

Yeast infections/vulvovaginal candidiasis (VVC).

Michelle couldn't believe it. It was 11:00 P.M. Thursday night and she was feeling itching and burning in her vagina. She had started to feel these symptoms yesterday and to ward off the yeast infection Michelle had eaten three yogurts and for good measure drank one-half gallon of cranberry juice, but now she was really on fire. The timing couldn't be worse. She was planning to leave on Friday afternoon for a romantic weekend on the beach with Scott. Michelle didn't know what to do. Should she call her gynecologist? Would her gynecologist even see her tomorrow - even if she begged? Should she go to an all-night pharmacy and get a yeast cream?

Almost all women at least one in their lives experience the uncomfortable symptoms of vaginal itching, burning, and discharge. It is common wisdom that these symptoms are diagnostic of a "yeast infection." However, recent medical studies have shown that the majority of women who have these symptoms **do not** have a yeast infection. However, if it isn't a yeast infection, what else might it be? To answer this question we need to discuss the symptoms of itching, burning, and discharge.

You feel terrible itching and burning. It feels like you have a thousand mosquito bites in your vagina. When a mosquito bites you, it injects a chemical called histamine into the bite. Histamine reacts on nearby nerve endings to cause the sensation of itching and burning. But, of course, you didn't get a thousand mosquito bites in your vagina, so what's going on? Anything that causes inflammation in the vagina causes your own body to release histamine. This leads to the symptoms of itching and burning.

So what can cause inflammation? Any vaginal infection can cause inflammation. The most common vaginal infection is not yeast, but is instead an infection caused by bacteria called bacterial vaginosis. In addition, another organism called Trichomonas can also cause vaginal infections. But, infections are also not the only cause of inflammation. Perfumes and dyes in soaps or bubble baths, spermicides or lubricants, laundry detergents and fabric softeners can also cause inflammation, irritation, or allergic reactions that stimulate the release of histamine. Since so many different conditions can cause these type of symptoms, it is very difficult for medically-untrained woman to correctly self diagnose the cause of her vaginal itching, burning, and discharge. As most women are aware of the diagnosis of a yeast infection,, and they are not aware of the other possible causes of these symptoms, they often mistakenly self diagnose a yeast infection.

The term vaginitis refers to any infection or inflammation in the vagina. Studies have shown that in addition to vulvovaginal candidiasis other common forms of vaginitis are bacterial vaginosis and Trichomonas. Approximately 30 to 35% of all vaginitis is caused by an overgrowth of bacteria in the vagina called bacterial vaginosis, 10% of all vaginitis is caused by Trichomonas, 10% is caused by inflammation due to chemicals or allergic reactions, and 20 to 25% of all vaginitis is caused by yeast infections. Approximately 15 to 20% of all vaginitis is actually a combination of two or more of the other types of vaginitis. As most women are aware of yeast infections, but not aware of bacterial vaginosis and Trichomonas, there is a tendency for women to consider vulvovaginal candidiasis for their vaginal symptoms and not the more common diagnosis of bacterial vaginosis.

This fact was underscored by a study in the Journal of Obstetrics and Gynecology in 2002. In this study ninety-five women were stopped in a pharmacy as they were about to purchase an over-the-counter yeast medication. They were offered the opportunity to go to a doctor's office and have an accurate diagnosis made at that time. Of those ninety-five women who had self diagnosed a yeast infection ***only 33% were actually found to have only a yeast infection.*** The majority of women had either bacterial vaginosis or a mixed infection. Therefore they would not have been treated with the over-the-counter yeast medication that they had planned to purchase. As importantly, women who had been previously been diagnosed with a yeast infection were no more likely to be able to self diagnose a yeast infection than those women who had never been told they had a prior yeast infection.

This study illustrates the fact that the symptoms of vaginitis are non-specific. An examination by a healthcare profession is essential to make the accurate diagnosis. The diagnosis of a yeast infection cannot be made over the phone by your doctor. Symptoms of itching, burning, and "cottage cheese"-like discharge do not mean you have a yeast infection. Only a healthcare professional has the diagnostic tools and the experience to make an accurate diagnosis, and this must be done in person. To differentiate among the three most common types of vaginitis, a physical examination should be performed. In addition a microscopic examination of the vaginal secretions and measuring the pH of the vaginal secretions is absolutely essential. Additional tests such as a culture or DNA testing are often necessary to make an accurate diagnosis.

When you do go to your healthcare provider's office the first thing your healthcare provider should do is ask you your symptoms. As we said before symptoms are generally non-specific to yeast infections; however, some symptoms may give your doctor a clue as to what type of vaginitis you have. Itching, soreness, and pain during intercourse are more likely to be a yeast infection than bacterial vaginosis. Symptoms of a malodorous discharge without pain during sex are more likely to be bacterial vaginosis, and symptoms of a malodorous vaginal discharge with pain during sex are more likely to be Trichomonas. Next your healthcare provider should perform a physical examination. Again there may be some clues on physical examination that may point towards a yeast infection as opposed to a bacterial vaginosis or a Trichomonas. Redness of the labia, swelling of the labia, and cracks or fissures of the labia are more likely to be a yeast infection than bacterial vaginosis. A sticky-adherent discharge it is more likely to be a bacterial vaginosis or Trichomonas. Next your healthcare provider will test the pH of the secretions. A pH of 4 to 4.5 is more likely to be vulvovaginal candidiasis while a pH of greater than 4.5 is more likely to be bacterial vaginosis or Trichomonas. However, as we pointed out earlier approximately 15%-20% of all vaginitis is a mixed infection and therefore these "rules" may not hold true.

The next thing your healthcare provider should do is perform a microscopic examination. This is the quickest and cheapest test that your doctor can perform to make an accurate diagnosis of vaginitis. Under the microscope your healthcare provider may see yeast cells called hyphae. Unfortunately, in about one third of all cases of culture proven yeast infection, no yeast are seen under the microscope. If your healthcare provider is not able to accurately diagnose what type of vaginitis you do have by evaluation of your vaginal secretions, it is essential that a culture be performed. While all cultures do not give immediate diagnoses, they are very accurate and will

help prevent incorrect treatment.

If your healthcare provider does diagnose a true yeast infection, there are many different treatment options for vulvovaginal candidiasis. There are both over-the-counter and prescription topical treatments for vulvovaginal candidiasis. In addition there is an oral medication, fluconazole, approved for the treatment of vulvovaginal yeast infections. The topical treatments come in many forms including vaginal creams, suppositories, and tablets. There are single-dose, three-day, or seven-day treatment regimens available.

When topical treatments they are used after an accurate diagnosis of a yeast infection has been made, they are very effective. However, there are also areas of concern associated with topical treatments. For many topical treatments,

- women are advised not to rely on contraceptive devices that contain latex (condoms, diaphragms) because they contain oils that may weaken latex or rubber.
- Women using these topical products are advised to use sanitary napkins instead of tampons if she is menstruating.
- Topical products tend to be messy and most are recommended for use at bedtime.
- Topical products often contain chemicals that can cause allergic reactions or chemical irritation and therefore can cause a superimposed allergic or chemical vaginitis.
- Lastly if a woman uses one of these topical preparations and did not have a yeast infection and then later presents to her healthcare provider's office, it is often very difficult to make the correct diagnosis because these creams interfere with diagnosis under a microscope and can actually interfere with vaginal cultures as well.

It is for these reasons that this author generally prefers to use the oral medication fluconazole for yeast infections.

Fluconazole which is sold by Pfizer Pharmaceuticals under the brand name, *Diflucan*, is a one-tablet treatment for vulvovaginal candidiasis.

- A 150 mg tablet is over 90% effective for the treatment of yeast infections.
- *Diflucan* has proven to be extraordinarily safe to use, and there has never been any evidence of systemic side effects (such as liver toxicity) with a single dose of *Diflucan*.
- The symptoms of a yeast infection start to disappear within thirty-six hours after taking the *Diflucan* tablet and should completely resolve within two days.
- *Diflucan* does not interfere with oral contraceptive pills, nor does it interfere with other types of contraception such as condoms or diaphragm use.
- The cost of *Diflucan* is comparable to the topical preparations. *Diflucan* can be used in combination with a topical steroid ointment which will very quickly start to treat the inflammation of a yeast infection on the labia such that symptomatic relief from the yeast infection can be achieved within a matter of hours instead of waiting up to thirty-six hours for symptomatic relief.
- *Diflucan* does not obscure further testing if there is a mixed vaginal infection.
- *Diflucan* does not have the potential to cause an allergic vaginitis.

In summary when a women encounters itching, burning, and discharge it is very important that she understands that there may be one of several different possible causes of these

symptoms. Therefore, it is essential that she go to a healthcare provider and get an accurate diagnosis before she begins treatment. If she is accurately diagnosed with a yeast infection, then there are many options of treatment including creams, suppositories, and oral *Diflucan*. All of these treatments are very effective; however, it is in this author's opinion, that *Diflucan* has less potential for side effects.