Children's Hospital

CODE PURPLE

Shelter-in-place Plan for Response to an External (CBRNE) Event

C – Chemical
B – Biological
R – Radiological
N – Nuclear
E – Explosive

July 18, 2013

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I. Introduction

Together the VA Medical Center, National Rehabilitation Hospital, Washington Hospital Center and Children's National Medical Center (CN) provide over 45% of the District of Columbia's hospital beds on our shared campus space in northwest Washington DC. These four hospitals provide a mixture of necessary services including Level I trauma, decontamination facilities and comprehensive emergency health care services to the public twenty-four hours a day, seven days a week.

The four campus hospitals use "Code Purple" to notify personnel that the environment immediately outside of campus buildings may be contaminated with chemical, radiological or biological agents. **Until sufficient information is obtained to guide decision making, all facility doors will be kept closed and all facility air intakes will be shut down to minimize the potential for internal contamination.** Whenever such a situation exists in the District, it is further anticipated that a subsequent influx of contaminated persons will result, therefore when Code Purple is announced each facility shall also implement their hospital's Code Orange (mass casualty) plans. Hospitals may also elect to activate their Code Green (decontamination) plans when it is appropriate to do so.

II. Purpose

This plan is designed to provide a shelter-in-place process to protect building occupants and resources from external contamination. All four hospitals on the campus utilize similar Code Purple plans to protect occupants and ensure continuity of operations. The CN Code Purple Plan is reflective of and written in collaboration with the other three campus hospitals.

CN personnel who work at off-site locations should not attempt to enter the hospital during a Code Purple. Personnel should remain at their extended campus location. If a disaster at or near an extended campus location occurs, personnel at that location must follow the directions of the local emergency responders (fire, police, etc). The site manager/designee should notify the hospital AOC of their situation via the hospital operator.

III. Definitions

Building Air Safety Plan: Control/shutdown of all fresh air intakes including air handlers and all entrances and exits. When the building air safety plan is in effect, no entrance/ exit may be opened. Patients in negative and positive pressure rooms will be masked as appropriate and their room doors kept closed. Biological and chemical fume hoods must be shut down and taped closed.

Building Controlled Access Plan: Patients, hospital visitors and hospital staff have separate controlled access to the building.

Building Lockdown Plan: Complete control of all entrances and exits to the building. No one is allowed into or out of the building without approval of CN's Hospital Command Center / Incident Commander.

Code Green: Decontamination. The process of eliminating toxic substances from patients or other exposed individuals before entry into the institution. Under Code Purple, decontamination areas will be activated according to each hospital's capabilities. Appropriate protective gear will be made available for staff who are to be potentially exposed as a result of this activity.

Code Orange: A mass casualty incident that results in a large influx of patients, outstripping usual emergency department resources and requiring mobilization of hospital-wide resources.

Code Purple: The environment immediately outside of campus buildings may be contaminated with chemical, radiological or biological agents. Such incidents threaten the integrity and function of the institution and require mobilization of all hospital resources as well as additional protective measures. Mass casualties are expected related to the agent. Decontamination may be needed.

Contamination: The presence of an unwanted material that may cause a detrimental effect or harmful condition on people, animals, equipment, articles or the environment.

Decontamination: The systematic reduction of contamination through a deliberate and appropriate cleaning process.

IV. Accountability

The Safety & Emergency Management Committee, under the leadership of the Executive Director of Safety & Emergency Management is accountable for ensuring the Code Purple Plan is in compliance with regulatory requirements. Each department manager is accountable for ensuring that their staff are educated on and practice in compliance with this plan.

Extended campus department managers are responsible for education of their staff regarding this plan, including the need to follow directions of their location-specific emergency response agency (fire, police, etc) during a disaster at or near an extended campus location.

V. Operational Components

A. Mitigation

Mitigation activities eliminate or reduce the chance of an external disaster or the effect of an external disaster. The possibility of contamination of the building (from nuclear, biological or chemical agents) may necessitate closing the building. Sealing the building from external contamination is effected through the closing of air handlers and intake vents. Protection of the building and staff from contaminated patients is effected by lockdown, decontamination and isolation policies. Protection of staff from overwhelming crowds utilizes the lockdown policy. In order to ensure that staffing is not affected during a disaster the hospital has developed policies to address staffing in emergency situations. CN hospital personnel should keep a minimum of five (5) days of their personal medication(s) on site.

B. Preparedness

To prepare for the possibility of an overwhelming event, CN and the other campus hospitals have entered into a Mutual Aid Memorandum of Understanding (MOU) with the District of Columbia Hospitals and DC Emergency Healthcare Coalition (DCEHC). The purpose of the MOU is to help hospitals achieve an effective level of disaster-related medical preparedness by authorizing the exchange of medical personnel, pharmaceuticals, supplies, equipment, or the evacuation or admission of patients in the event of a disaster.

The Hospital Mutual Aid Radio System (H-MARS) is organized by the DC Hospital Association (DCHA) to provide a means of instant radio communications between all DC and Federal Emergency Departments. The Emergency Communications and Information Center (ECIC) at CN is the clearinghouse for H-MARS and is one of three DCEHC Communications Notification Centers (CNCs) that in collaboration with the DCEHC HIS (healthcare information system) coordinates activities, including daily drills, requests for information during disasters (e. g., bed availability, staff availability); and conference calls between DCEHC, DCHA, DC and Federal hospitals, DC Health Department, DC Fire and EMS Department, and other emergency agencies.

Key campus hospital employees are members DCEHC and provide up-to-date information to their facilities regarding emergency preparedness activities in the region.

C. Immediate Notification of an Event

When any campus hospital becomes aware of a chemical, biological, radiological, nuclear or explosive event within the District of Columbia they shall immediately notify the other campus hospitals through the Campus Emergency Communications Plan. Notification must also be given to 911 whenever a hospital is the first to become aware of a disaster.

When the ECIC is notified by the Emergency Medical Services (EMS) of the potential for receiving multiple patients from a CBRNE event, the ECIC communication specialist will obtain the following information:

a. When, where, and what type of event has occurred.
b. Number and type of casualties expected.
c. What type radioactive, chemical or biohazard contamination is expected.
d. The name, position, agency and phone number of the person reporting the event.

When news reports or clinical information is received by anyone in the building, the Administrator on-site is notified immediately.

D. Response Decision

Each campus hospital is responsible for making their own response decisions based on available information and their individual capabilities. A variety of response levels may be used, as follows:

1. **Shelter-in-place (Code Purple/hospital lockdown)**
No one enters, no one leaves. Air handling units and air intakes are shut down. Hospital monitors developments through the DCFEMS liaison to determine when the plume/source has passed the hospital campus. Keep in mind that persons entering the facility may require decontamination prior to entry.

2. **Decontamination (Code Green)**

If a campus hospital's decontamination facilities are set up to allow continued operation of the decon center during a Code Purple, that facility may elect to modify their Code Purple status to include Code Green (decontamination) for incoming exposed persons. This decision must be made carefully based upon the properties of the known agent, height of air intakes, segregation of decon center air intake from other hospital air intakes, provision of appropriate personal protective equipment and an uncontaminated air supply source for hospital-based first receivers.

The agent must be known in order to assess whether the hospital level C personal protective equipment will provide appropriate protection. The agent must be known, and the direction of the plume, in order to determine whether air intakes to the decon room will be affected. Consult the Decontamination Team Leader, Engineering (6040) and the Executive Director of Safety & Emergency Management.

3. **Code Orange (mass casualty)**

Only those campus hospitals who are capable of performing decontamination without compromising their facility's shelter-in-place strategy may participate in receipt and treatment of exposed victims during an active Code Purple situation.

Once the plume/source has passed the hospital(s), and the shelter-in-place plan is not needed, all able hospital decontamination centers will be activated, victims decontaminated, triaged and treated as necessary.

E. Activation of Response

1. Communication of Response

Either the ED Charge Physician/RN or CEO/designee may decide to activate the Code Purple plan and notify the hospital operator. When authorized, the operator will activate the Code Purple Plan immediately and will use the emergency overhead page to announce three times over the PA system as follows: "ATTENTION - CODE PURPLE ". The operator will notify the code teams, hospital staff and other key personnel also via pocket pagers.

2. Building Occupant Protection

In the event of a Code Purple, the building lockdown plan and the building air safety plan are immediately implemented. (Addendum II). Once the Hospital Command Center/Incident Commander receives/obtains further information from external response agencies (i.e., determine threat or lack of threat of a chemical plume; or presence or lack thereof of a radiological or biological air threat) the HVAC system may or may not be turned back on. (NOTE: lab hoods and patient negative/positive pressure rooms are inactivated with shutdown of the HVAC system.)

3. Security

Each facility is responsible for enacting security levels appropriate to maintaining the functional integrity and safety of the facility. NO personnel shall be stationed outside until the safety of the situation is assured through consultation with each other facility as well as DC Fire/Hazmat, DCEMA, weather expertise and the MSDS of the agent involved (when appropriate).

4. Establish Hospital Command Center (HCC)

In a Code Purple the hospital administrative HCC will assume control of hospital operations. A first priority is to determine the need for continuation of the building lockdown plan and the building air safety plan (for Code Purple).

5. Ongoing Communications

Hospital command centers should notify/update the other campus hospitals of their status via the Campus Emergency Communications Plan. Examples of needs for ongoing communication between hospitals would be prior to staff updates, public communications and when considering whether to terminate Code Purple.

All internal communication to staff as well as external communications to the media and state and local authorities will originate in the Hospital Command Center and be facilitated by the Public Information Officer (PIO)/Public Affairs Department in accordance with hospital policy.

F. Termination of the Code Purple Response

Each hospital shall determine when it is appropriate to stand down their command center based upon internal activities within their organization. Each hospital shall notify the other campus hospitals of plans to terminate Code Purple according to the Campus Emergency Communications Plan.

Each hospital will communication termination of their Code Purple Plan to their staff through announcement of "ALL CLEAR- Code Purple" overhead and via pagers.

G. Evacuation

If a campus hospital is no longer able to function and requires evacuation (Code Black), once the external environment allows, the campus hospitals will follow their mutual aid agreements to support one another's needs. If additional assistance is needed hospitals may request assistance through DCEHC.

If evacuation beyond the hospital campus is necessary, the affected hospital's command center shall notify the DC EMA transportation desk or call 911.

H. Recovery

Each hospital shall utilize its own recovery strategies, supplementing as needed through the DCEHC and campus hospital mutual aid agreements. Recovery activities include:

1. Assessment of resources utilized.
2. Establish means to resupply exhausted resources.
3. Debriefing (each hospital).
4. Incident debriefing, Psychological First-Aid and/or counseling as necessary.
5. Review and evaluation of the process, procedures, results and areas for improvement (as necessary). Findings from the debriefing and any necessary plan changes shall be brought to the CN Safety & Emergency Management Committee.
6. Identification of improvement activities for future drills.
7. The Campus Emergency Preparedness Committee shall meet following the incident to discus the response and make changes as needed to the Campus Code Purple Plan

VI. Plan Review

The Executive Director of Safety & Emergency Management will facilitate review of this plan at least every three years and update as necessary. Revisions to the plan will be approved through the organization's Safety & Emergency Management Committee, Leadership Counsel and the Chief Executive Officer.

VII. Accountable Executive and Reviewer(s)

A. Accountable Executive: Vice President, Operations
B. Department Responsible for Review: Safety & Emergency Management Department
C. Committee Responsible for Review: Safety & Emergency Management Committee

VIII. Approval

Approved by:
Leadership Counsel _____ _____
Date

Kurt Newman, MD, President/CEO _____ Date

IX. Review or Revision Date

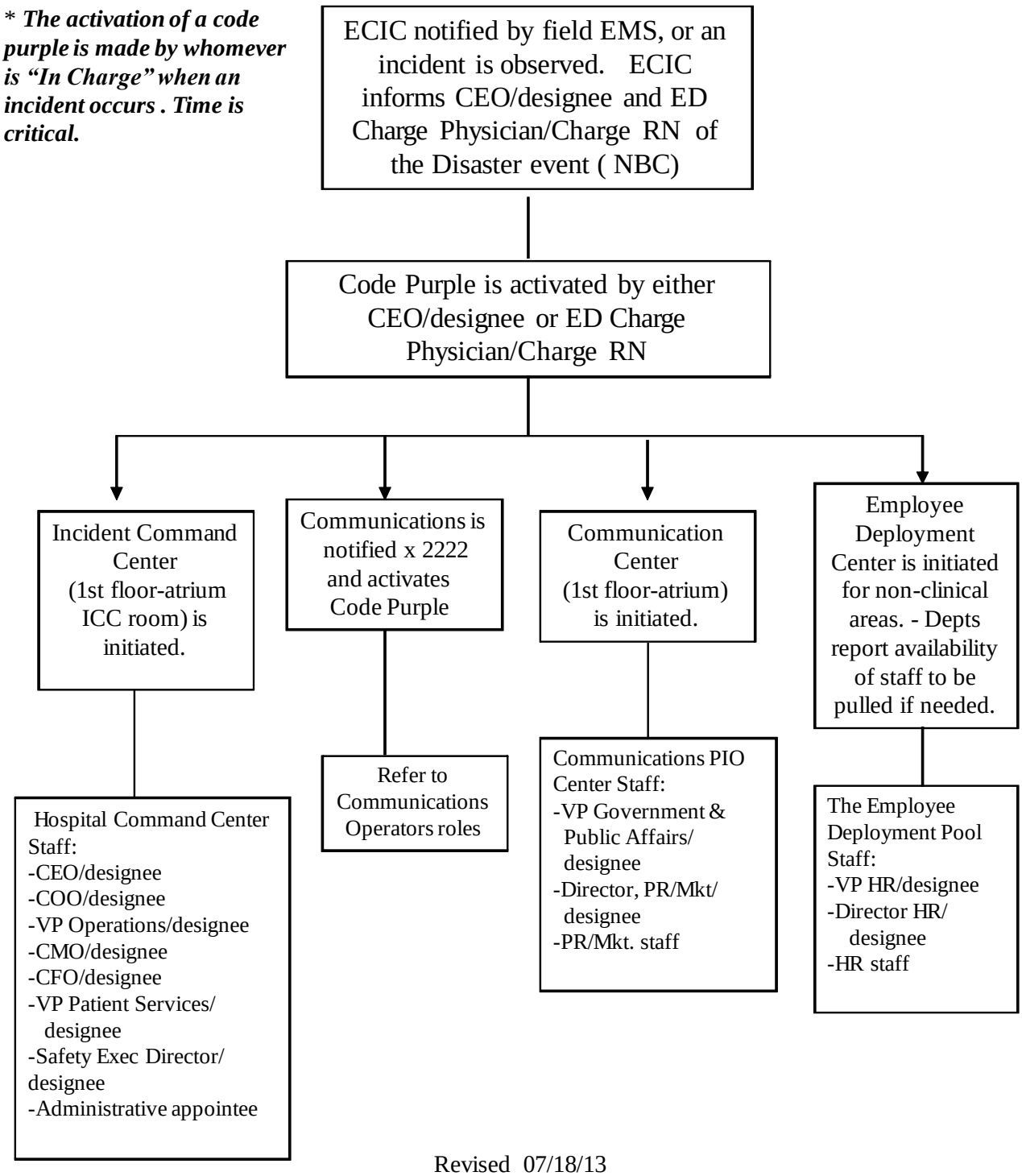
Original:	07/23/91
Reviewed:	07/21/92
Revised:	08/25/95
Revised:	09/09/98
Revised:	08/08/00
Revised:	07/31/01
Revised:	05/25/02
Revised:	10/06/04
Revised:	10/06/05
Revised:	10/01/07
Revised:	09/03/10
Revised:	07/18/13

X. References

CH:FS:14 Disaster Planning Policy
CH:DIS:01 Code Orange (MCI) Plan
CH:DIS:05 Code Green (Decontamination)
CH:DIS:09 Code Black (Evacuation) Plan
Addendum I: Activation of Code Purple
Addendum II: Building Lock Down Plan
Addendum III: Summary of Biological Agents
Addendum IV: Summary of Chemical Threats
Addendum V: Summary of Nuclear Threats

Addendum I

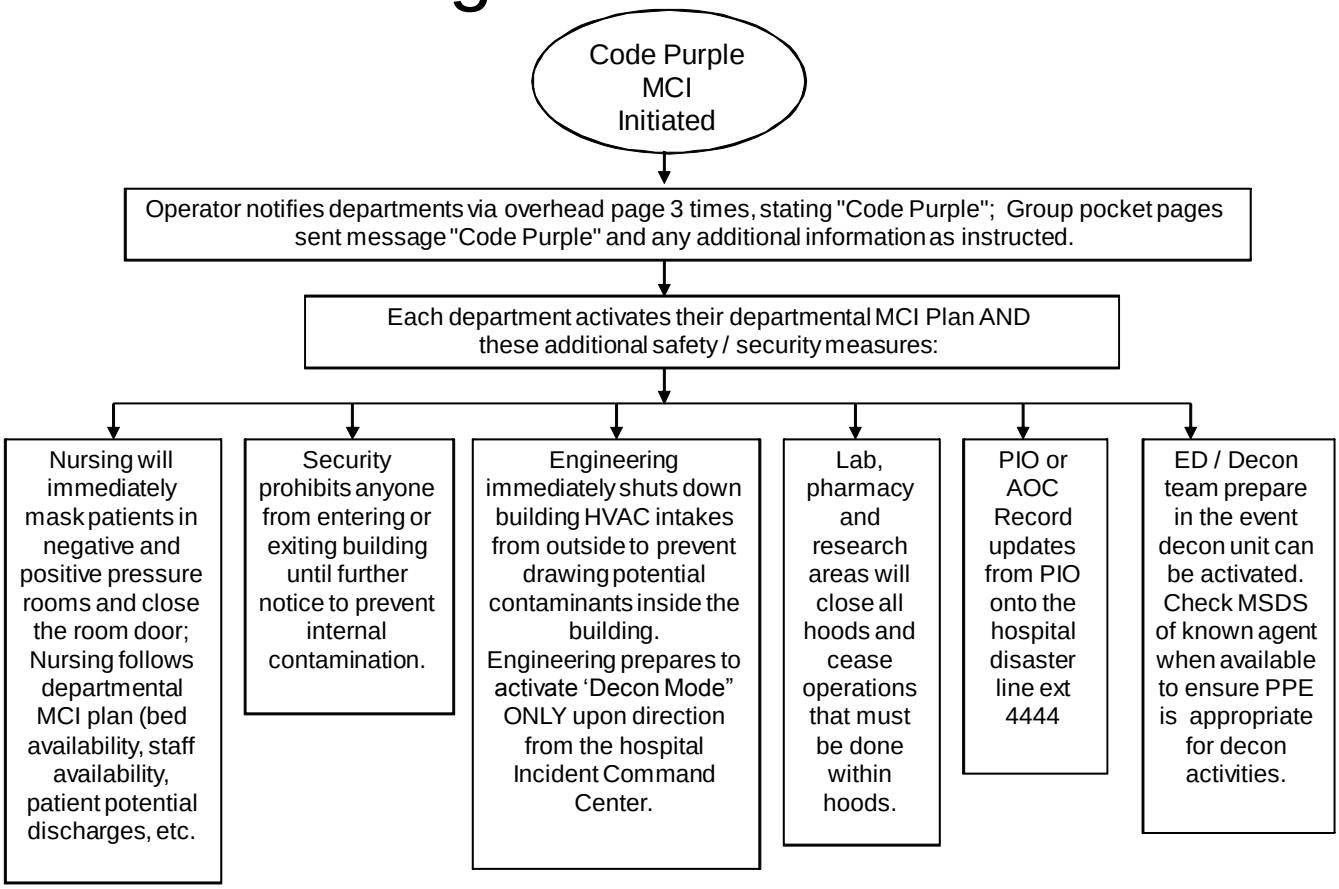
Activation of a Code Purple



Revised 07/18/13

Building Lock Down Plan

Addendum II



HCC team will monitor external threat level information and instruct Engineering, Security and the Operator on appropriate actions to take once the external threat level is determined and/or negated.

Addendum III

Summary of Biological Agents

Name *(Agent, clinical issue or syndrome)*	*Anthrax*
Nature	*Bacillus anthracis, gram positive sporulating rod. Toxin responsible for hemorrhage, edema and necrosis. Zoonetic disease of herbivores*
Means of Exposure *(Usual)*	*Cutaneous* *Gastrointestinal* *Inhalation*
Means of Absorption	*Skin, ingestion, inhalational*
Clinical Duration	*Incubation 1-7 days; duration of illness weeks*
Exposure Populations	*Cutaneous-agricultural and industrial setting* *Gastrointestinal-ingestion of contaminated or undercooked meat from infected animals* *Inhalational-inhalation of spores*
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories • Children: Ciprofloxacin 20-30mg/kg/d IV q 12 hrs • Adult: Doxycycline 200 mg IV, then 100 mg q8-12 hrs • Adult: Penicillin 2 million units IV q2 hrs plus streptomycin 30 mg/kg IM qd (or gentamicin IV) • Children:<12 y/o Penicillin G 50,000 U/kg IV q 6 h; >12 y/o Penicillin G 4 million units IV q 4 hours • Adult: Clindamycin (in combination with other agents) – effective against toxin: 600 mg q 6-8 h • **Children: Clindamycin (in combination with other agents) – effective against toxin : 40/mg/kg/day IV q 6h (Maximum 2 gram/day)**	*Antibiotic, IV's, respirator, supportive care*
Expected Outcome with treatment	
Survival 80-100%	Cutaneous 80%
Survival 50%	
Survival < 20%	Inhalation 25%
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	Standard Precautions for health care workers
Specify	After invasive procedure or autopsy performed, area should be disinfected with a sporicidal agent (hypochlorite)

Name *(Agent, clinical issue or syndrome)*	*Plague*
Nature	*Yersinia pestis, rod-shaped, non-motile, non-sporulating, gram negative bacterium zoonotic disease of rodents*
Means of Exposure *(Usual)*	*Rodents and their fleas*
Means of Absorption	*Cutaneous- Bubonic: bites from infected fleas Pneumonic- inhalation of organism (primary pneumonic plague) or spread to the lungs from septicemia (secondary pneumonic plague)*
Clinical Duration	*Incubation period 2-10 days bubonic plague; 2-4 days pneumonic plague*
Exposure Populations	*Persons enveloped in cloud; cutaneous contact with exposed*
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories	*Antibiotic, IV's, supportive*
	• Streptomycin 30 mg/kg IM qd in 2 divided doses x 10 days (or gentamicin IV)
	• Doxycycline 200 mg IV then 100 mg IV q 12 x 10-14 days
	• Chloramphenicol 1 g IV q6 hrs x 10-14 days (drug of choice for meningitis)
	• Children Streptomycin 20-30 mg/kg/d q 12-24 h
	• **Children >7 y/o: Doxycycline 2-4 mg-/kg/d q 12 hrs**
Expected Outcome with treatment	
Survival 80-100%	Bubonic plague 85%
Survival 50%	Pneumonic plague 43%
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	Bubonic plague: Standard precautions
Specify	**Pneumonic plague: Strict isolation Droplet precautions-high person-to person transmission**

Name *(Agent, clinical issue or syndrome)*	*Q Fever*
Nature	*A zoonetic disease caused by the rickettsia Coxiella burnetii. Natural reservoir cats, dogs, sheep, cattle and birds*
Means of Exposure *(Usual)*	*Organism shed in placental tissues and body fluids (milk, urine, feces)*
Means of Absorption	*Inhalation of aerosols. A single inhaled organism may produce clinical illness*
Clinical Duration	*Incubation period 2-14 days; Varies with number of organism inhaled. Longer incubation period with lower number of inhaled organisms self limiting febrile illness 2 days to 2 weeks.*
Exposure Populations	*Occupational exposures: farmers, abattoir workers, laboratory personnel*
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories • Adults:Doxycycline 100 mg PO q 12 hrs x 5-7 days • Adults: Tetracycline 500 mg PO q 6 hrs x 5-7 days • Children >7 y/o: Doxycycline 2-4 mg-/kg/d q 12 hrs • **Children >7 y/o: Tetracycline 25-50/mg/kg/d q 6 hrs**	*Antibiotic, IV's*
Expected Outcome with treatment	
Survival 80-100%	
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	Standard precautions
Specify	

Name *(Agent, clinical issue or syndrome)*	*Brucellosis*
Nature	*Gram negative cocco-bacilli*
Means of Exposure *(Usual)*	*Occupational: Animal contact-- abattoir, veterinarian.* *Laboratory personnel need to follow BSL 3 practices when handling specimen*
Means of Absorption	*Aerosol-10-100 bacteria sufficient to cause infection in man*
Clinical Duration	*Long incubation 5-60 days*
Exposure Populations	*Large aerosol dose*
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories • Adults: Doxycycline 100 mg PO bid plus rifampin 600-900 mg/d po x 6 weeks • Children: Doxycycline 2-4 mg/kg/d div. Q 12 for 4-6 weeks • **Children: Tetracycline 30-40 mg/kg/d qid for 4-6 weeks**	*Antibiotic, IV's*
Expected Outcome with treatment	
Survival 80-100%	95%
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	Standard precautions for health care workers
Specify	Secondary cases may occur with improper handling of infected secretions. Environmental decontamination with hypochlorite solution

Name *(Agent, clinical issue or syndrome)*	*Glanders*
Nature	*Gram negative bacilli Burkholderia mallei produce disease in horses, mules and donkeys.*
Means of Exposure *(Usual)*	*Human cases occur in veterinarians, horse and donkey caretakers, and abattoir workers. Aerosols from cultures highly infectious to laboratory personnel*
Means of Absorption	*Inhalation*
Clinical Duration	*Incubation period 10-14 days depends on inhaled dose and agent virulence*
Exposure Populations	
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories • Adults & Children: Sulfadiazine 100mg/Kg/day div. Q6h for 3 weeks • Tetracycline, Meropenem with an aminoglycoside may be effective.	*Antibiotic*
Expected Outcome with treatment	
Survival 80-100%	
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	Standard precautions
Specify	Secondary cases may occur with improper handling of infected secretions

Name *(Agent, clinical issue or syndrome)*	*Tularemia*
Nature	*Franceisella tularensis a gram negative cocco-bacilli.*
Means of Exposure *(Usual)*	*Zoonetic disease acquired after contact with tissues or body fluid of infected animals; less common inhalation of contaminated dust or ingestion of contaminated food or water*
Means of Absorption	*cutaneous, ingestion* ***inhalation*** *most likely delivery method and would cause typhoidal tuleremia*
Clinical Duration	*Incubation 1-21 days; dose dependent; as few as 10-50 organisms will cause disease if inhaled or injected intradermally. For ingestion 10^8 organism is needed*
Exposure Populations	
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories • Adults:Streptomycin 30 mg/kg IM qd X 10-14 days • Adults: Gentamicin 3-5 mg/kg/d IV x 10-14 days • Children: Streptomycin 15mg/kg IM BID • **Children: Gentamicin 2.5 mg/kg IV or IM tid**	
Expected Outcome with treatment	
Survival 80-100%	Ulceroglandular form 95%
Survival 50%	Typhoidal form 65%
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	Standard precautions
Specify	Easily killed with heat and disinfectants

Name *(Agent, clinical issue or syndrome)*	*e.g. Organophosphate*
Nature	*e.g. Paralyzing Agent*
Means of Exposure *(Usual)*	*Crop dusting aircraft*
Means of Absorption	*(Inhaled, trans cutaneous)*
Clinical Duration	*4-6 hours*
Exposure Populations	*Persons enveloped in cloud; cutaneous contact with exposed*
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories	*Antidote, Antibiotic, IV's, Respirator*
Expected Outcome with treatment	
Survival 80-100%	
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	
Specify	

Name *(Agent, clinical issue or syndrome)*	*e.g. Organophosphate*
Nature	*e.g. Paralyzing Agent*
Means of Exposure *(Usual)*	*Crop dusting aircraft*
Means of Absorption	*(Inhaled, trans cutaneous)*
Clinical Duration	*4-6 hours*
Exposure Populations	*Persons enveloped in cloud; cutaneous contact with exposed*
Severity Profile	**Percentage**
Worried Well	
Minor Treatment	
Significant ED Treatment	
Admission to Hospital	
Admission to ICU	
DOA	
Treatment Categories	*Antidote, Antibiotic, IV's, Respirator*
Expected Outcome with treatment	
Survival 80-100%	
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	
Worst Case	
Risk to Caregivers	
None	
Specify	

Adapted from USAMRIIDS Medical Management of Biologic Casualties Handbook, 4th Edition, February 2001

Addendum IV

Summary of Chemical Threats

Name	*Organophosphates*
Nature	*Multisystem and nerve agent*
Usual Means of Exposure	*Airborne*
Means of Absorption	*Inhaled, cutaneous, ingested*
Clinical Duration	*Days*
Exposure Populations	*Any exposure to cloud or contaminated personnel*
Severity Profile	
Worried Well	
Minor Treatment	*50% (decontamination only)*
Significant ED Treatment	*25%*
Admission to Hospital	*12.5%*
Admission to ICU	*12.5%*
DOA	*25%*
Treatment Categories	*Atropine*
	Pralidoxime
	Paralytic agents
	Sedatives
Expected Outcome with Treatment	
Survival 80-100%	√
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	*Inpatient care for 3-4 days*
Worst Case	*ICU care for 5 days*
Risk to Caregivers	
None	
Specify	*Exposure to contaminated patients high risk for caregivers*

Name	*Blister agents (Mustard, Lewisite, others)*
Nature	*Exfoliant*
Usual Means of Exposure	*Explosives, dropped from aircraft*
Means of Absorption	*Cutaneous, inhaled*
Clinical Duration	*Days*
Exposure Populations	*Direct exposure on skin*
Severity Profile	
Worried Well	
Minor Treatment	*60% (decontamination only)*
Significant ED Treatment	*30%*
Admission to Hospital	*15%*
Admission to ICU	*15%*
DOA	*10%*
Treatment Categories	
	Burn care
	Tetanus prophylaxis
	Antibiotics for some
	Paralytic agents
	Sedatives, analgesics
Expected Outcome with Treatment	
Survival 80-100%	√
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	*Inpatient burn unit for 10 days*
Worst Case	*ICU for 30 days, inpatient burn care for additional 30 days*
Risk to Caregivers	
None	
Specify	*Low risk – can get agents on skin by direct contact with clothes of contaminated victims*

Name	*Pulmonary agents (chlorine, phosgene, others)*
Nature	*Respiratory irritant*
Usual Means of Exposure	*Gas cloud*
Means of Absorption	*Inhaled*
Clinical Duration	*Hours except in severe cases*
Exposure Populations	*Direct inhalation within gas cloud*
Severity Profile	
Worried Well	*50%*
Minor Treatment	
Significant ED Treatment	*50%*
Admission to Hospital	*20%*
Admission to ICU	*10%*
DOA	*5%*
Treatment Categories	*Oxygen*
	Respiratory support (CPAP, ventilators)
	Paralytic agents
	Sedatives
Expected Outcome with Treatment	
Survival 80-100%	√
Survival 50%	
Survival < 20%	
Hospital Resource Needs	
Average Patient	*Oxygen, observation for 24 hours*
Worst Case	*ICU care for 21 days*
Risk to Caregivers	
None	√
Specify	

Name	*Cyanide*
Nature	*Multisystem (cellular) poison*
Usual Means of Exposure	*Gas cloud, spray into water supply*
Means of Absorption	*Inhaled, ingested*
Clinical Duration	
Exposure Populations	*Within bas cloud or ingested contaminated liquids or food*
Severity Profile	
Worried Well	
Minor Treatment	*67% (decontamination only)*
Significant ED Treatment	*33%*
Admission to Hospital	
Admission to ICU	*33%*
DOA	*33%*
Treatment Categories	*Sodium nitrite*
	Sodium thiosulfate
	Ventilators
Expected Outcome with Treatment	
Survival 80-100%	
Survival 50%	√
Survival < 20%	
Hospital Resource Needs	
Average Patient	*Decontamination only*
Worst Case	*ICU care for 2-3 days*
Risk to Caregivers	
None	√
Specify	

Addendum V

Summary of Nuclear Threats

Threat Scenario	Localized dispersion of activity or dispersion device
Nature	Small radioactive source or sources released to the environment (water/air)
Route of Exposure	Dispersed activity - potential internal and/or external exposure
Exposure Population	Population within range of dispersed sources
Means of Absorption	Dispersed radiation source ingested, inhaled or absorbed External exposure to dispersed source (minimal exposure)
Radiation Exposure	Minimal radiation exposure

Clinical Injuries	Psychological impact, terrorism Potential long term late effects due to radiation exposure, probability of detection small
Time to Onset	Psychological- immediate Late effects- years
Medical Problem	Carcinogenic potential (low probability)
Outcome	Excellent
Hospital Resources Needed	Potential psychological treatment
Risk to Caregivers	No risk

Summary of Nuclear Threats

Threat Scenario	Widely dispersed high level radioactive source
Nature	Large radioactive source (eg.;^{137}Cs, spent fuel rods etc.) dispersed to the environment with an explosive device
Route of Exposure	Dispersed activity - potential internal and/or external exposure to a significant radiation source over several city block area, concomitant blast and thermal burns possible
Exposure Population	Several thousand people with potential for external and internal contamination and radiation exposure, blast and burn effects
Means of Absorption	Dispersed radiation source ingested, inhaled or absorbed External exposure to dispersed source, potential for casualties receiving life-threatening radiation exposures

Radiation Exposure	**Clinical Injuries/Time to Onset**	**Medical Problem**
≤ 0.35 Gy (35 rad)	nausea, weakness, and appetite loss within 6 h symptoms subside within 12 h	anxiety
0.7 – 1.25 Gy (70 – 125 rad)	nausea, vomiting in 5-30%, onset 3-5h, end 24h	potential delayed traumatic and wound healing minimal clinical effect, death not expected except for opportunistic infection
1.25 – 3 Gy (125-300 rad)	mild- moderate nausea and vomiting in 20-70%, onset 2-3h, end 2 d	significant medical care at 3-5wk for 10-50%, infection, bleeding, fever, wounds/burns geometrically increase morbidity and mortality
~3 Gy (300 rad)	50% death untreated in 60 d children more susceptible	
3-5 Gy (300-500 rad)	signs and symptoms of lower doses will persist and increase in severity	diarrhea, anorexia, fluid loss ulceration, dramatic increased probability of death
> 5 Gy (500 rad)	mortality 100% 2-3 wk with no treatment with treatment and no complications there is a potential to survive 10 Gy (1000 rad)	

Hospital Resources Needed Decontamination and radiological assessment will be required for all incoming patients. Decontamination and treatment of wounds/burns to minimize internal contamination. Treatment: lavage and chelation therapy, iodine blocker administration, blood, urine and stool sample to assess internal contamination.

Risk to Caregivers The risk to caregivers is a function of the radiation exposure received during decontamination and treatment procedures. The use of decontamination protective equipment, proper procedures (time, distance and shielding) and adequate radiation surveillance will minimize occupational exposures. The National Council on Radiation Protection and Measurements (NCRP Report No. 138, "Management of Terrorist Events Involving Radioactive Material") recommends "Exposures during emergency operations that do not involve lifesaving should, to the extent possible, be controlled to the occupational dose limits (50 mSv/y = 5 rem/y). Where this cannot be accomplished, it is recommended that a limit of 0.5 Sv (50 rem) effective dose and an equivalent dose of 5 Sv (500 rem) to the skin be applied."

Summary of Nuclear Threats

Threat Scenario	Terrorist constructed nuclear device (< 10 kT yield most probable) Stolen tactical nuclear weapon
Nature	Nuclear detonation
Route of Exposure	Assume a 10 kT device: Overpressure shock wave- 50% mortality to 590m Thermal effects- 50% mortality to 1800m Initial nuclear radiation (prompt radiation)- 4 Gy (400 rad) 50% mortality to 1200m Residual radiation (fallout)- 50% mortality to 9600m
Exposure Population	Function of the device yield
Means of Absorption	External radiation exposure from prompt radiation burst Additional external exposure from fallout and potential internal contamination from ingestion, inhalation and absorption through wounds
Radiation Exposure	Same as above
Risk to Caregivers	Same as above