pharmacy personnel. The Director of Pharmacy, or any other senior pharmacist authorized by Hartford Hospital, shall be responsible for the distribution of the cached drugs to other locations as specified in the CR-MMRS/ Hartford Hospital Memorandum of Understanding. The remainder of the pharmacy staff will assist with the distribution and labeling of medications for use in the triage areas established for this purpose.

- In the event of an incident that necessitates the activation of the CR-MMRS Plan, CR-MMRS antibiotics may be distributed to the Pharmacy Departments of each of the CR-MMRS signatory hospitals, utilizing transport by local Law Enforcement, EMS units, Fire Department, or other emergency services agents. Distribution to hospital pharmacies is mandated by requirements for the oversight of distribution by state-licensed pharmacists as specified by the Connecticut Board of Pharmacy, as well as applicable federal regulations.

- Distribution of the CR-MMRS pharmaceutical stockpile shall be authorized only by the CR-MMRS Medical Director or the CR-MMRS Medical Response Coordinator, or a designee of any of these authorities.

- The authority to order the release and distribution of the CR-MMRS stockpile from the Hartford Hospital Pharmacy has been granted to any of the following individuals. No other authorization exists:

  - The CR-MMRS Medical Director:
    Michael Zanker, MD
    Assistant Director, Ground EMS
    Hartford Hospital
    Phone (office): 860-545-5433
    Phone (home): 203-439-0661
    Cell: 860-221-5195 (Nextel)
    Pager: 860-625-4639
    E-mail: mzanker@harthosp.org

  - The CR-MMRS Medical Response Coordinator:
    John J. Shaw, DMD
    Medical Response Coordinator
    Capitol Region MMRS
    Phone (office): 860-241-0505
    Cell: 860-883-7952 (Nextel)
    E-mail: jjsmmrs@aol.com

Note: It is recognized that biological incidents requiring the release and distribution of the CR-MMRS antibiotic stockpile may occur outside of the CR-MMRS jurisdiction. In the event of a request for release from another MMRS jurisdiction, or from another legitimate authority, the above-named
administrators shall make every effort to evaluate each incident and respond appropriately without jeopardizing the readiness of the CR-MMRS jurisdiction.

III. Standards of Operation for CR-MMRS Stockpile Distribution at Dispensing Hospitals

- Labeling and Dispensing Requirements:

  1. In compliance with Connecticut Board of Pharmacy requirements, all drugs distributed from the CR-MMRS cache shall require labels that provide the following information:
     - Patient Name
     - Date
     - Name of medication and strength
     - Quantity
     - Lot number / expiration date
     - Doctor’s name
     - Directions for use

  2. Each hospital pharmacy shall provide the labeling for medications dispensed from their facility and the pharmacy personnel necessary to dispense the needed medications in a timely manner. To expedite this process a pre-printed label may be provided that will only require the insertion of the patient’s name and date.

  3. A chart order or a prescription for each drug dispensed shall be required.

IV. CR-MMRS Pharmaceutical Training Requirements:

The Hartford Hospital Pharmacy Department shall be responsible for training its pharmacy personnel regarding the existence of the CR-MMRS pharmaceutical stockpile, the method of activation for distribution and dispensation, and the labeling requirements. CR-MMRS provides a training program periodically so as to ensure compliance with this requirement. This training shall be sufficient to ensure that all involved personnel are fully aware of their obligations under the CR-MMRS Plan.

- CR-MMRS has entered into an agreement with Hartford Hospital’s Department of EMS Education to provide training to the public safety sector in the Capitol Region on early recognition, evaluation and treatment of exposure to a variety of nerve agents. This Train-the-Trainer protocol is intended to ensure that every first responder in the Capitol Region receives adequate training to be able to handle competently the CR-MMRS pharmaceuticals during the performance of duties under emergency conditions. All first responders will receive training, testing and certification prior to being issued the appropriate pharmaceuticals.

- The following steps detail the scope of work that describes the terms of the CR-MMRS / Hartford Hospital education contract:

  1. Conduct a train-the-trainer program (8 hours) for representatives from each public safety organization in Response to Weapons of Mass Effect,
Awareness Level and Mark I Kit courses. Approximately 200 trainers will be trained for the region

2. Facilitate training of all responders via the Response to Weapons of Mass Effect, Awareness Level by mentoring trainers as they conduct courses for their organizations (50 courses)

3. Provide technical and administrative support for the organization trainers to ensure that all first responders receive the Mark I Kit training program

4. Assist public safety organizations in integrating the Response to Weapons of Mass Effect, Awareness Level and Mark I Kit courses into their new employee orientation

5. Assist public safety organizations in developing standards for consistent and ongoing validation of each responder’s ability to utilize the Mark I Kit

6. Gather, analyze, track and report data concerning the training efforts and accomplishments

7. Provide timely and consistent updates to CR-MMRS.

- Responsibilities of individual departments and agencies to CR-MMRS

1) Each department or agency receiving medications first shall present to CR-MMRS a detailed plan for the storage, security, inventory, and distribution of the nerve agent antidote kits. The plan shall address at least the following considerations:
   - Storage in a facility shall occur in a locked and monitored location.
   - Storage on vehicles shall occur in a locked storage box, and components shall be inventoried and logged following each shift change.
   - Logs and other records shall be maintained by the department/agency and made available to the CR-MMRS upon request.

2) Individual departments/agencies shall provide CR-MMRS-authorized training to each and every first responder. Upon completion of the training program, first responders shall receive certification that they are authorized to utilize and dispense the pharmaceuticals contained in the CR-MMRS stockpile.

3) The department/agency shall submit a Roster of Vouchers that shall be presented by the department/agency medical officer to the Hartford Hospital Pharmacy. The Pharmacy then shall release and distribute the appropriate quantity of pharmaceuticals to the medical officer.

4) Upon receipt of the pharmaceuticals, the department/agency medical director shall be solely responsible for the storage and security of the drugs, and for the distribution of the drugs to the certified first responders.
Attachment A

In 2003, CR-MMRS enabled an agreement with Hartford Hospital to provide storage, security, and distribution of the CR-MMRS stockpile, and to provide training for the Capitol Region’s first responders on the safe use of the various components of the pharmaceutical cache. That agreement, as well as the CR-MMRS Plan for Storage, Security, and Distribution of the CR-MMRS Pharmaceutical Stockpile, received approval from the CT Department of Consumer Protection (CTDCP), the agency responsible for the regulation of drug distribution in CT.

Since that time, CTDCP and CR-MMRS have worked closely to evaluate and monitor the CR-MMRS pharmaceutical program to ensure that the stated objective of providing pharmaceutical support to our first responders and their families in a timely manner has been met. In every sense, the CR-MMRS pharmaceutical program has been deemed successful.

To date (2006), approximately 400 training officers from a variety of first response agencies have received CR-MMRS training on the use of the Mark I kits and the valium auto-injectors, and approximately 2000 responders now are authorized to carry and to dispense these nerve agent antidotes. There have been no untoward incidents relative to the use of these powerful agents, a tribute to the integrity of the first response community.

Currently, the CT Department of Emergency Management and Homeland Security (DEMHS) and the CT Department of Public Health (CTDPH) are working to establish a statewide Mark I training program for all of the state’s first responders. The statewide plan is based on the CR-MMRS plan, thus insuring a smooth integration of the Capitol Region’s plan with developing state initiatives.

2003 Memorandum of Understanding
Between CR-MMRS and Hartford Hospital

The terms of the 2003 Memorandum of Understanding are as follows:

This Memorandum of Understanding is entered into between the Hartford Health Department, the Hartford Hospital and the Capitol Region Metropolitan Medical Response System of Hartford, Connecticut.

Hartford Hospital agrees to securely store, maintain, make available for immediate use on a 24-hour basis, and act as custodian for the pharmaceuticals intended for use during the first 48-hours of a biological, chemical or nuclear terrorist attack and purchased under the Capitol Region Metropolitan Medical Response System (CR-MMRS) Plan of Hartford, Connecticut.

The Capitol Region Metropolitan Medical Response System and the City of Hartford Health Department agree to support Hartford Hospital in its role as the custodian for these pharmaceuticals. The Hartford Health Department commits to underwrite
any potential costs incurred by Hartford Hospital by implementation of this agreement, up to $500.00 per month.

The specific rules regarding use or issuance of these pharmaceuticals will be as outlined in the pending Capitol Region Metropolitan Medical Response System Plan, of which all agencies are anticipated signatories.

The pharmaceuticals will be inventoried quarterly (or as required by the U.S. Department of Health and Human Services (DHHS) and/or the Capitol Region Metropolitan Medical Response System Plan), and a report shall be issued to CR-MMRS. The inventory report shall include specific reference to expiration dates so that procedures designed to reduce expiration of the products can be implemented.

As part of this Memorandum of Understanding, the most recent names and contact information of the Director of the Hartford Health Department, the CR-MMRS Senior Project Manager, and the designated responsible person for the MMRS inventory at Hartford Hospital, together with designated alternate contacts, shall be maintained, updated and shared as required to ensure the ability to conduct immediate and efficient contact among agencies.
Attachment B:

Organophosphates and Nerve Agents

**Summary of Clinical Toxicity:**
Toxic effects are due to cholinergic excess:
1) Muscarinic effects ("SLUDGE") and nicotinic effects (muscle weakness)
2) Organophosphate (OP) and carbamate insecticides or chemical weapons exhibit similar clinical effects
3) Carbamates reversibly inhibit acetylcholine esterase (AChE).
4) OP inhibition of acetylcholinesterase (AchE) is initially reversible but becomes irreversible without treatment

**Use of Atropine and Pralidoxime Chloride:**
1) **Atropine** is a competitive muscarinic receptor blocker that crosses the CNS and has no effect at nicotinic receptors
   - **Indications** for Atropine: "SLUDGE" (salivation, lacrimation, urination, defecation, gastrointestinal effects, emesis), pulmonary edema, and bradycardia.
   - **Dosage:** Adult: 2 to 5-mg IV push, Pediatric: 0.05 mg/kg IV. Titrate to "SLUDGE" symptoms.

2) **Pralidoxime (2-PAM chloride)** removes OP and carbamates from AChE, reversing their muscarinic and nicotinic effects
   - **Indications** for Pralidoxime Chloride: Usually given with atropine (especially in symptomatic OP or nerve agent poisoning), and may be considered for carbamate toxicity
   - **Dosage:**
     - Adult: 1 to 2 gm over 5-10 minutes
     - Pediatric: 20 to 40 mg/kg over 5-10 minutes
     - Continuous infusions or repeat doses are common
   - Military personnel are issued up to three auto-injectors of atropine (2 mg each) and 2-PAM (600 mg each). Also issued are diazepam injectors (10 mg) to be used after all three doses of atropine and 2-PAM.

3) **Diazepam (Valium®):** Diazepam is available as an auto-injector to be used as the convulsive antidote to nerve agents. The auto-injector delivers 10 mg of diazepam in 2 ml of sterile solution.

**Complications:**
- **Atropine:** Tachycardia, Anticholinergic delirium
- **Pralidoxime Chloride:** Rapid infusion may cause muscle rigidity, tachycardia, and laryngospasm

**Alternative treatment:** Supportive care only
ATTACHMENT C

Dosages For Biological Agents

Anthrax:
Doxycycline 100mg twice daily x 4 weeks or:
Ciprofloxacin (Levaquin) 500mg po twice daily x 4 weeks

Brucellosis
No prophylaxis recommended.
Treatment is Doxycycline 200mg and Rifampin 600-900mg po daily x 6 weeks

Smallpox
No prophylaxis recommended.

Treatment is Smallpox Vaccine (would be requested from CDC, if available)

Plague (pneumonic or bubonic)
Doxycycline 100mg po twice daily or Ciprofloxacin (Levaquin) 500mg po twice daily x 7 days

Tularemia
Doxycycline 100mg po twice daily x 14 days plus vaccine (if available from CDC)

Source: USAMRIID/CDC for doses