



URINARY TRACT INFECTION

CONSULTATION INFORMATION

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INITIAL SCREENING

History and Physical Examination

Your physician will inquire into your symptoms, past urological and gynecological history, prior surgeries, and medical conditions such as diabetes or stroke that may predispose the patient to recurrent bladder infections. A physical examination is then performed, frequently with special attention to the pelvic examination. A pelvic examination will determine if the bladder and urethra are normal and whether the vaginal tissue is healthy.

Urinalysis or Urine Culture

A clean catch or catheterized urine sample will be collected and analyzed to determine if you have a urinary tract infection, blood, or other abnormality in your urine. If infection is suspected, the urine sample will be sent for culture.

Post Void Residual

This test is performed to see whether any urine remains in your bladder after you have attempted to empty it completely. Measurements may be made by catheterization or ultrasound. A normal post-void residual is less than 100 cc of urine remaining in the bladder.

Review of Previous Medical Records

It is very important to review previous culture results. This helps determine whether true bladder infections have been present or whether these are re-infections or persistent UTIs. The need for additional work-up may be dependent on information obtained. Additionally, other urologic conditions may "mimic" UTI symptoms and treatment might significantly differ.

FURTHER EVALUATION

Voiding Diary

A voiding diary is an **essential** part of your evaluation. It will allow you to communicate clearly with your physician about the status of your bladder, including how frequently you urinate during the day and at night, how much fluid you drink during the day.

Cystoscopy

Cystoscopy (also called Cysto) is a test that allows your doctor to look at the interior lining of the bladder and urethra, areas which usually do not show up well on x-rays. A cystoscope is a thin lighted viewing instrument that is inserted into the urethra and advanced into the bladder. Your doctor then examines the inside of your bladder for stones, tumors, pockets that don't empty, and foreign bodies.

Just before the procedure, you will be allowed to empty your bladder. Cystoscopy is usually performed with local anesthesia; a small amount of numbing jelly is placed into your urethra to reduce discomfort. After the anesthetic takes effect, a well-lubricated Cystoscope is inserted into your urethra and slowly

advanced into your bladder. If your urethra has a spot that is too narrow to allow the scope to pass, other smaller instruments are inserted first to gradually enlarge the opening.

Once the Cystoscope is inside your bladder, sterile water is instilled through the scope to expand your bladder creating a clear view. The Cystoscope is usually in your bladder for only two or three minutes. You may feel a cool sensation, an uncomfortable fullness, or an urgent need to urinate. Try to relax during the procedure by taking slow, deep breaths. Most people report that this procedure is not nearly as uncomfortable as they had expected.

After the procedure, you may need to urinate frequently, with some burning during and after urination for a day or two. A pinkish tinge to the urine can be common for several days after Cystoscopy. Afterwards, you should drink ample fluids to help minimize the burning and to prevent a urinary tract infection.

Call our office if:

- **Your urine remains red or you see blood clots after you have urinated several times.**
- **You are unable to pass urine 8 hours after the procedure.**
- **You develop a fever, chills, or severe pain in your flank or abdomen after the procedure.**

Imaging of the Kidneys and Ureters

A CT scan or ultrasound of the upper part of the urinary tract may be appropriate, especially if the infections have been difficult to treat or have been associated with fevers, elevated blood counts, or nausea and vomiting. This indicates potential involvement of the upper tracts. Additionally, breakthrough infections or persistent UTIs may indicate the need for further upper tract evaluation. Kidney stones or urethral obstruction are infrequently found.

TREATMENT FOR RECURRENT UNCOMPLICATED UTIs

Antibiotics

Treat by Culture

This course of therapy is appropriate if patients are getting 3-4 UTIs or less per year and the patient has had a negative work-up in the past. When symptomatic, the patient leaves a urine sample for culture and then proceeds to take antibiotics based on the identification and resistance patterns of the particular strain of bacteria that is infecting the bladder.

A reliable patient can even take culture vials home with instructions on how to obtain the culture at home and return it to the clinic within a couple of days. Antibiotics can be kept at home to help minimize the impact on the patient's lifestyle.

Again, it is very important to obtain the urine culture when treating these recurrent infections.

Post-coital Prophylaxis

This type of therapy is appropriate for patients with UTIs that are always associated with intercourse. A small dose of antibiotics is taken around the time of intercourse to prevent the onset of symptoms. It is best to take this just prior to activity, but if that is not possible, as soon as possible after intercourse is acceptable.

Continuous Prophylaxis

With this type of therapy, a small dose of antibiotics is taken on a daily basis to prevent recurrence of UTIs. The dosage is usually very small and should be taken at bedtime. Generally speaking, the urine is most concentrated overnight and spends the most time in the bladder, therefore a bedtime dosage is often most effective.

With this treatment, it is very important to take the medication on a routine basis. **If doses are missed or sporadically taken, antibiotic resistance may develop. If this happens, it not only may affect the ability to treat future UTIs but also other bacterial infections. *This is very important.***

Most commonly used antibiotics for UTIs and possible side effects:

Macrodantin (Macrobid or nitrofurantoin) – This antibiotic is great for urinary tract infections. The kidneys concentrate the antibiotic so the only place it gets to high enough concentrations to kill bacteria is in the urinary tract. It does not change the colonic flora, therefore minimizing complications like diarrhea. Side effects of long-term use may include fibrosis or scarring of the lungs and peripheral neuropathy. Generally, the medication is considered safe during pregnancy, except with rare genetic metabolic deficiencies.

Bactrim (Septra or sulfa/TMP) – This drug is made up of two types of antibiotics, trimethoprim and sulfamethoxazole, which may work better in combination. It is relatively broad-spectrum, meaning it may interfere with colonic and vaginal flora which may increase the risks of diarrhea and vaginal yeast infections. Unfortunately, many people have allergic reactions to the sulfa portion of this medication. This drug should not be taken early during pregnancy and may affect the effectiveness of oral contraceptives.

Trimethoprim – This antibiotic may be used alone especially for those taking antibiotics for UTI prophylaxis. It works well on a daily basis. It should not be taken during pregnancy.

Quinolones (Levaquin, Levofloxacin, or Cipro) - This is a class of antibiotics often used to treat infections of the genitourinary tract. It is also broad spectrum, therefore diarrhea and vaginal yeast infections may be problematic. Overall, resistance patterns to this class of antibiotics are increasing in individuals and in the community. A bacteria that is resistant to one drug of the class, may easily become resistant to the entire class of antibiotics. Besides common side effects like diarrhea and dizziness, peripheral neuropathy, colitis, and tendon ruptures are severe potential complications. This drug should not be taken during pregnancy.

Cephalosporin (Keflex) – This class of antibiotics is related to penicillin and also has broad spectrum coverage. With this antibiotic, changes in bowel patterns and vaginal yeast infections may be problematic. Resistance patterns may also develop. It is considered safe during pregnancy and breastfeeding but may affect the effectiveness of oral contraceptives.

Doxycycline – This antibiotic is from the tetracycline class of antibiotics. It works well for some types of urinary tract infections. The greatest side effect is nausea and sun sensitivity. It is not safe during pregnancy or breastfeeding, but may have less of an effect on the effectiveness of oral contraceptives.

Fosfomycin (Monural) – This is a relatively uncommon antibiotic that is taken as a one-time dose for uncomplicated urinary tract infections. It comes as a packet of crystals to be mixed with water and may cause diarrhea. It is relatively safe during pregnancy.

Methenamine (Hiprex, Mandelamine, or Urex) – Used primarily for prophylaxis, this drug is more a urinary antiseptic - not really an antibiotic. It metabolizes into formaldehyde in the urine if the urine is acidic. It is usually taken in conjunction with Vitamin C for urine acidification and normally is prescribed twice daily. It is generally very well tolerated.

Behavior Therapy to Reduce Urinary Tract Infections

Drink Additional Fluids

Drinking additional fluids increases the amount of urine produced on a daily basis. With increased urine production, the bladder is emptied and flushed out more often. The bacterium that does make it to the bladder spends less time in the bladder and therefore has less of a chance to multiply and cause bladder infections.

Void after intercourse

Any bacterium that has been manually pushed into the bladder is flushed from the system before it has a chance to cause urinary tract infections.

Double void

Double voiding means to return to the bathroom soon after a previous void and try to empty again. With this second void, the idea is to attempt to empty the bladder closer to empty. The further the bladder empties, the less chance the bacteria has to remain in the bladder, multiply, and cause bladder infections.

Change contraception

Spermicide used on either condoms or diaphragms can alter the pH of the vaginal cavity. This change in pH alters the normal flora in the vagina so more coliform bacteria can colonize the area. The presence of these strains of bacteria may lead to a greater risk of a UTI.

Personal Hygiene

Most urinary tract infections are caused by bacteria that live in the stool. If stool is sitting around the vagina or on the perineum, this will increase the chances of the bacteria making it to the bladder. Therefore it is important to maintain good personal hygiene and cleanliness after bowel movements and make sure that wiping always occurs from front to back.

Maintain Bowel Regularity

Constipation and impaction can increase the risk of stool contamination on the perineum. Eat more fiber! The best way of adding fiber to the diet is increasing the quantity of fruits and vegetables that are eaten. This means a minimum of five servings of fruits or vegetables every day. For many people, however, the amount of fruits and vegetables that are necessary may be inconveniently large or may not provide adequate relief from constipation. In this case, fiber supplements can be useful. Benefiber, Metamucil, and Citrucel are common over-the-counter supplements which work well.

Maintain Good Diabetic Control

If diabetic, it is very important to get the blood sugars under good control. When blood sugars are high, glucose spills into the urine through the kidneys. This provides excellent food sources for any bacteria present in the bladder and allows for bacteria to rapidly multiply. This significantly increases the risks of urinary tract infection. Additionally, elevated blood sugars long-term can cause immunosuppression which also increases the risk of UTI.

Vaginal Hormone Replacement

After menopause or a hysterectomy, a woman's body produces less of the hormone estrogen. This drop in estrogen allows for thinning and deficiency of the tissue in the vagina and urethral that may allow for greater susceptibility to UTIs. This lack of estrogen also changes the pH of the vagina which allows for colonization with more virulent types of bacteria. Applying estrogen in the form of a vaginal cream, vaginal tablet, or ring may help relieve some of these symptoms. (See appendix for application directions.)

Estrogen supplementation is a controversial issue. The amount of estrogen that is absorbed into the blood stream from this vaginal application is small, just a fraction of the dose that would be absorbed by oral administration. Generally it is considered safe, however may be contraindicated in those with a history of some cancers and clotting disorders.

Alternative Daily Treatments

Cranberry Supplementation

Drinking cranberry juice has long been thought to prevent and treat urinary tract infections. There have been several recent scientific studies that have verified this information. It appears that cranberry supplementation helps prevent specifically E. coli infections which account for 80 – 85% of common UTIs. It works by preventing the bacteria from adhering to the bladder walls. It does not prevent the bacteria from entering the bladder.

Many cranberry juices bought in the grocery store are full of sugar (a source of empty calories) and have a very low concentration of actual cranberry juice. Therefore it is very important to read labels if

consuming the actual juice. The recommended dosage of juice is 16 ounces of unsweetened cranberry juice daily.

Another option is to purchase cranberry supplementation in a pill form. Supplementation in this form should be taken twice daily. These supplements are not regulated by the FDA, so it is important to choose a reputable company from which to purchase them.

Vitamin C supplementation

Vitamin C supplementation is used to acidify the urine creating an unfriendly environment for the bacteria to multiply and grow. There is no scientific evidence that this works in preventing urinary tract infections although in some individuals it may be helpful. If taking a supplement to acidify the urine, one may be more likely to develop kidney stones.

D-mannose

D-mannose is a naturally occurring sugar. Supplementation with d-mannose may decrease the risk of urinary tract infections caused by *E. coli*, which cause 80-85% of all bladder infections. It works by preventing bacterial adherence to the bladder wall.

Probiotics

Adding probiotics to your diet essentially is adding good, live bacteria to your colon. These supplements usually contain *Lactobacillus acidophilus* and *bifid bacterium*. This good bacterium colonizes the colon and vagina and basically crowds out the other organisms like coliform bacteria. If the coliform bacterium is not present near the urethra, urinary tract infections are less likely. They can be taken in a pill form, or can be found in a variety of foods now, mostly commonly yogurt.

Theralogix Cranberry Supplementation

TheraCran is a standardized, high-quality, high-potency cranberry supplement formulated to support and maintain normal urinary tract health. The formulation of **TheraCran** is overseen by an advisory board of leading academic physicians and scientists.

TheraCran is the first and only cranberry supplement that has been independently tested and certified for proanthocyanidin (PAC) and other flavonoid content. PACs are the compounds that researchers have determined to be the active component of cranberries. For a cranberry supplement to be effective in reducing the risk of urinary tract infections, it must provide an adequate dose of these PACs. Research indicates that 30–35 mg PACs per day is needed for urinary tract health.

TheraCran is the first cranberry supplement to use a new high-potency cranberry powder containing at least 2.5% PACs. Most supplements on the market contain cranberry powder with only 1% PACs. As a result, it may take up to six capsules per day of these other supplements to get the recommended amount of active ingredients. Because **TheraCran** provides a more concentrated dose of PACs, only two capsules per day are needed: one in the morning and one in the evening. **TheraCran** contains no cellulose or other agents that can bind to PACs, dramatically reducing their effectiveness. Most other cranberry products do contain cellulose binders and are not effective.

Fingertip Application Method for Estrogen Vaginal Cream

- Wash your hands with soap and water; dry thoroughly.
- Squeeze out enough cream from the tube to cover 1/2 of your index finger.
- Locate the vaginal opening and the urethra opening. The urethra opening is located immediately above the vagina. The urethra may not be easily identified because the opening is much smaller than the vaginal opening.
- Carefully spread the cream onto the external vaginal/urethra area. As the cream is spread, some may be gently inserted into the vaginal opening, however, it is not necessary to push the cream deep into the vagina.