

# Systemic candidiasis and HIV disease

Candidiasis is an infection with the fungus called *Candida*. It's among the most common conditions seen in people with HIV, and often the first illness and sign that HIV disease is progressing to a more severe stage. Outbreaks can be frequent, cause great discomfort and add to the decline of health.

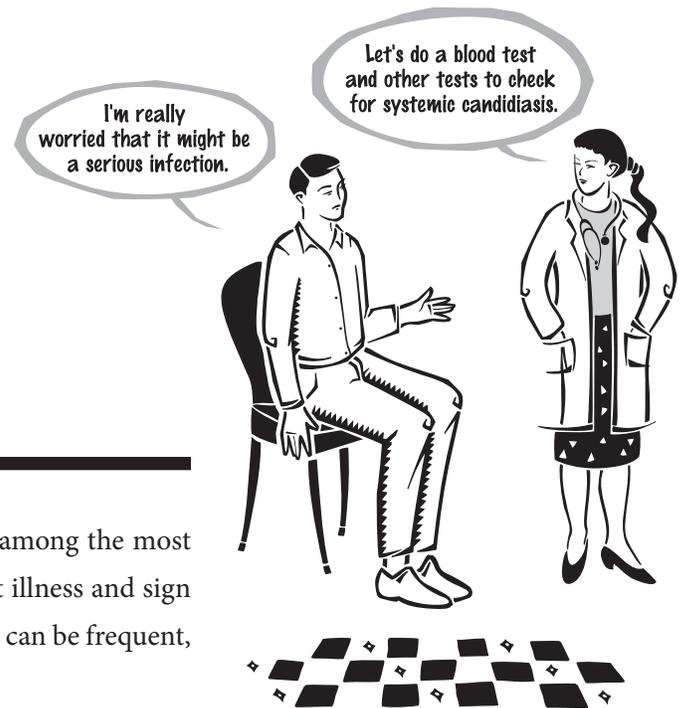
Candidiasis can occur in the mouth, throat, windpipe (*esophagus*), vagina or on the skin. It can also spread throughout the body. While this is rare, it's also life-threatening. Recurrent and difficult to treat vaginal yeast infections are a sign of HIV disease progression in women.

## What causes candidiasis?

*Candida* is normally found in small amounts in the mouth, vagina, digestive tract and skin. Other bacteria and the immune system keep it from becoming a problem in healthy people.

However, a weak immune system makes it easier for *Candida* to grow and cause infection. In HIV disease, the most serious outbreaks occur when CD4 counts are very low (below 100). Here, candidiasis can recur and be difficult to treat.

Factors including diabetes, pregnancy, iron, folate, and vitamin B12 or zinc deficiency, and use of antihistamines can increase the risk of fungal infections. Chemotherapy, stress and depression can also cause or worsen candidiasis.



### INFECTION IN THE VAGINA

*Vaginal candidiasis*, called *yeast infection* or *vaginitis*, is an infection of the vulva and/or vagina. It causes a smelly, thick, white-yellow discharge that might occur with itching, burning and swelling. A bad case can make walking, peeing or sex very painful.

### INFECTION IN THE MOUTH

*Oral candidiasis*, or *thrush*, can occur without symptoms. The most common usually include discomfort in the mouth and throat, burning and an altered sense of taste (often described as "bad"). Creamy white or yellowish coatings or spots are also common. Thrush is rare at CD4s above 500, but outbreaks are more common as it drops to 100.

### INFECTION IN THE THROAT AND WINDPIPE

*Esophageal candidiasis* is a serious condition on the list of AIDS-defining illnesses, affecting up to 1 in 5 people with AIDS. It often occurs

together with thrush. Symptoms include chest pain, nausea and pain when swallowing. Coatings and spots may partly block the throat, which can make swallowing painful and cause people to lose weight. This can spread into the stomach and intestines.

### INFECTION OF THE SKIN

*Cutaneous candidiasis* can infect skin in the armpits, groin, sex organs, fingernails, toenails and under the breasts. Bright red uneven eruptions appear in the folds of skin which may be coated by a white, wrinkled layer of tissue. Other symptoms include a mild burning.

### INFECTION THROUGHOUT BODY

*Systemic candidiasis* spreads throughout the body and can be life-threatening. Infection might include the brain, heart, kidneys, eyes, liver, genital tract and joints. This form occurs most often in people with low white blood cell counts (*neutropenia*).

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### Diagnosis

Candidiasis is usually diagnosed by appearance and symptoms. Lab tests are usually done if the infection does not clear up after treatment. A doctor will use a small tube called an endoscopy to look into the windpipe for esophageal disease.

Systemic candidiasis is very difficult to diagnose. Fungus found in the blood may come from a local infection like the mouth as well as from infection of internal organs. It may also only be briefly present in the blood even when an organ is infected.

### Treatment

Many drugs are used, and they come in two types: *topical* (active only where it's applied) and *systemic* (active throughout the body). Topical treatment is the first choice for oral, vaginal or skin infections, and it generally works for mild-to-moderate cases. If they do not work, or if outbreaks occur often, systemic drugs may be needed. Systemic treatment is always used for esophageal or systemic disease.

### Topical therapy

#### MOUTH RINSES

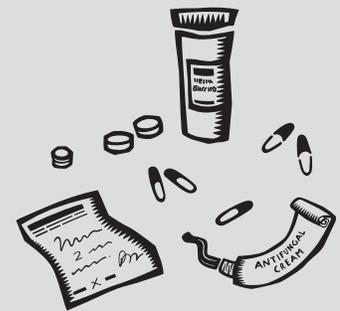
Mouth rinses are less effective as they only have contact with the mouth for a short time. However, they may be the best choice for someone with a very sore or dry mouth. Rinses should be swilled around the mouth for as long as possible and then swallowed. They are used at least 4 times a day and continued for a few days after symptoms have gone. The most widely used rinse is Mycostatin Oral Suspension (nystatin).

#### LOZENGES

For oral symptoms, one or two lozenges or troches are taken 3–5 times a day. They should be sucked slowly and not chewed or swallowed whole. Common brands are Mycelex (clotrimazole) and Mycostatin (nystatin).

#### CREAMS AND OINTMENTS

Creams and ointments are used for skin and nail infections. They can be used at the corners of the mouth or rubbed into affected areas of skin, including the labia. They should be applied 2–4 times a day by gentle and thorough mas-



sage. The length of therapy varies, but it often takes 10–20 days and should continue for a few days after the symptoms clear up.

Products include Fungizone, Lotrimin, Lotrisone, Monistat-Derm, Mycelex, Mycolog-II, Mycostatin, Nizoral and Spectazole. Creams containing a steroid should not be used for children under 12. Some creams can be bought as a prescription or over the counter as products for athlete's foot or jock itch.

#### VAGINAL SUPPOSITORIES

Vaginal suppositories or tablets are put into the vagina: once only clotrimazole or once a day for 3 days miconazole. Common brands are GyneLotrimin, Mycelex-G and Monistat 3. A single oral dose of fluconazole (Diflucan) is increasingly used for treating vaginal candidiasis.

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### Systemic therapy

#### KETOCONAZOLE

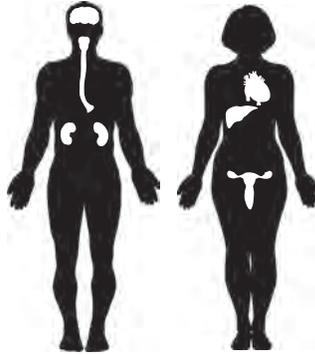
Nizoral (ketoconazole) is taken at 200 or 400mg once a day with acidic food or beverage. Antacids should be avoided. It should also not be taken at the same time as other therapies that have a buffer or antacid, like Videx (didanosine, ddI). It may not be well absorbed in people with gut problems or who cannot eat very much.

#### FUNGIZONE

Fungizone (amphotericin B, AmB) is given directly into a vein to treat systemic candidiasis when other therapies fail or the infection is very aggressive. It can be very difficult to tolerate. People are usually given the drug until they start to improve (usually 2 weeks) and then switched to fluconazole at 200–400mg per day. Other forms of AmB are used when systemic infections become resistant or less responsive to standard therapy, including Amphotec and Abelcet. These may have fewer side effects than standard AmB, but all can be quite toxic.

#### FLUCONAZOLE

Fluconazole is usually taken at 200mg the first day, then 100mg once a day thereafter. Treatment typically lasts 2 weeks for oral or



systemic infection can occur in the brain, windpipe, kidneys, heart, liver and genital tract

skin candidiasis and 3 weeks for esophageal infection

Studies suggest that fluconazole is more effective than ketoconazole, but some doctors prefer to treat with other drugs in order to save the potent fluconazole for later use, if necessary. Once fluconazole resistance develops, then treatment options are very limited.

#### ITRACONAZOLE

Itraconazole (Sporanox) appears to be at least as potent as ketoconazole and may be as good as fluconazole. It should be taken with acidic food or beverage. The dose is 200mg per day.

Itraconazole oral solution is more effective and puts higher levels of the drug in the blood than the capsule. There are possible interactions between itraconazole and many HIV drugs.

### Side effects

#### TOPICAL TREATMENTS

Topical creams and ointments may cause mild burning, blisters and peeling on sensitive skin. Some creams also contain a steroid to reduce inflammation. Vaginal tablets do not often cause problems, but may lead to vaginal burning, itching or skin rash. Some women experience cramps or headaches.

Lozenges may cause minor changes in liver function. Oral irritation and nausea are rare side effects. Oral rinses may cause gut problems if many doses are taken.

#### SYSTEMIC TREATMENTS

Side effects for the oral azole drugs are similar, but some studies show they're more common with itraconazole. The most common are nausea, vomiting and belly pain. Others include headaches, dizziness, drowsiness, fever, diarrhea, rash and changes in taste. The most serious problem is liver toxicity, but this is rare and usually reverses after the drug is stopped. Liver function tests should be done, particularly with ketoconazole.

AmB has many side effects, and some quite severe. Therefore, it's only used in cases when there's a direct threat to life or all other treatments have failed. Main side effects include kidney side effects and anemia. Others include fever, chills, changes in blood pressure, changes in appetite, nausea, vomiting and headache.

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### Tips for preventing fungal infections

Overall, the best way to naturally prevent fungal infections is to eat healthfully and regularly, avoid excessive sugar intake, and avoid or decrease alcohol, caffeine, dairy and cigarettes.

- Decrease or avoid sugars (corn and maple syrup, glucose, fructose and sucrose). Sugar is food for *Candida* and helps it grow. Read the labels on packaged foods for these sugars.
- Decrease or avoid alcohol. Alcohol converts to sugar and helps *Candida* grow.
- Drink milk or eat yogurt that contains acidophilus bacteria — “friendly” bacteria that helps your body fight off “unfriendly” germs, like *Candida*.
- Eat larger amounts of food that may keep yeast from growing. Some nutritionists believe garlic has natural antifungal properties. Fresh garlic is considered best. (NOTE: Large amounts of garlic may interfere with HIV meds, especially Norvir (ritonavir).
- Antibiotics may lead to yeast infections. “Friendly” bacteria are found naturally in the body and help clear unfriendly yeasts. Common antibiotics kill these bacteria which then allow yeast to grow.

### Preventing resistance

Most cases of candidiasis that fail to respond to treatment have been reported. This is partly due to the widespread, long-term use of azoles for treating and preventing candidiasis.

Resistance to azole drugs often requires using AmB. While potent and effective, the drug is toxic, especially to the kidney. Newer versions (ABLC, Ambisome and Abelcet) have proven less so. Some people may better tolerate these versions.

Nevertheless, exposure to azole treatment decreases the antifungal activity of AmB. This may be the case for newer, less toxic forms of the drug. However, 2 other drugs are active against azole-resistant candidiasis: voriconazole (Vfend) and Cancidas (casposfungin acetate).

Using antifungal drugs to prevent fungal infections is approached with great caution and is generally discouraged, especially using fluconazole this way. This makes treating newer and more aggressive infections more difficult and often unsuccessful. How-

ever, this may not be possible in some people with recurrent infections who must remain on long-term therapy to prevent them.

### Antifungal drugs and pregnancy

The Federal Guidelines for the Prevention of Opportunistic Infections recommend not using antifungal drugs during pregnancy due to possible birth defects. They further state that azoles be stopped in women who become pregnant and that women taking these drugs use effective birth control.

Topical therapies may be preferable for pregnant women. For systemic treatment the Guidelines suggest using AmB, especially in the first trimester.

Although no formal studies have been done, pregnant women have used aMb without apparent harm to their unborn children, though the drug has possible severe side effects.



FACING NEW DECISIONS? WONDERING WHAT'S THE NEXT STEP?

**HIV Health InfoLine:** 1-800-822-7422 (toll-free)  
10a-4p, Monday-Friday, Pacific Time