NOTES

Dosing cards for treatment of children exposed to weapons of mass destruction

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During winter 2003, officers from a U.S. Public Health Service (PHS) Disaster Medical Assistance Team and Office of Force Readiness and Deployment, formerly the Commissioned Corps Readiness Force, were deployed to the Washington, D.C., and New York City metropolitan areas in response to President Bush raising the Homeland Security Advisory System alert level to orange.[1] An orange, or high-risk, condition is declared when there is a high risk of terrorist attacks.[1,2] PHS officers were deployed to Washington, D.C., and New York City as a precautionary measure to provide ancillary medical support in case the local medical response system was compromised or overwhelmed as a result of a terrorist action. Intelligence reports did not elaborate or provide specific details regarding the type of threats involved.[2] Consequently, the PHS officers had to prepare themselves for a variety of medical crises, including those caused by weapons of mass destruction (WMD).

The Centers for Disease Control and Prevention (CDC) emergency preparedness and response Web site provides a list of man-made and natural medical threats.[3] The threat list describes many potential bioterrorism, chemical, and radiation emergencies. PHS officers were deployed with ample supplies of antidotes and treatments for the most likely potential WMD events, including formulations appropriate for both adult and pediatric use.

Although WMD pediatric dosing recommendations were readily available from CDC and elsewhere, it became evident to pharmacy team members during the orange-alert deployment that the guidelines are inadequate for practical use in a field environment or mass casualty situation in which access to laboratory and other high-level medical approaches would be limited or nonexistent. In general, calculations based on a child's body weight were available, but additional issues must be considered when determining an appropriate pediatric dose (e.g., conversion of pounds to kilograms, calculation of dose based on body weight, calculation of volume to administer based on drug formulation concentration). The need for health care providers to complete a three- or four-step calculation, no matter how simple, during a high-stress WMD response significantly increases the potential for errors and inefficiencies.

Development of dosing cards. To improve response time, ensure public safety, and minimize risk, PHS pharmacist officers designed, developed, and produced WMD pediatric dosing cards. These cards provide standardized and simplified instructions to prepare and administer anti-

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The dosing cards described in this article may be downloaded from www.hhs.gov/pharmacy/ccrf.html.

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dotes, treatments, and prophylactic medications to young victims exposed to WMD. The provision of standardized pediatric dosing cards will improve team readiness by minimizing the opportunity for potential dosing errors, thereby optimizing the care, treatment, and safety of pediatric patients during a WMD attack. Although inspired by a potential WMD crisis, the cards may also be used for industrial accidents or natural disasters.

Each card is a pocket-sized reference that provides a dosing chart for each threat agent based on child weight ranges and commercially available formulations that are potentially available from the CDC's Strategic National Stockpile program and other sources. Cards are color-coded based on the type of WMD agent (e.g., blue for cyanide, yellow for bioterrorism), so providers can quickly identify the correct card for the situation. Adult doses are also included on each card for completeness.

Figure 1. Front and back of dosing card for cyanide poisoning.

Field Administration of Blood Agent (Cyanide*) Antidotes: Pediatric Dosing Procedures
***Calcium Cyanide, Hydrogen Cyanide, Cyanogen Chloride, Potassium Cyanide, Sodium Cyanide[1,2]**

1. Ventilate using bag-valve-mask with one ampoule of amyl nitrite (crushed) in bag; after several minutes, add another (crushed) ampoule; keep adding an ampoule every 3 minutes. This is a temporary measure until IV drugs can be given.

2. Administer 300 mg (10 ml) of **sodium nitrite** IV over at least 5 minutes. Flush line. [***Children's dose: 6-9 mg/kg.*** *No separate recommendation for infants.*] For elderly, use adult dose unless they are small and frail. Be aware: ***Nitrites produce orthostatic hypotension, but a patient who can stand does not need them.*** *If hypotension occurs, slow the rate of infusion.*

3. Follow with 12.5 grams (50 ml) of **sodium thiosulfate IV** over 10 to 20 minutes. [***Children's dose: 400 mg/kg.*** No separate recommendation for infants.] Adult dose should be used for elderly unless they are small and frail. (Amyl nitrite, sodium nitrite, and sodium thiosulfate are in the Pasadena (formerly Lilly) Cyanide Antidote Kit, the latter two in ampules of 300 mg/10 ml and 12.5 grams/50 ml). Use one-half dose in 30 minutes if no improvement. See instructions on top of Antidote Kit box.

4. If patient continues to remain apneic, intubate and continue oxygen through tube with assisted ventilation. Transfer apneic or unconscious patients to medical facility. Patients often recover rapidly unless CNS hypoxia has occurred.

[1]NOTE: Local protocols may supercede the recommended guidelines.
[2]NOTE: Dosing may also be adjusted based on Hg assessment. If rapid Hg assessment is not available, assume Hg concentration of 12 g/dL (Goldfrank's Toxicologic Emergencies, 7th ed.)

References: Agency for Toxic Substance and Disease Registry Website, Antidotes and Other Treatments: www.atsdr.cdc.gov/HEC/natorg/pehsubrochure.pdf, www.atsdr.cdc.gov/HEC/natorg/pehsu.html, CDC: www.bt.cdc.gov/children/pdf/working/execsumm03.pdf

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Field Administration of Blood Agent (Cyanide*) Antidotes: Pediatric Dosing Procedures[1,2]
***Calcium Cyanide, Hydrogen Cyanide, Cyanogen Chloride, Potassium Cyanide, Sodium Cyanide**

Sodium Nitrite 3% Solution (30 mg/mL)			
Weight			
Pounds (lbs)	Kilograms (kg)	Dose (6-9 mg/kg)	Administer (IV)
11	5	30-45 mg	1-1.5 mL
22	10	60-90 mg	2-3 mL
44	20	120-180 mg	4-6 mL
66	30	180-270 mg	6-9 mL
=88	=40	Adult Dose (300 mg)	10 mL

Sodium Thiosulfate 25% Solution (250 mg/mL)			
Weight			
Pounds (lbs)	Kilograms (kg)	Dose (400 mg/kg)	Administer (IV)
11	5	2000 mg (2 gm)	8 mL
22	10	4000 mg (4 gm)	16 mL
44	20	8000 mg (8 gm)	32 mL
=66	=30	Adult Dose (12.5 gm)	50 mL

[1]NOTE: Local protocols may supercede the recommended guidelines. [2]This card may be used as a cross-reference to calculate pediatric doses. All pediatric doses should be individualized based on a child's actual weight. Refer to CDC guidelines for complete prescribing information (www.bt.cdc.gov).

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Providers can swiftly scan the charts available on each card to verify the appropriate dose to administer. Depending on the nature of the event, providers can use the quick-reference cards as a crosscheck to verify the accuracy of their calculations or determine an approximate dose to administer without calculations. All doses have been rounded based on the child's weight and the drug concentration. For example, relying solely on the WMD pediatric dosing cards for determining the appropriate dose of ciprofloxacin in postexposure prophylaxis for anthrax, both a 5-kg child and a 9-kg child could receive 75 mg p.o. twice daily. If one were to work through the weight-based calculations (15 mg/kg) and develop a precise dosage for each of these children, the result would be a maximum of 75 mg p.o. twice daily for the 5-kg child and 135 mg p.o. twice daily for the 9-kg child. While this rounding is probably not clinically significant with older or larger children, use of the quick-reference cards without further professional discretion and adjustments can result in wide variability for smaller children in terms of the actual milligram-per-kilogram dosage given. Therefore, we strongly recommend that the cards be used as a guide, supported by a common-

Figure 2. Front and back of dosing card for nerve-agent poisoning.

PEDIATRIC DOSING GUIDELINES FOR NERVE AGENTS (Sarin-GB, Soman-GD, Tabun-GA, VX) ANTIDOTES*,[1]

Autoinjector (AI) Guidelines

	MILD SYMPTOMS					SEVERE SYMPTOMS[3]				
	Dose	Autoinjector Products (AI) Note: Select only one combination product (i.e. Atropen® plus Pralidoxime Autoinjector (AI); OR Mark 1 kit; OR ATNAA Combination AI)				Dose	Autoinjector Products (AI) Note: Select only one combination product (i.e. Atropen® plus Pralidoxime Autoinjector (AI); OR Mark 1 kit; OR ATNAA Combination AI)			
Weight lbs (kg)	Atropine 0.05mg/kg Pralidoxime 25mg/kg	Atropen® plus Pralidoxime 600mg AI (packaged separately)		Mark 1 Kits (Atropine 2mg & Pralidoxime 600mg AI)	ATNAA (Atropine 2mg/Pralidoxime 600mg Combination AI)	Atropine 0.1mg/kg Pralidoxime 50mg/kg	Atropen® plus Pralidoxime 600mg AI (packaged separately)		Mark 1 Kits (Atropine 2mg & Pralidoxime 600mg AI)	ATNAA (Atropine 2mg/Pralidoxime 600mg Combination AI)
11 lbs (5 kg)	Atropine 0.25mg Pralidoxime 125mg	1 Atropen 0.25mg (Yellow): Pralidoxime		n/a	n/a	Atropine 0.5mg Pralidoxime 250mg	1 Atropen 0.5mg (Blue): Pralidoxime follow BPFG[4]		n/a	n/a
22Lbs (10 kg)	Atropine 0.5mg Pralidoxime 250mg	1 Atropen 0.5mg (Blue): Pralidoxime follow BPFG[4]		n/a	n/a	Atropine 1mg Pralidoxime 500mg	1 Atropen 1mg (Red): Pralidoxime follow BPFG[4]		n/a	n/a
44 lbs (20 kg)	Atropine 1mg Pralidoxime 500mg	1 Atropen 1mg (Red): Pralidoxime follow BPFG[4]	OR	n/a	n/a	Atropine 2mg Pralidoxime 600mg[2]	1 Atropen 2mg (Green): 1 Pralidoxime 600mg AI	OR	1 Mark 1 kit	1 ATNAA Combination AI
66 lbs (30 kg)	Atropine 1mg[2] Pralidoxime 600mg	1 Atropen 1mg (Red): 1 Pralidoxime 600mg AI		n/a	n/a	Atropine 2mg[2] Pralidoxime 600mg[2]	1 Atropen 2mg (Green): 1 Pralidoxime 600mg AI		1 Mark 1 kit	1 ATNAA Combination AI
88 lbs (40 kg)	Atropine 2mg Pralidoxime 600mg	1 Atropen 2mg (Green): 1 Pralidoxime 600mg AI		1 Mark 1 kit	1 ATNAA Combination AI	Atropine 4mg Pralidoxime 1200mg[2]	2 Atropen 2mg (Green): 2 Pralidoxime 600mg AI		2 Mark 1 kits	2 ATNAA Combination AI
>110 lbs (>50 kg)	Atropine 2mg Pralidoxime 600mg[2]	1 Atropen 2mg (Green): 1 Pralidoxime 600mg AI		1 Mark 1 kit	1 ATNAA Combination AI	Atropine 6mg Pralidoxime 1800mg[2]	3 Atropen 2mg (Green): 3 Pralidoxime 600mg AI		3 Mark 1 kits	3 ATNAA Combination AI

[4]Bulk Drug Formulation Guidelines (BDFG)[5]

Weight lbs (kg)	Mild Symptoms				Severe Symptoms					
	Atropine 0.4mg/ml		Pralidoxime 333mg/ml		Atropine 0.4mg/ml		Pralidoxime 333mg/ml		Diazepam 5mg/ml	
	Dose		Dose		Dose		Dose		Dose	
	Mild 0.05mg/kg	Administer IM/IV	Mild 25mg/kg	Administer IM/IV	Severe 0.1mg/kg	Administer IM/IV	Severe 50mg/kg	Administer IM/IV	Severe 0.2mg/kg	Administer IM/IV
11 lbs (5kg)	0.25mg	0.6ml	125mg	0.4ml	0.5mg	1.2ml	250mg	0.8ml	1mg	0.2ml
22 lbs (10Kg)	0.5mg	1.2ml	250mg	0.8ml	1mg	2.5ml	500mg	1.5ml	2mg	0.4ml
44 lbs (20Kg)	1mg	2.5ml	500mg	1.5ml	2mg	5ml	1000mg	3ml	4mg	0.8ml
66 lbs (30Kg)	1.5mg	3.8ml	600mg[2]	1.8ml	3mg	7.5ml	1500mg	4.5ml	6mg	1.2ml
88 lbs (40Kg)	2mg	5ml	600mg[2]	1.8ml	4mg	10ml	1800mg[2]	5.4ml	8mg	1.6ml
>110 lbs (>50Kg)	2mg[5]	5ml	600mg[2]	1.8ml	6mg[2]	15ml	1800mg[2]	5.4ml	10mg	2ml

*Local protocols may supercedethe recommended guidelines. [1]This card may be used as a cross-reference to calculate pediatric doses. All pediatric doses should be individualized based on a child's actual weight. Refer to CDC guidelines for compiete prescribing information (www.bt.cdc.gov). [2]Weight based on perdiatric doses cannot exceed the recommended product dosig guidelines. Adjustments have been made accordingly. [3]Patients with severe symptoms should typically receive diazepam 0.2mg/kg. Refer to Bulk Product Formulation Guidelines for appropriate dosing based on weight. Note: Diazepam is available as a 10mg/2ml Autoinjcetor. [4]BPFG (bulk product formulation guidelines). [5]All doses rounded to nearest 0.1 mL.

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PEDIATRIC DOSING GUIDELINES FOR NERVE AGENTS (Sarin-GB, Soman-GD, Tabun-GA, VX) ANTIDOTES

Clinical Symptoms: Mild-Moderate: miosis, rhinorrhea, dyspnea, diaphoresis, vomiting, weakness. Severe: include the above *plus* one: loss of consciousness, copious secretions, apnea, seizures, severe muscle twitching, paralysis, or coma.

Atropine: Available as 0.4mg/mL; 20mL vials ***Note***: Atropine should be properly stored away from heat and direct light

Children < 14 yrs old: 0.05 mg/kg IM (mild symptoms); up to 0.1mg/kg IM (severe symptoms) ***Note***: 0.1mg minimum dose (paradoxical bradycardia)

Adults and children > 14 yrs old : 2mg IM (mild symptoms); 6mg IM (severe symptoms)

**Repeat doses every 2-5 min until an Atropine effect is observed; then doses can be repeated every 1-4 hours to maintain Atropine effect.*

Note: The number of mL that can be administered IM is < 2; multiple injections may be necessary to achieve appropriate dose.

Pralidoxime: Available as 1Gm vial; Reconstitute with 3mL of sterile water or normal saline to result in a solution of 333mg/mL.

Children < 14 yrs old: 25mg/kg IM/IV (mild symptoms); up to 50mg/kg IM/IV (severe symptoms)

Adults and children > 14 yrs old: 600mg IM/IV (mild symptoms); 1800mg IM/IV (severe symptoms)

2-PAM can cause hypertension when given rapidly IV; administer slowly over 20 minutes to minimize. This hypertension can be rapidly but transiently reversed by phentolamine (adult: 5 mg IV; child: 1mg IV).

**Additional doses titrate based upon response for severe persistent symptoms- repeat as needed every 1-2 hours if muscle weakness is not relieved.*

Diazepam: For severe symptoms & for all patients that receive 6mg of atropine and/or 1800mg of 2-PAM.

Children < 14 yrs old: 0.2mg/kg IM/IV, **Adults and children >14 yrs old**: One auto-injector (10mg) IM/IV

Auto-Injector Formulations:

Mark I™: Available as 2 auto-injectors; 1 containing Atropine 2mg/0.7mL & 1 containing Pralidoxime (2-PAM) 600mg/2mL.

ATNAA (Antidote Treatment- Nerve Agent, Auto-Injector): 2-chambered auto-injector that delivers Atropine 2.1mg in 0.7mL & 2-PAM 600mg in 2mL sequentially using a single needle.

Note: The Mark I & ATNAA are not approved for pediatric use, but could be initial treatment for children of any age with severe symptoms of nerve agent toxicity.

Mild-moderate symptoms should be treated with supportive measures only.

Pralidoxime Chloride: Available in a pre-filled syringe containing 2-PAM 600mg in 2mL.

AtroPen®: Available in 4 different strengths of Atropine in color-coded pre-filled auto-injector syringes:

2mg/0.7mL (green) for children and adults >41kg

1mg/0.7mL (dark red) for children 18 to 41 kg

0.5mg/0.7mL (blue) for children 7 to 18 kg

0.25mg/0.3mL (yellow) for children <7 kg

* For massive exposure and severe symptoms, more than 1 dose to a maximum of 3 may be necessary (for all auto-injectors).

* If auto-injectors are not available, dose the 2 medications based on commercial availability (Atropine is administered first).

Note: Atropine & 2-PAM are not always given together- individual patient assessment is necessary for proper treatment of symptoms.

See reverse side of this document for pediatric dosing recommendations

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References: *J Pediat.* 2002 Sept;141(3):311-326.; www.bt.cdc.gov/children/pdf/working/execsumm03.pdf ; *Pediatrics.* 2003 Sep;112(3 Pt 1):648-58. ; www.dsf.health.state.pa.us/health/lib/health/ems/ems_ib_5.pdf ; *The Harriet Lane Handbook.* 16th ed. St Louis, MO: Mosby;2002:39.; *J Pediat.* 2005 Jan;146(1):8-10.; www.atsdr.cdc.gov/MHMI/mmg166.html; www.meridianmeds.com/international.html

sense approach, to assist professionals in the field when selecting an appropriate dose for children exposed to WMD. Although designed for empirical treatment in the field or mass-casualty setting, the cards have some practical use for limited events in a hospital environment. If access to high-level medical care is readily available, WMD treatments may be based on definitive laboratory monitoring (e.g., hemoglobin concentration for cyanide poisoning)[4] rather than empirically based on weight and signs and symptoms. It must also be emphasized that many states and cities may have local protocols or policies that differ slightly from CDC guidelines. Any local WMD policies and protocols would supersede the guidelines listed on the quick-reference cards.

All doses are based on published literature, including CDC guidelines. Each card includes supporting documentation (e.g., WMD agent signs and symptoms, adult dosing, reconstitution and storage instructions) and references.[5-16] Therefore, each card serves as a minireference for a specific WMD response. Currently, WMD pediatric dosing cards are available for calcium cyanide, hy-

Figure 3. Front and back of dosing card for radiation exposure.

Field Administration of Radiation Exposure Antidotes: Pediatric Dosing Guidelines[1,2,3]

Antidote Target	Product	Age (or Weight)	Dose
Americium, Curium, or Plutonium Antidotes (chelating agent)	Pentetate Calcium Trisodium: 200 mg/mL injection solution(Ca-DTPA) [a]	> 12 years	1 g IV STAT
		< 12 years	14 mg/kg (not to exceed 1 g) IV STAT
Americium, Curium, or Plutonium Antidotes (chelating agent)	Pentetate Zinc Trisodium: 200 mg/mL injection solution (Zn-DTPA)[a]	> 12 years	1 g (25 mL) IV QD
		< 12 years	14 mg/kg (not to exceed 1 g) IV QD
Cesium or Thallium Antidote (ion exchange resin)	Ferric Hexacyanoferrate: 0.5 g capsules (Prussian Blue)	> 12 yrs	3 g PO TID (followed by 1-2 g PO TID)
		2 - 12 yrs	1 g PO TID [b]
Radioactive Iodine Antidote (antithyroid agent) for ≥ 5 *Gy* Predicted Thyroid Dose[4]	Commercial formulations: Potassium Iodide[4]: 65 or 130 mg tablets or 65 mg/mL solution (KI)	> 150 lbs	130 mg PO QD for 7-10 days
		3 to 18 yrs (<150 lbs)	65 mg PO QD for 7-10 days
		1 month to 3 years	32.5 mg PO QD for 7-10 days
		Birth < 1 month	16.25 mg PO QD for 7-10 days

GUIDELINES FOR HOME PREPARATION OF POTASSIUM IODIDE (KI) SOLUTION (if commercial preparation not available)[4]

1. Place one 130mg tablet (or two 65mg tablets) into a bowl and grind into a fine powder.
2. Add 20ml of water to bowl and dissolve the KI powder.
3. Add 20ml of milk, juice, soda or syrup to flavor the KI/water mixture
4. Resulting solution has a concentration of 16.26mg/5ml
5. Unused iodine mixture may be stored in the refridgerator for up to 7 days.

[a] Ca-DTPA is preferred initial agent followed by sequential administration of Zn-DTPA. Ca-DTPA should only be used for maintenance therapy when Zn-DTPA is not available. Dilute Ca-DTPA or Zn-DTPA into 100-250 mL D5W, NS or LR; infuse over 30 minutes. Length of therapy depends upon patient response and degree of contamination.
[b] Capsules may be opened and mixed with bland food or liquid. Administer with food to stimulate excretion of cesium or thallium.

[1]NOTE: Local protocols may supercede the recommended guidelines. [2]This card may be used as a cross-reference to calculate pediatric doses. All pediatric doses should be individualized based on a child's actual weight. Refer to CDC guidelines for complete prescribing information (www.bt.cdc.gov).
[3]All doses are one time unless repeat dosing is recommended by public health authorities. [4]Contraindicated in patients with known allergies to iodine

References: www.bt.cdc.gov; www.fda.gov/cder/drug; Ann Intern Med. 2004 Jun 15; 140(12):1037-51. ; Med Mgmt of Radiological Casualities. Armed Froces Radiobio Res Inst. Dec 1999; Drug Information Handbook. Lexicomp. 2005.

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Field Administration of Acute Radiation Syndrome Treatments: Pediatric Dosing Guidelines[1]

Product	Age or Weight	Dose
Anti-infectives for Radiation Dose Range of 2-10 *Gy*		
Fluoroquinolone (ciprofloxacin tablet, injection solution, or oral suspension)	1 to 17 years	10-15 mg/kg (up to 500 mg) PO BID
		6-10 mg/kg (up to 400 mg) IV Q8
Antiviral[a] (acyclovir capsule, tablet, injection solution, or oral suspension)	> 2 years	20 mg/kg PO QID
	> 2 years	250 mg/m ^{2} IV Q8
	< 1 year	10 mg/kg IV Q8
Antifungal [b] (fluconazole tablets, injection solution, or oral suspension)	All ages	6-12 mg/kg PO or IV QD
Antiemetics		
granisetron tablets, injection solution, or oral solution	> 2 years	2 mg PO QD
		10 mcg/kg IVPB (over 5 minutes) QD
ondansetron tablets, injection solution, or oral solution	> 12 years	8 mg PO Q12
	4 to 11 years	4 mg PO Q4
	0.5 to 18 years	0.15 mg/kg IV (over 30 minutes) Q4
Colony Stimulating Factor (CSF) for Radiation Dose Range of 3-10 *Gy*		
granulocyte CSF (filgrastim) injection solution	All ages	5 mcg/kg SQ QD
		until ANC >1.0 X 10 ^{9} cells/L
pegylated granulocyte CSF (pegfilgrastim) injection solution	> 45 kg	6 mg SQ STAT
granulocyte-macrophage CSF (sargramostim) injection solution or powder for reconstitution	All ages	250 mcg/m ^{2} SQ QD
		until ANC >1.0 X 10 ^{9} cells/L

[a] Acyclovir is recommended if patient is seropositive for herpes simplex virus or has a medical history of the virus.
[B] Fluconazole is recommended if patient's absolute neutrophil count (ANC) is < 0.500 x 109 cells/L.

[1]NOTE: Local protocols may supercede the recommended guidelines.

References: Ann Intern Med. 2004 Jun 15; 140(12):1037-51; Drug Information Handbook. Lexicomp. 2005.

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drogen cyanide, cyanogen chloride, potassium cyanide, and sodium cyanide (Figure 1); the nerve agents sarin, soman, tabun, and *O*-ethyl *S*-(2-diisopropylaminoethyl) methylphosphonothiolate (Figure 2); radiation agents (Figure 3); and the biological agents causing anthrax, plague, and tularemia (Figure 4).

All calculations and source information were reviewed and verified by at least two independent PHS pharmacists. In spring 2005, PHS officers reviewed and updated each of the WMD pediatric dosing cards to ensure currency and accuracy. Expansion of the series to other WMD and emergency pediatric medical crises is under consideration (e.g., phosgene, mustard gas, advanced cardiac life support).

Discussion. The dosing cards designed and developed by the PHS pharmacist officers have been field tested in a team training exercise and were received favorably. It was thought that the WMD pediatric dosing cards could improve efficiency and reduce the risk of dosing errors and may maximize the potential to save lives during a WMD crisis. The development of a simplified approach to pediatric dosing can substantially improve our na-

Figure 4. Front and back of dosing card for biological-agent exposure.

Field Administration of Biological Agent (Anthrax, Plague, Tularemia) Post-Exposure Prohylaxis: Pediatric Dosing Procedures for Ciprofloxcin and Doxycycline[1, 2]

Ciprofloxacin[4,5]

Weight		Anthrax/Tularemia Prophylaxis[3,4]					Plague Prophylaxis Dose[4]				
		Dose	250 mg/5 mL Susp.		500 mg/5 mL Susp.		Dose	250 mg/5 mL Susp.		500 mg/5 mL Susp.	
Lbs	Kg	10 mg/kg – 15 mg/kg po BID	Administer	Qty to Dispense for 10-day supply[5]	Administer	Qty to Dispense for 10-day supply[5]	20 mg/kg po BID	Administer	Qty to Dispense for 10-day supply[5]	Administer	Qty to Dispense for 10-day supply[5]
11	5	50 mg - 75 mg po BID	1 –1.5 mL po BID	20-30 mL	0.5 mL – 0.75 mL po BID	10 to 15mL	100 mg po BID	2 mL po BID	40 mL	1 mL po BID	20mL
16.5	7.5	75 mg - 125 mg po BID	1.5-2.5 mL po BID	30-50 mL	0.75 mL – 1.25 mL po BID	15 to 25mL	150 mg po BID	3 mL po BID	60 mL	1.5 mL po BID	30mL
22	10	100 mg – 150 mg po BID	2-3 mL po BID	40-60 mL	1 mL – 1.5 mL po BID	20 to 30mL	200 mg po BID	4 mL po BID	80 mL	2 mL po BID	40mL
44	20	200 mg – 300 mg po BID	4-6 mL po BID	80-120 mL	2 mL – 3 mL po BID	40 to 60mL	400 mg po BID	8 mL po BID	160 mL	4 mL po BID	80mL
66	30	300 mg – 450 mg po BID	6-9 mL po BID	120-180 mL	3 mL – 4.5 mL po BID	60 to 90mL	500 mg po BID[4]	10 mL po BID	200 mL	5 mL po BID	100mL
88	40	400 mg – 500 mg po BID[4]	8-10 mL po BID	160-200 mL	4 mL – 5 mL po BID	80 to 100mL	500 mg po BID[4]	10 mL po BID	200 mL	5 mL po BID	100mL
>99	>45	450 mg - 500 mg po BID[4]	9-10 mL po BID	180-200 mL	4.5 mL – 5 mL po BID	90 to 100mL	500 mg po BID[4]	10 mL po BID	200 mL	5 mL po BID	100mL

Doxycycline[5]

Weight		Anthrax/Tularemia/Plague Prophylaxis Dose[4]	Administer		Qty to Dispense per 10 Day Supply	
Lbs	Kg	2.2 mg/kg po BID	25 mg/5 mL Susp.	50 mg/5 mL Susp.	25 mg/5 mL Susp. (60mL/BTL)[5]	50 mg/5 mL Susp. (473 mL/BTL)
11	5	11 mg po BID	2.5 mL po BID	1.25 mL po BID	1 BTL (50 mL)	25 mL
16.5	7.5	~17 mg po BID	3.5 mL po BID	1.75 mL po BID	2 BTL (70 mL)	35 mL
22	10	~22 mg po BID	5 mL po BID	2.5 mL po BID	2 BTL (100 mL)	50 mL
44	20	~44 mg po BID	9 mL po BID	4.5 mL po BID	3 BTL (180 mL)	90 mL
66	30	~66 mg po BID	13 mL po BID	6.5 mL po BID	5 BTL (260 mL)	130 mL
88	40	~88 mg po BID	18 mL po BID	9 mL po BID	6 BTL (360 mL)	180 mL
>99	>45	~99 mg po BID	20 mL po BID	10 mL po BID	7 BTL (400 mL)	200 mL

[1]Local protocols may supercede the recommended guidelines. [2]This card may be used as a cross-reference to calculate pediatric doses. All pediatric doses should be individualized based on a child's actual weight. All doses have been rounded to nearest 0.5ml. Refer to CDC guidelines for complete prescribing information (www. bt.cdc.gov). [3]Renally compromised patients require a dose adjustment for ciprofloxacin when CrCl < 50 ml/min. [4]Maximum Daily Dose: Ciprofloxacin 500mg BID; Doxycycline 100mg BID. [5]Qty to dispense: May dispense in full bottles or divided into to exact quantities that have been provided.

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Field Administration of Biological Agent (Anthrax, Plague, Tularemia) Post-Exposure Prohylaxis: Pediatric Dosing Procedures for Ciprofloxcin and Doxycycline[1]

Antibiotic of Choice[2]

- **Anthrax:** Doxycycline or Ciprofloxacin[3]
- **Plague:** Doxycycline is the antibiotic of choice. Ciprofloxacin may be administered to individuals that have a contraindication to Doxycycline (i.e. allergy to one of the tetracyclines).
- **Tularemia:** Doxycycline or Ciprofloxacin

Adult Dosing Guidelines (including pregnant & lactating women; and immuno-compromised individuals)[2]

Doxycycline 100mg po BID **OR** Ciprofloxacin 500mg po BID[3]

Available Formulations (Note: *italics* indicates Strategic National Stockpile Formulation).

Doxycycline
- *25 mg/5 ml suspension (after reconstitution); 60 ml bottle*
- *100 mg tablet packaged in unit-of-use (20 tablets/bottle)*
- 50 mg/ml syrup
- 20 mg, 50 mg, 75 mg tablets
- 20 mg, 50 mg, 75 mg, 100 mg capsules

Ciprofloxacin
- *250 mg/5 ml suspension (after reconstitution); 100 ml bottle*
- *500 mg tablet packaged in unit-of-use (20 tablets/bottle)*
- 500 mg/ml suspension
- 100 mg, 250 mg, 750 mg tablets

Guidelines for Home Preparation of Doxycycline Suspension

1. Place one 100-mg Doxycycline tablet into a bowl and grind into a fine powder.
2. Add 4 teaspoons (20ml) 50:50 apple juice/table sugar mixture to the Doxycycline powder and stir well until the powder dissolves. The resulting suspension has a concentration of 25mg/5ml
3. Unused suspension should be covered and stored in the refrigerator for up to 24 hours.
4. FDA recommends that this mixture be prepared daily; unused portions should be discarded.

[1]NOTE: Local protocols may supercede the recommended guidelines. [2]Refer to CDC guidelines for complete prescribing information (www.bt.cdc.gov) [3]Renally compromised patients require a dose adjustment for ciprofloxacin when CrCl ≤ 50 ml/min

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See reverse side of this document for more information

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tion's readiness and ability to respond to a WMD attack in the civilian population.

Conclusion. Pediatric dosing cards for treatment of exposure to WMD were developed to simplify treatment and help prevent medication errors.

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Effect of internal reporting criteria on suspected adverse drug reactions submitted to MedWatch

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Adverse drug reactions (ADRs) have been reported in nearly 20% of hospitalized patients and account for approximately 17% of hospital admissions.[1] The financial effect of adverse drug events is also considerable. In some analyses, ADRs and medication errors extend hospital stays from two to four days, resulting in an additional treatment cost of $2500 to $5500 per patient.[2-4] The Food and Drug Administration (FDA) relies on voluntarily submitted ADR reports to assist in identifying postmarketing drug safety issues.[5] MedWatch, FDA's safety information and adverse-event reporting program, receives 200,000–300,000 reports of suspected ADRs annually. Suspicion of an undesired response to a medication is a requirement for a MedWatch report; causality is not. To facilitate a focus on certain reactions, FDA has specifically sought the reporting of serious ADRs, defined as those that are fatal or life-threatening, result in permanent or significant disability, require or prolong hospitalization, contribute to a congenital anomaly, or require intervention to prevent permanent impairment or damage.[6]

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