

Candida Infection of the Bloodstream— Candidemia

Fungal Disease Series #4

Candida is the single most important cause of fungal infections worldwide. In the U.S., Candida is the 4th most common cause of bloodstream infection that can develop while you are in a hospital (also called “nosocomial” infection or hospital acquired infection). There are 17 different species of Candida. Of these, *Candida albicans* (*C. albicans*), *C. glabrata*, *C. parapsilosis* and *C. tropicalis* are the most common species.



Where in my body can I get a Candida infection?

Candida infection can happen in almost any part of your body. Usually it develops on mucous membranes (in the mouth, genitals etc.) but the infection can also be in your bloodstream. When Candida is in your blood stream, the condition is called **Candidemia**. Candida infection can spread from your blood stream to other parts of your body (such as your eyes, kidney, liver and brain). If this happens, it is called *Invasive Candidemia*. People who are healthy do not usually get Candidemia. Healthy people however, may get a Candida infection in their mouth (called *thrush*) from certain drugs such as inhaled corticosteroids used to treat asthma and COPD. If you are very ill or have a weakened immune system (for example from chemotherapy or an organ transplant), are diabetic, receive corticosteroids, broad spectrum antibiotics or have a central venous catheter in place, you are predisposed to develop Candidemia. A central venous catheter is a tube that is inserted in one of the major blood vessels leading to the heart and is used to give you medications, chemotherapy, or nutritional supplements. (see ATS Patient Series at <http://patients.thoracic.org/information-series/en/resources/central-venous-catheter.pdf> for information on central venous catheters).

How can I get Candidemia?

In the hospital, 40% of bloodstream infections are caused by the fungus Candida. Most often, Candidemia develops within a week of being admitted to an intensive care unit (ICU) if you also have a central venous catheter, get kidney dialysis, have major surgery, have a low white blood count, or if you are getting broad spectrum antibiotics, intravenous steroids or medications to depress your immune system. You can also get Candidemia outside of the hospital if you are sent home from the hospital with a central venous catheter or if you are on cancer chemotherapy. Chemotherapy weakens your immune system and can put you at risk for common infections, like the cold or flu, or less common infections, like Candidemia or other fungal infections. Candida species can also enter the bloodstream alongside a catheter in your vein or artery, at the area where the catheter enters through the skin. Although Candida infections of the mucosal surfaces (mouth and esophagus) are usually easy to treat, treatment of Candidemia can be challenging, especially when the infection has spread to other organs (eye, brain or kidneys) and if there is a central venous catheter in place.

What are the signs and symptoms of Candidemia?

Signs and symptoms of Candida infection

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depend upon the site of infection. However, if you have Candidemia, you may have one or more of the following:

- fever, chills
- skin rash
- generalized weakness or fatigue
- low blood pressure
- muscle aches
- vision changes or signs of an eye infection
- headaches and neurological deficits
- abdominal pain

How is Candidemia diagnosed?

Candidemia is diagnosed by taking a blood sample and finding *Candida* in your blood. In many cases, the species found is *Candida albicans*, however, other species of *Candida*, *Candida tropicalis*, *C. glabrata* and *C. parapsilosis* can be found in your blood. *Candida parapsilosis* is most commonly found in children. The diagnosis can also be made by detecting antigens of *Candida* in the blood stream

How is Candidemia treated?

Because Candidemia can cause a serious, life threatening illness, treatment is usually begun when an infection is suspected. Treatment includes finding the source of the infection and if possible, removing it (for example the central venous catheter) and beginning treatment with medication. There are a number of medications that can be used to treat *Candida* infections. The medications include: fluconazole, an amphotericin B drug, a drug from the echinocandin group (such as anidulafungin, caspofungin or micagungin) or voriconazole. The type of drug used will depend on how sick you are or the species of *Candida* most likely causing your infection.

What can be done to prevent getting Candidemia?

Your health care team (physician, nurse, pharmacist etc) know that Candidemia can develop from not using good hand washing and not checking your central venous catheter for signs of infection. Therefore, they will check your catheter and wash their hands regularly. If you

are at risk for getting Candidemia, you may be treated with an antifungal medication to prevent you from getting the infection. This is called “prophylactic” treatment. Prophylactic treatment with antifungal medication does not work for everyone. The decision to treat you is based on the likely benefits of preventing an infection compared to the risk of making you sick from the medications themselves.

What puts me at risk for developing Candidemia?

You are at risk for developing Candidemia if you:

- are hospitalized, especially in the intensive care unit (ICU) for several days
- have a central venous catheter (whether you are in the hospital or at home)
- have a weak immune system, either from drugs or from being extremely ill
- have had abdominal surgery,
- have severe burns,
- inject yourself with drugs,
- are being treated with antibiotics for bacterial infection,
- have kidney disease needing dialysis

Infants who are very underweight at birth are also at risk for developing Candidemia.

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Resources

Centers for Disease Control (CDC)

<http://www.cdc.gov/nczved/divisions/dfbmd/diseases/candidiasis/index.html>

Rx Action Steps

Call your health care provider if you have two or more of any of the above risk factors and develop a fever, or any other signs and symptoms of infection (for example, redness, warmth or drainage from the catheter site).

Doctor's Office Telephone: