

DOXYCYCLINE FACT SHEET FOR RECIPIENTS¹

IMPORTANT:

In September 2008, the Department of Homeland Security made a determination that there was a significant potential for a domestic emergency involving a heightened risk of attack with anthrax. The Secretary of the Department of Health and Human Services (HHS) then declared a health emergency justifying authorization of the emergency use of certain drugs for post-exposure prophylaxis (PEP) against inhalation anthrax. If you have received this Fact Sheet, you may have been exposed to the bacterium (germ) that causes anthrax, a deadly disease.

As part of the response to this emergency, the Commissioner of the Food and Drug Administration (FDA) has authorized the emergency use of doxycycline for PEP of inhalation anthrax under certain circumstances. The doxycycline being used in this emergency comes in Unit of Use (UoU) bottles of 20 pills (i.e., 10-day supply), some of which may have been repackaged, and a liquid (oral suspension 25 mg/ 5 mL in a 60 mL bottle). Some of the doxycycline products being used in this emergency could be part of the federal government's Shelf Life Extension Program (SLEP).

Taking doxycycline can help keep you from getting sick if you have been exposed to certain germs such as the one that causes anthrax. The information in this Fact Sheet provides useful information to inform you of, among other things, the significant known and potential risks and benefits of the emergency use of doxycycline. The information provided in this Fact Sheet also pertains to children receiving doxycycline.

If you have been exposed to the anthrax germ and are taking doxycycline as directed and you begin to have the symptoms of anthrax described below, get medical care right away. Do not delay getting medical care.

You will start with only enough medicine for 10 days. This is not a full course of PEP regimen. You need to take a full course of PEP regimen, which is usually 60 days. It is important to complete the full course of PEP regimen to help protect you from getting anthrax disease. Public officials will announce where you can get the rest of the medicine that you will need to complete your PEP regimen.

Doxycycline is a prescription medicine approved by the FDA to treat infections caused by certain germs, including the life-threatening germ that causes anthrax disease. A special legal permission called an Emergency Use Authorization (EUA) is needed because, among other reasons, there is no FDA-approved doxycycline with emergency use instructions, other information to prevent anthrax, or home preparation instructions for children and adults who cannot swallow doxycycline pills. The specific emergency use instructions listed here are new and so they have not been studied in the past. The instructions given in the pamphlet titled "In an Emergency: How to Prepare Doxycycline for Children and Adults Who Cannot Swallow Pills" have not been formally tested in a home setting.

¹ In the event of an emergency, it is possible that public health officials or other volunteers might distribute doxycycline products to recipients as authorized. In this fact sheet, the term "health care provider(s)" includes these individuals and is used for brevity here.

Please be aware that some of the doxycycline products provided under this EUA are part of SLEP. Under this program, FDA conducts the necessary tests to see if specific lots of doxycycline can be used beyond the expiration dates originally printed on the label by the drug company. If doxycycline passes the tests, FDA determines that the shelf life of the product can be extended beyond the expiration dates printed on the original label. These products under SLEP are relabeled with “EXPIRATION DATE EXTENDED PURSUANT TO FDA SHELF LIFE EXTENSION PROGRAM TO: EXP Month-Year.”

What is Anthrax?

Anthrax is a serious disease caused by the germ *Bacillus anthracis*. This germ forms spores. A spore is a cell that is asleep (inactive) but may become active under the right conditions. Anthrax spores can cause anthrax if they get into your/your child’s lungs, skin, or stomach and become active. People who breathe in (inhale) anthrax spores are at risk of getting serious disease referred to as inhalation anthrax. Inhalation anthrax can cause death even if you are treated. Anthrax disease affects children and adults in much the same way. However, children may be more likely to suffer bad effects from some of the antibiotic used to prevent the disease than adults. (See section on "what are the possible side effects of doxycycline?")

Am I contagious to other people?

No, anthrax is not known to spread from one person to another.

What are the symptoms of breathing in (inhalation) anthrax?

The first symptoms of breathing in anthrax spores are cold-like or flu-like symptoms and can include a sore throat, mild fever and muscle aches. Later symptoms include cough, chest discomfort, shortness of breath, tiredness and muscle aches.

Symptoms (warning signs) can occur within 7 days of coming into contact with anthrax spores. However, for inhalation anthrax, symptoms can take up to 42 days to appear.

What is doxycycline?

Doxycycline is an antibiotic medicine that is used to treat infections caused by certain germs, including the life-threatening germ that causes anthrax.

What are the benefits of doxycycline?

You may have been exposed to anthrax. Doxycycline may prevent you from getting sick with anthrax. Doxycycline has been approved by the FDA to treat anthrax or to keep you from getting an anthrax infection. Start taking doxycycline right away. Do not wait to take doxycycline until you get sick.

Who should not take doxycycline?

Do not take doxycycline if you:

- are allergic to doxycycline
- are allergic to any antibiotic known as a tetracycline. Ask your doctor if you are not sure.

The following is a partial list of tetracycline drugs and manufacturer's trade names in parentheses.

Chlortetracycline (Aureomycin)

Demeclocycline (Declomycin)

Doxycycline (Adoxa, Atridox, Bio-tab, Doryx, Doxychel, Doxy, Monodox, Periostat, Vibra-tabs, Vibramycin)

Minocycline (Arestin, Dynacin, Minocin, Vectrin)

Oxytetracycline (Terak, Terra-Cortril, Terramycin, Urobiotic-250)

Tetracycline (Achromycin V, Bistracycline, Sumycin, Tetrex, Topicycline, Helidac)

What if I do not take the antibiotic doxycycline?

It is your choice to be treated or not. If you don't take doxycycline, and you have been exposed to anthrax spores, you may develop severe disease or die from anthrax disease. Anthrax is a deadly illness. It is important to be aware that even if you take doxycycline exactly as directed for prevention, there is a chance that you may still get anthrax.

Are there other FDA-approved medications for the prevention of inhalation anthrax after being exposed to anthrax spores?

Other antibiotic medicines approved by the FDA to prevent inhalation anthrax include: penicillin G procaine, ciprofloxacin, and levofloxacin. These antibiotic medicines require a prescription from your/your child's doctor. However, as with doxycycline, none of these products is approved with instructions prepared for this emergency situation. It is possible that one of these other products (e.g., ciprofloxacin) is also authorized for use under an emergency use authorization (EUA) for use during this emergency. Each of these other medicines also has side effects. Penicillins can cause serious allergic reactions, skin rashes, and a serious type of diarrhea. Ciprofloxacin and levofloxacin can cause serious adverse effects including: tendon rupture, convulsions, hallucinations (seeing things that are not there), depression, abnormal heart beats, and a serious type of diarrhea.

BioThrax™ (Anthrax Vaccine Adsorbed) is a vaccine that is given to protect adults ages 18 to 65 years old who may come in contact with animal products such as hides, hair or bones from areas where anthrax is found, and that may be contaminated with anthrax (*Bacillus anthracis*) spores and for people such as veterinarians, laboratory workers whose job may involve touching animals or other materials that may be infected. It is not clear if BioThrax™ works or is safe for people after they have been contaminated with anthrax (*Bacillus anthracis*) spores. Side effects of BioThrax™ are muscle or joint aches, headache, tiredness, chills, rashes and low fever.

BioThrax™ is not an alternative in this emergency setting because it takes several weeks to establish protection.

There are other antimicrobial drugs to which anthrax may be sensitive; however, they are not approved by FDA for this use.

What should you tell your health care provider before taking doxycycline?

Before you take doxycycline, tell your health care provider about all your medical conditions including:

- any allergies you may have to medicines
- if you are pregnant or plan to become pregnant. Doxycycline can harm developing teeth of a baby during the second half of pregnancy.
- if you are breastfeeding or plan to breastfeed. Doxycycline can pass into your breast milk and may harm your baby. Talk to your health care provider about the best way to feed your baby if you take doxycycline. It is recommended you do not breastfeed while taking doxycycline.

Tell your health care provider about all the medicines you take, including prescription and non-prescription medicines, vitamins, and herbal supplements. Doxycycline and other medicines may affect each other causing side effects. Doxycycline may affect the way other medicines work, and other medicines may affect how doxycycline works. The doses of some medicines may need to be changed while you take doxycycline.

Note: The benefits of taking doxycycline in an emergency may be more important for you than the risks of not taking it.

Especially tell your health care provider if you take:

- medicine to thin your blood (warfarin, Coumadin)
- seizure medicine such as barbiturate (phenobarbital), phenytoin (Dilantin), carbamazepine (Tegretol)
- isotretinoin (Accutane) or acitretin (Soriatane)
- methotrexate
- oral contraceptives (**Birth control pills may not work as well when you take doxycycline. Use condoms or another form of birth control to prevent pregnancy until you finish taking all of your doxycycline**)
- Lithium
- ciprofloxacin, levofloxacin or other fluoroquinolone antibiotic

Know the medicines you take. Keep a list of them and show it to your health care provider and pharmacist when you get a new medicine.

What is the dose of doxycycline for adults (18 years of age and older) who have been given the pill form of doxycycline?

- **For adults who can swallow pills:** The dose of doxycycline for adults is one 100 mg pill in the morning and one 100 mg pill at night.
- **For adults who cannot swallow pills:** If you cannot swallow pills, use the pamphlet titled, “*In an Emergency: How to Prepare Doxycycline for Children and Adults Who Cannot Swallow Pills.*” This pamphlet will help you prepare a doxycycline crushed pill and water mixture that can be added to food to hide the taste.

What is the dose of doxycycline for children (age less than 18 years old) who have been given the pill form of doxycycline?

- **For children who are 89 pounds and over and who can swallow pills:** The dose of doxycycline one 100 mg pill in the morning and one 100 mg pill at night.
- **For children who are 89 pounds and over and who cannot swallow pills:** You will need to use the pamphlet titled “*In an Emergency: How to Prepare Doxycycline for Children and Adults Who Cannot Swallow Pills.*” This pamphlet will help you make a doxycycline and water mixture using a 100 mg doxycycline pill. After mixing, find your child’s weight on the chart and it will show you how many teaspoons to use of the doxycycline and water mixture. Take the right number of teaspoons of the doxycycline and water mixture and add it to one of the foods listed in the pamphlet to hide the taste. This will be one dose of medicine for your child. Your child will have to take all of the food mixture, in the morning and another mixture at night.
- **For all children who are under 89 pounds:** You will need to use the pamphlet titled “*In an Emergency: How to Prepare Doxycycline for Children and Adults Who Cannot Swallow Pills.*” This pamphlet will help you make a doxycycline and water mixture using a 100 mg doxycycline pill. After mixing, find your child’s weight on the chart and it will show you how many teaspoons to use of the doxycycline and water mixture. Take the right number of teaspoons of the doxycycline and water mixture and add it to one of the foods listed in the pamphlet to hide the taste. This will be one dose of medicine for your child. Your child will have to take all of the food mixture, in the morning and another mixture at night.

What is the dose of doxycycline for children (age less than 18 years old) who have been given the liquid form (oral suspension) of doxycycline?

- The health care provider will tell you the dose to give to your child and will write it on the bottle for you. A dose should be taken once in the morning and once in the evening.

- Shake the liquid (oral suspension) well before using and measure with the dosing syringe that you will be given.

How should an adult or child take doxycycline?

- Take or give doxycycline pills with a full glass of water.
- Take or give doxycycline on an empty stomach. If you get an upset stomach, take doxycycline with some food or milk.
- It is important to drink plenty of fluids to wash down the medicine to decrease the chance of getting irritation or ulcers in the esophagus.
- If you miss a dose, start taking your medicine again when it is time for your next dose. Do not take/give two doses at one time.
- Doxycycline may not work as well when taken with certain other medicines. Take or give doxycycline either 2 hours before or 2 hours after taking any of these medicines:
 - antacids
 - multivitamins or supplements with calcium, iron, magnesium, or sodium bicarbonate
 - Sucralfate (Carafate)
 - Colestipol (Colestid)
 - cholestyramine
 - Bismuth subsalicylate (Helidac) (Pepto Bismol) (Kaopectate), or many other products to treat indigestion, nausea, or diarrhea
 - Didanosine (non-enteric)
 - People who take a blood thinner (anticoagulant therapy) may need a different dose
- Do not share your doxycycline with others.

What should you avoid while taking doxycycline?

Doxycycline can make your skin more sensitive to sunlight and some bright lights. Avoid sunlight, tanning beds and sunlamps to prevent sunburn. Wear protective clothing and use sunscreen when you are in sunlight.

What are the possible side effects of doxycycline?

Doxycycline can cause side effects including:

- ****Teeth problems** (These occur more often in children below the age of 8 years and in unborn children during the last half of pregnancy.)
 - yellow-gray-brown changes in the color of the teeth that does not go away (permanent)
 - poor formation of outer layer of the tooth (enamel)
- ****Slowed bone growth in children**
- **Vaginal yeast infection in women**
- **Swelling (inflammation) of the tongue**
- **Stomach and intestine problems:**
 - loss of appetite

- trouble swallowing
- nausea
- vomiting
- diarrhea
- inflammation of the bowel
- sores in the swallowing tube between the mouth and stomach (esophagus)
- swelling of the esophagus
- rash in the rectum area and genital area or “diaper rash”
- **Serious liver problems (liver failure)**
- **Sun sensitivity:** See “What should you avoid while taking doxycycline?” above
- **Rash and thick, red, flakey areas on the skin**
- **Allergic reactions.** Doxycycline can cause mild allergic reactions such as hives or more serious allergic reactions
- **Serum sickness.** Symptoms include: fever, rash, joint pain, and swelling of the lymph nodes
- **Swelling (inflammation) of the heart**
- **Worsening of systemic lupus erythematosus (SLE)**
- **Changes in blood cell counts:** Destruction of red blood cells, decreased platelets, decreased white blood cells (this is something that can be seen in a lab test)
- **Increase in blood urea nitrogen (BUN)** because of less cell action (this is something that can be seen in a lab test)
- **Benign Intracranial Hypertension:** Increased pressure in the brain in adults and bulging of the soft spot (fontanel) in the heads of infants
- **Thyroid Gland Changes:** Brown-black discoloration of the thyroid glands without changes in thyroid function. This is not something that you can see.

**** Special Note for Use of Doxycycline in Children and Pregnant Women:** There is some information known about side effects from the use of doxycycline during pregnancy. If the mother of an unborn baby takes doxycycline, staining of baby’s teeth or poor bone development can result. Doxycycline may cause staining of the teeth (permanent teeth that are developing) in children younger than 8 years old. This means that their teeth can become grayish in color and this color does not go away. This medicine can also cause bone growth delay in premature infants but this side effect goes away after the medicine is finished. There is a remote chance of severe liver disease in some pregnant women. Doxycycline is FDA-approved for use in children and pregnant women for PEP against inhalation anthrax.

What should I do if I have any of these side effects?

Get medical help right away, for example call 911, for symptoms of an allergic reaction including:

- swelling of the tongue, hands, or feet
- closing of the throat
- trouble breathing
- itching
- rash, especially hives and wheals

Stop taking your medicine and go to the emergency room for:

- Severe stomach cramps with high fever or diarrhea
- Yellowing of the eyes or skin or dark-colored urine
- Pain when swallowing
- Unusual bleeding or bruising
- Severe headaches, dizziness, or double vision

Keep taking if you have any of these common side effects:

- Mild nausea, upset stomach, loose stools
- Vaginal yeast infection in women

How do I report side effects or errors from using doxycycline?

- Tell your health care provider right away if you have any of the serious side effects listed above.
- Tell your health care provider if you get common side effects that bother you or that do not go away.
- You or your health care providers can report side effects or medication errors to MedWatch at www.fda.gov/medwatch, by submitting a MedWatch Form 3500 (available at http://www.fda.gov/medwatch/safety/FDA-3500_fillable.pdf) or by calling 1-800-FDA-1088.
 - When reporting side effects or medication errors to MedWatch, ideally, the report should include that the drug was used under an EUA by including in the description of the event section (Section B.5) of the MedWatch Form 3500 the abbreviations “EUA” or the words “Emergency Use Authorization.”

How can I learn more?

If you have questions, please call the Centers for Disease Control and Prevention (CDC): on the web at: www.bt.cdc.gov, or by telephone at: 1 (800) CDC-INFO.

How should you store doxycycline?

- Store doxycycline pills between 68° F to 77° F (20°-25°C).
- Keep the doxycycline pills dry.
- Keep doxycycline liquid (oral suspension) at room temperature for up to 14 days.
- After the health care provider prepares the liquid (oral suspension), it is only good for 14 days.
- Public officials will tell you how to properly get rid of any unused drug.
- Keep any unused doxycycline and water mixture (that you make by crushing doxycycline pills) in a covered bowl at room temperature for up to 24 hours. Label the bowl. Throw out any unused mixture after 24 hours.
- Keep the container closed tightly.

Keep doxycycline and all medicines out of the reach of children