Ciprofloxacin for Post-Exposure Prophylaxis of Anthrax
Emergency Use Instructions for Health Care Providers

The Food and Drug Administration (FDA) has issued an order permitting the emergency dispensing of oral formulations of ciprofloxacin without a prescription during an anthrax emergency to individuals who may have been exposed to *Bacillus anthracis* (*B. anthracis*), the pathogen that causes anthrax.[1] Ciprofloxacin is FDA-approved for post-exposure prophylaxis (PEP) of inhalation anthrax - to reduce the incidence or progression of disease following exposure to aerosolized *B. anthracis*.[2] This fact sheet provides instructions for the use of ciprofloxacin during an emergency involving anthrax (referred to as Emergency Use Instructions (EUI) fact sheet). For more information on EUI, visit www.cdc.gov.

What is inhalation anthrax?
Anthrax is a serious disease caused by the spore-forming bacterium *B. anthracis.* Inhalation anthrax is the most deadly form of the disease, with a historical mortality rate of approximately 90% for untreated cases. Inhalation anthrax occurs when an individual inhales aerosolized spores. It is not spread from person to person. Early symptoms are fever, chills, fatigue, cough, or headache. Later symptoms are shortness of breath, chest pain, confusion, or nausea. Symptoms usually occur within 7 days of inhaling anthrax spores, but can occur as soon as 24 hours after exposure or may take up to 6 to 7 weeks to appear (animal data show symptoms can occur greater than 50 days after exposure).

Who should NOT take ciprofloxacin?
Do not give ciprofloxacin to anyone who is allergic to a quinolone antibiotic (including ciprofloxacin) or has a history of myasthenia gravis. Avoid concomitant administration of ciprofloxacin and Zanaflex (tizanidine) since ciprofloxacin can increase effects of tizanidine (e.g., bradycardia, hypotension); consider switching either ciprofloxacin or tizanidine to an alternative drug.

What is the usual dose of ciprofloxacin for PEP of anthrax?
The full PEP regimen is 60 days. During an anthrax emergency, recipients may receive an initial 10-day supply to begin ciprofloxacin therapy; public health officials will announce whether recipients need more ciprofloxacin and how to get the rest of the drug. If you have been asked to dispense ciprofloxacin that has an expired date on the container, please be informed that based on scientific review, FDA is allowing for the use of certain lots of ciprofloxacin beyond the labeled expiration date during an anthrax emergency. For more information, go to the FDA website at www.fda.gov (search for "ciprofloxacin expiration").

- **Children weighing 67 lbs (31 kg) or more and Adults (≥ 18 years)** should take one tablet (500 mg) by mouth every 12 hours (one tablet in the morning and one tablet in the evening) each day with a full glass of water (with or without food).***** For those who **cannot swallow tablets**, provide guidance on swallowing tablets or recommend an alternative drug available in oral suspension/liquid form or a drug that can be mixed with food or liquid (such as doxycycline).
- **Children weighing less than 67 lbs (31 kg)** should take ciprofloxacin oral suspension dosed by weight (see table below) every 12 hours (one dose in the morning and one dose in the evening) each day.

Ciprofloxacin oral suspension comes in two strengths – 5% (250 mg/5 mL) and 10% (500 mg/5 mL):

- Ciprofloxacin oral suspension is supplied in two components (ciprofloxacin microcapsules and diluent). Follow the instructions provided with the oral suspension to mix the microcapsules in the diluent before dispensing the drug to the recipient. Write the dose on the bottle and mark the dose with a line on the graduated teaspoon or oral syringe.
- Tell the recipient to shake the oral suspension very well (15 seconds) before each use.

Weight in pounds (kilograms)	Dose* in milliliters (mL) 250 mg/5 mL strength	Dose* in milliliters (mL) 500 mg/5 mL strength	Number of 100 mL bottles needed for 10-day supply for one patient	
			250 mg/5 mL strength	500 mg/5 mL strength
0–7 lbs (0–3 kg)	1 mL (50 mg)	0.5 mL (50 mg)	ONE (1) Bottle	ONE (1) Bottle
8–14 lbs (4–6 kg)	2 mL (100 mg)	1 mL (100 mg)		
15–22 lbs (7–10 kg)	3 mL (150 mg)	1.5 mL (150 mg)		
23–29 lbs (11–13 kg)	4 mL (200 mg)	2 mL (200 mg)		
30–36 lbs (14–16 kg)	5 mL (250 mg)	2.5 mL (250 mg)		
37–44 lbs (17–20 kg)	6 mL (300 mg)	3 mL (300 mg)	TWO (2) Bottles	
45–51 lbs (21–23 kg)	7 mL (350 mg)	3.5 mL (350 mg)		
52–58 lbs (24–26 kg)	8 mL (400 mg)	4 mL (400 mg)		
59–66 lbs (27–30 kg)	9 mL (450 mg)	4.5 mL (450 mg)		
> 67 lbs (> 31 kg)	10 mL (500 mg)	5 mL (500 mg)		

*****Dosage adjustment is needed for individuals with severe renal impairment (see package insert).[2]

[1] FDA's issued emergency dispensing order applies to all FDA-approved oral dosage forms of ciprofloxacin products for the post-exposure prophylaxis of inhalation anthrax during an emergency involving *B. anthracis*. For details, see www.fda.gov.

[2] For more information about the benefits and risks of ciprofloxacin, please see the FDA-approved package insert for ciprofloxacin available at www.dailymed.nlm.nih.gov and search for ciprofloxacin.

What are common side effects of ciprofloxacin?
Inform recipients that mild gastrointestinal side effects such as nausea, vomiting, and/or diarrhea, a mild sunburn, or a vaginal yeast infection may be experienced but to continue taking ciprofloxacin. If these side effects become severe, over the counter or prescription drugs can help to relieve the symptoms.

What are possible side effects of ciprofloxacin?
Tell recipients to **STOP** the ciprofloxacin and get medical help immediately if they develop any of the following:

- Tendon rupture, tendinitis, or joint problems
- Serious allergic/hypersensitivity reactions (anaphylactic and/or severe rashes)
- Liver problems (anorexia, jaundice, dark brown or tea-colored urine, pruritus, or tender abdomen)
- Central nervous system effects (seizures, tremors, paranoia, anxiety)
- Serious heart rhythm changes (QT prolongation and torsade de pointes)
- Severe stomach cramps with high fever or bloody diarrhea (antibiotic-associated diarrhea and pseudomembranous colitis)
- Changes in sensation and possible nerve damage (peripheral neuropathy)

What should recipients avoid while taking ciprofloxacin?

- If a recipient is taking Carafate (sucralfate), Videx (didanosine), phosphate binders, or multivitamins, supplements, or antacids containing magnesium, calcium, aluminum, iron, or zinc, instruct the recipient to take ciprofloxacin at least 2 hours before or 6 hours after taking any of these products.
- If a recipient is taking ciprofloxacin with theophylline (increased theophylline concentration), phenytoin (loss of seizure control), concurrent blood thinners (increased blood thinning), clozapine (irregular heartbeat), or oral antidiabetic agents (increased antidiabetic efficacy), consider changing the dose of these drugs or recommending alternative drugs. For a complete list of ciprofloxacin drug interactions, please see package insert.

What additional information should be provided to recipients taking ciprofloxacin?

- Ciprofloxacin can exacerbate myasthenia gravis symptoms. It can also greatly potentiate effects of Zanaflex (tizanidine) (e.g., bradycardia, hypotension). Instruct those with a history of myasthenia gravis or taking tizanidine to avoid taking ciprofloxacin.
- Instruct recipients not to take ciprofloxacin with dairy products (like milk or yogurt) or calcium-fortified juices.
- Ciprofloxacin can cause sun sensitivity. Instruct recipients to use sunscreen and cover exposed skin.
- Ciprofloxacin, while not generally recommended for use in pregnancy, is recommended as antimicrobial PEP for anthrax during pregnancy and while breastfeeding due to the risks of anthrax. The very limited data available on ciprofloxacin use in pregnancy suggest the benefits of ciprofloxacin outweigh the risks.
- Recipients may wish to cut back on their caffeine intake, as the caffeine half-life may be prolonged.
- Instruct recipients to keep ciprofloxacin tablets dry, and to store tablets and reconstituted oral suspension at room temperature (68–77°F or 20–25°C). Reconstituted oral suspension may be stored for up to 14 days at room temperature.

The Countermeasures Injury Compensation Program (CICP) is a federal program created to help pay for related costs of medical care and other specific expenses for eligible people seriously injured by the administration or use of certain medical countermeasures. Medical countermeasures may include vaccines, medications, devices, or other items used to prevent, diagnose, or treat the public during a current, or potential future, public health emergency or security threat. For more information about CICP, visit www.hrsa.gov/cicp or call: 1-855-266-2427.

Risk-Benefit Statement
Although ciprofloxacin has some potential and serious adverse effects, the expected benefit of ciprofloxacin to help prevent disease and death associated with anthrax exposure outweigh these risks.

Available Alternatives
During an anthrax emergency, you will be informed of any alternative drugs that are available, such as doxycycline and amoxicillin. The risks and benefits of alternative drugs will be explained in their own fact sheets. For more information, visit www.cdc.gov.

Reporting Adverse Event or Medication Errors
Report adverse events or medication errors to MedWatch (www.fda.gov/medwatch) by completing a MedWatch Form 3500 or by calling 1-800-FDA-1088.

Give recipients "Anthrax Emergency: How to Take Ciprofloxacin to Prevent Anthrax" instructions.

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