Women are at much greater risk of developing a urinary tract infection (UTI) than men.\(^1\) In fact, 1 in 5 women will have at least one UTI in her lifetime, with many women having several infections throughout their lifetime.\(^1\)

A urinary tract infection is typically a bacterial infection that affects any part of the urinary tract.\(^2\) Most people who have UTIs are treated with a short course of antibiotics to eradicate the infection. If you think you may have a UTI, it’s best to make an appointment with your physician immediately so he or she can determine the appropriate course of action for you. Meanwhile, the following Q&A can help shed more light on UTIs, including their causes, symptoms, and potential treatments.

### 1. What are some causes of a urinary tract infection?

There are several causes of UTIs. The most common are bacteria. The most common mechanism is when bacteria on the skin near the rectum or in the vagina spread and enter the urinary tract through the urethra, the place where urine leaves the body.\(^2\) These bacteria then travel upward causing infection in the bladder and other parts of the urinary tract. For many women, sexual intercourse seems to trigger an infection.\(^3\) Although the reason for this linkage is unclear, it could result from bacteria entering the urinary tract through sexual intercourse.\(^4\) Other factors that may increase a woman’s risk of developing a UTI include pregnancy, menopause, or diabetes.\(^5,6\)

### 2. What are some signs and symptoms of a UTI?

In women, the signs and symptoms of UTIs may include a persistent urge to urinate, a burning sensation when urinating, passing frequent and small amounts of urine, urine appearing cloudy, pink, or cola colored, strong-smelling urine, or discomfort while urinating.\(^7\)

### 3. What kinds of tests may be performed to determine the cause of a UTI?

A simple urine test may be performed to determine the cause of a UTI.\(^8\) A physician may perform a test called a urinalysis. A urinalysis tests a sample of urine for pus, blood, and bacteria.\(^8\) The bacteria may then be tested against different antibiotics to help determine the appropriate treatment for the UTI.\(^8\)

### 4. What kinds of treatments are available for UTIs?

Antibiotics can treat most UTIs successfully.\(^9\) The number of times per day an antibiotic must be taken will depend on many factors.\(^9\) These factors include the cause of the infection, the type of antibiotic, and importantly, other medical conditions.\(^9\) When choosing an antibiotic, it’s also important to consider whether an infection will become resistant to the medication. Macrobid (nitrofurantoin) can be administered twice daily, and development of resistance has not been a significant problem.\(^10\)
5. **What will happen if a UTI treatment is delayed or left untreated?**

If left untreated, UTIs may develop into serious kidney infections that can permanently damage the kidneys or spread into the bloodstream and elsewhere in the body. If a UTI is suspected, consult with your healthcare professional immediately. This is especially important for women who are pregnant. Pregnant women are not more likely to get UTIs, but UTIs may be more serious during pregnancy. A pregnant woman with a UTI should consult her doctor to avoid potential problems like high blood pressure and premature delivery of her baby.

6. **What should a woman who is pregnant or plans to become pregnant, discuss with her doctor?**

Women who are pregnant should talk with their healthcare provider about all medications that they are taking. If a UTI is detected, an individual may want to ask their doctor about the antibiotic Macrodantin® (nitrofurantoin macrocrystals), which is a pregnancy category B medication. Women should be advised that Macrodantin® is the brand of nitrofurantoin macrocrystals; it is not a generic. Although generics have the exact same active drug components by law, the inactive ingredients can affect the drugs absorption into the body. Women who are pregnant may want to discuss brand drugs versus generics with their doctor.

7. **What is most important to discuss with a healthcare provider if frequent UTIs persist?**

The risk of developing UTIs increases as men and women get older. If recurrent UTIs persist, individuals should discuss with their doctor potential resistance to medications. Macrodantin (nitrofurantoin macrocrystals) may be one UTI treatment to consider as bacteria do not develop resistance to Macrodantin as frequently as they do with other antibiotics.

8. **Are there UTI treatments that should be avoided for people with a sulfa allergy?**

A commonly prescribed UTI treatment that people with a sulfa allergy should avoid is Bactrim® (trimethoprim and sulfamethoxazole).

9. **How can UTIs be prevented?**

It is important to note that preventative measures do not ensure protection against the bacteria that might cause UTIs, but may help reduce the risk of developing an infection. Some simple steps individuals may consider is increasing daily intake of liquids, specifically water, because drinking more increases urination which helps to flush away bacteria that may build up in the urinary tract. Individuals should also avoid resisting the urge to urinate because that too leads to bacteria build up. Changing personal hygiene may help reduce the risk of UTIs. This may include wiping from the front to back after urinating to help reduce the risk that bacteria will spread to the vagina and urethra. Another is urinating after intercourse, again, to flush away any bacteria that may get into the urinary tract.

---

*Remember to talk with your healthcare provider if you suspect you may have a urinary tract infection.*
**MACRODANTIN INDICATIONS AND USAGE**

*Macrodantin* is specifically indicated for the treatment of urinary tract infections when due to susceptible strains of *Escherichia coli*, enterococci, *Staphylococcus aureus*, and certain susceptible strains of *Klebsiella* and *Enterobacter* species. Nitrofurantoin is not indicated for the treatment of pyelonephritis or perinephric abscesses.

To reduce the development of drug-resistant bacteria and maintain the effectiveness of *Macrodantin* and other antibacterial drugs, *Macrodantin* should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

Nitrofurantoin lacks the broader tissue distribution of other therapeutic agents approved for urinary tract infections. Consequently, many patients who are treated with *Macrodantin* are predisposed to persistence or reappearance of bacteriuria. Urine specimens for culture and susceptibility testing should be obtained before and after completion of therapy. If persistence or reappearance of bacteriuria occurs after treatment with *Macrodantin*, other therapeutic agents with broader tissue distribution should be selected.

In considering the use of *Macrodantin*, lower eradication rates should be balanced against the increased potential for systemic toxicity and for the development of antimicrobial resistance when agents with broader tissue distribution are utilized. Be sure to speak with your healthcare provider about the benefits and potential risks of starting any medical treatment, including treatment with *Macrodantin*. Several reproduction studies have been performed in rabbits and rats at doses up to six times the human dose and have revealed no evidence of impaired fertility or harm to the fetus due to nitrofurantoin. In a single published study conducted in mice at 68 times the human dose (based on mg/kg administered to the dam), growth retardation and a low incidence of minor and common malformations were observed. However, at 25 times the human dose, fetal malformations were not observed; the relevance of these findings to humans is uncertain. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

**MACROBID INDICATIONS AND USAGE**

*Macrobid* is indicated only for the treatment of acute uncomplicated urinary tract infections (acute cystitis) caused by susceptible strains of *Escherichia coli* or *Staphylococcus saprophyticus*. Nitrofurantoin is not indicated for the treatment of pyelonephritis or perinephric abscesses. To reduce the development of drug-resistant bacteria and maintain the effectiveness of Macrobid and other antibacterial drugs, *Macrobid* should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria.

When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy. Nitrofurantoins lack the broader tissue distribution of other therapeutic agents approved for urinary tract infections. Consequently, many patients who are treated with *Macrobid* are predisposed to persistence or reappearance of bacteriuria. (See CLINICAL STUDIES.) Urine specimens for culture and susceptibility testing should be obtained before and after completion of therapy. If persistence or reappearance of bacteriuria occurs after treatment with *Macrobid*, other therapeutic agents with broader tissue distribution should be selected.

In considering the use of *Macrobid*, lower eradication rates should be balanced against the increased potential for systemic toxicity and for the development of antimicrobial resistance when agents with broader tissue distribution are utilized. Be sure to speak with your healthcare provider about the benefits and potential risks of starting any medical treatment, including treatment with *Macrobid*.

Macrobid and Macrobid are registered trademarks of Almatica Pharma, Inc. Bactrim is a registered trademark of F. Hoffmann–La Roche Ltd.