Cystitis is an inflammation of the bladder, usually caused by a bacterial infection. It is a common condition, with more than 30% of women experiencing at least one episode in their lifetime.

Cystitis occurs when bacteria enter the urethra and travel to the bladder (see diagram). The bacteria most commonly associated with cystitis are Escherichia coli (E. coli). E. coli is found naturally in the bowel and, in smaller numbers, in the vagina and on the skin between the anus and the vagina (perineum).

Women are much more prone to developing cystitis than men. Their shorter urethra allows the bacteria to reach the bladder quickly. In addition, the urethral, vaginal and anal openings are closely located in women, making it easy for bacteria to be transferred.

Recurrent cystitis infections can lead to feelings of exhaustion and anxiety in women.

Symptoms

- Frequent painful urination—often a burning sensation
- Urgent need to urinate, even after just urinating
- Passing only small amounts of urine each time
- Cloudy, smelly urine or blood in the urine

If left untreated, the infection can move from the bladder to the kidneys. Symptoms of a kidney infection include those associated with cystitis as well as fever, chills, back pain, nausea and vomiting. Women with symptoms of a kidney infection should seek immediate medical attention. Cystitis and kidney infections are also referred to as urinary tract infections (UTIs).

Risk factors

- Sexual activity—Cystitis is sometimes referred to as ‘honeymoon cystitis’. During sex, bacteria can be spread from the perineum to the urethral opening. In addition, any form of vaginal penetration can cause rubbing or irritation to the urethra (which is next to the entrance of the vagina). If a woman’s lubrication is inadequate the vaginal skin can become irritated or suffer from small abrasions, encouraging bacteria to grow. This bacteria may then be transferred to the urethral opening.

- Contraceptive use—Diaphragms and condoms have been linked to an increased risk of cystitis. Diaphragms can change urination patterns, leading to bacteria not being flushed out of the bladder as efficiently or the bladder not being completely emptied. Unlubricated condoms can result in irritation, increasing the chances of infection. Evidence suggests that the use of spermicides increases the risk of cystitis. Spermicides kill the ‘good’ bacteria in the vagina and may also cause an allergic reaction, leading to an increase in ‘bad’ bacterial growth.

- Menopause—The drop in the level of the hormone oestrogen which occurs at menopause leads to a reduction in vaginal elasticity and lubrication and an increase in the pH level of the vagina. These changes result in an increased risk of bacterial infection. The drop in oestrogen can also cause changes in the pelvic floor tone, resulting in a ‘pool’ of urine remaining in the bladder (see next point).

- Urination pattern—if the bladder is not emptied adequately bacteria can be left behind which can multiply and cause cystitis. Not emptying the bladder frequently enough can also cause problems, with the urine becoming concentrated and irritating the lining of the bladder. Not drinking enough fluid will result in concentrated urine being stored in the bladder, helping bacteria to grow. Incomplete emptying of the bladder can also lead to an infection. The flow of urine from the bladder can be affected by:
  - a blockage in the urinary tract (cyst, stones, birth defect)
  - weight of the foetus during pregnancy. It is important to promptly treat cystitis during pregnancy as it more likely to move to the kidneys and cause pregnancy complications
  - genital prolapse (the dropping down of pelvic organs)
  - use of a diaphragm or an incorrectly placed tampon.

Women’s Health Queensland Wide Inc (Women’s Health) is a not for profit, health promotion, information and education service for women and health professionals throughout Queensland.

Health Information Line
3839 9988 in Brisbane
1800 017 676 toll free outside Brisbane

Website
www.womhealth.org.au

Administration and library
07 3839 9962

Email
admin@womhealth.org.au

Women’s Health Queensland Wide Inc
Information and Education
since 1980
Health conditions—Women with diabetes, spinal cord injury and multiple sclerosis have a higher risk of cystitis and other urinary tract infections. Other vaginal infections such as candidiasis (thrush) or trichomoniasis can make a woman more susceptible to cystitis.

Family history—Women who experience recurrent infections are more likely to have a mother who has had urinary tract infections.

Other—Exposure to cold appears to increase the risk of cystitis in women with a history of recurrent infection. Personal hygiene practices (wiping from back to front when going to the toilet), taking baths and wearing tight pants or pantyhose have all been hypothesised as increasing the risk of cystitis. Although there is little conclusive evidence that these behaviours contribute to cystitis it is plausible.

Diagnosis

If treated quickly cystitis can sometimes disappear on its own without the need to see a doctor. Women can try drinking plenty of water to help flush out the bacteria as well as taking a urinary alkaliniser. Urinary alkalinisers help neutralise the acid in the urine, making it more difficult for the bacteria to survive. They can also help relieve symptoms. Dissolve one level teaspoon of baking soda in a glass of water or use one of the preparations available from the chemist (eg. Ural).

If a woman is pregnant, her symptoms persist for longer than 24 hours or she has any fever, chills, back pain, nausea and vomiting (symptoms of a kidney infection) she needs to see her doctor. Cystitis during pregnancy can lead to high blood pressure and low birth weight. Apart from noting the symptoms, the doctor will ask questions to determine what may have contributed to an infection, including about a woman’s sexual history. The doctor will ask for a urine sample to test for the presence of bacteria. To be accurate, the urine sample should be what is referred to as ‘mid-stream’. A mid-stream urine sample aims to provide a specimen of urine without contamination from bacteria around the vagina. It involves allowing some urine to pass into the toilet before collecting the sample of urine. Other tests may also be performed to exclude the possibility of any other types of infection.

The doctor may perform a dipstick test on the urine sample to see if there are signs that a bacterial infection is present. The sample will then be sent to a laboratory for testing.

Treatment

Cystitis is treated with a course of antibiotics. Because the laboratory testing of the urine sample may take several days, the doctor will often prescribe a broad-spectrum antibiotic in the meantime to bring relief from symptoms and to stop any infection progressing. It is important that the complete antibiotic course be taken, even if the symptoms resolve, to prevent the infection recurring.

To get relief from symptoms, women can also:

• drink plenty of fluids
• reduce their intake of alcohol, tea and coffee as these can all irritate the bladder
• take urinary alkalinisers (see diagnosis section above)
• place a hot water bottle, wrapped in a towel, between the legs. This makes the skin around the urethral opening hotter than the urine and so can bring relief when urinating
• take mild painkillers for pain relief
• avoid eating foods that can irritate the bladder while infection is present. These include foods with high acid content and amino acids.

Women showing signs of a kidney infection should see a doctor as soon as possible.

Recurrent infections

Approximately 20% of women with a first urinary tract infection will experience a second within six months. Recurrent infections can lead to feelings of exhaustion and anxiety in women. Women who experience recurrent infections are encouraged to practice a number of preventive strategies (see below).

If the infection appears to relate to sexual activity women may be prescribed a single dose antibiotic to take after sex. Similarly, some women may also be given low dose antibiotics long term as a preventive measure.

If infections continue or there are complications, a referral to a urologist may be helpful. Tests may be conducted to ensure there are no abnormalities in the urinary system.

Prevention of recurrent infection

As a number of women will experience a subsequent cystitis infection, preventive strategies play an important role. While not all strategies are based on conclusive evidence they are sensible suggestions.

• Drink plenty of water—at least 2-3 litres a day.
• Urinate when you need to, avoid ‘holding on’ and ensure the bladder is emptied completely.
• Urinate after sexual activity—this can help flush out bacteria that may have entered the urethra during sex.
• Use a lubricant during sex—if vaginal dryness is a problem a water-based lubricant will reduce the chance of irritation or abrasions.
• If using a diaphragm and/or spermicide have the diaphragm checked to ensure it is the right size and fit. Alternatively, discuss with your doctor the possibility of using another form of contraception.
• Try cranberry products—cranberries contain a substance that prevents the E.coli bacteria from attaching to the cells which line the urinary tract. It is important to note that while cranberry products will help prevent cystitis, they are not effective as a treatment.
• Herbal medicines such as parsley, bearberry and golden seal are used to maintain healthy urinary function. Women seeking to use natural therapies to prevent cystitis recurrence should consult a qualified practitioner.
• Natural therapies such as acupuncture, acupressure, aromatherapy, naturopathy and reflexology are used to promote bladder and urinary tract health.
• Maintain a healthy immune system.
• In post-menopausal women application of vaginal oestrogen cream has been found to reduce the likelihood of recurrent cystitis infection. Possible side affects of vaginal oestrogen creams include breast tenderness, vaginal bleeding or spotting, discharge and irritation.
• Maintain a good pH balance in the vagina. A healthy vaginal discharge and balanced perineum environment contain microorganisms and an acidic pH environment that helps prevent bacteria sticking to the skin. An unhealthy vaginal pH level may lead to bacteria being more able to stick to the skin around the urethra, and therefore more able to travel up the urethra to the bladder. Wearing cotton underwear, quickly treating any vaginal infections such as thrush or trichomoniasis and keeping soaps and bubble bath away from the vagina may all assist in maintaining a healthy vaginal pH balance.
• When going to the toilet, wipe from front to back to minimise the risk of bacteria being transferred to the urethra.
• Avoid constipation.
Interstitial cystitis

Interstitial cystitis (IC) is a severe and chronic pain syndrome that affects the bladder. It is also referred to as ‘painful bladder syndrome’. The vast majority of IC sufferers are Caucasian women. It is thought that many cases of chronic pelvic pain are due to IC.

SYMPTOMS

Symptoms of IC include:

- frequent urination—including having to get up to go to the toilet during the night
- an urgent need to urinate
- pain (abdominal, urethral, vaginal or perineal).

Other characteristics of IC that may be present are a scarred or stiff bladder, glomerulations, (pain point bleeding), and ulcers (Hunner’s ulcers) and lesions in the bladder. The symptoms can be debilitating with many women unable to work full time and/or suffering from related mental and emotional health issues.

Women with IC generally experience pain when their bladder fills and find relief (temporarily) from this pain when they urinate. However, as the pain returns as soon as the bladder begins to fill again, women find themselves urinating very frequently to relieve the pain. Typically, a woman with IC will go to the toilet 16 times a day, but some sufferers go up to 40 times. As a consequence, they may suffer the effects of sleep deprivation. Women’s symptoms may be exacerbated with sexual activity and premenstrually.

DIAGNOSIS

It is common for IC to be initially diagnosed as bacterial cystitis. However, women with IC do not have bacteria in their urine and therefore do not respond to antibiotic therapy. Unfortunately, the diagnosis of IC often takes time as other possible causes are usually excluded first. On average it takes 3-7 years and 3-5 different practitioners before IC is diagnosed.

There is no single diagnostic test for IC. A thorough medical history, pelvic examination and urine studies are all important in the diagnosis of IC.

Upon a pelvic examination, 95% of IC sufferers will report tenderness at the base of the bladder. A cystoscopy with distention may also be performed; under general anaesthesia a long thin viewing device (cystoscope) is inserted through the urethra into the bladder. The bladder is then filled to high pressure with fluid or gas (distention).

The medical community has differing opinions on the suitability of other diagnostic tools for IC such as urodynamics, potassium sensitivity test (PST), questionnaire based scales (eg. Pelvic Pain and Urgency/Frequency) and biopsy of the bladder wall (to rule out bladder cancer). A number of clinical markers are currently being investigated.

CAUSES

The exact causes of IC are unknown, with a number of theories being investigated. Patients who suffer with IC appear to have an increased risk of having conditions such as endometriosis, irritable bowel syndrome (IBS) and migraines.

It is thought that the symptoms of IC may be caused by several types of abnormalities in the bladder. These abnormalities may relate to the bladder surface, to the blood supply to the bladder or to microorganisms present in the bladder. Some theories suggest that the immune system may play a role in some women with IC. Inflammation of the bladder may result from autoimmunity (where the body attacks its own healthy cells) or from the release of histamine from elevated numbers of mast cells in the bladder.

TREATMENT

The general aim of treatment is to help people manage their symptoms. Treatment recommendations are difficult due to the lack of good quality clinical trials. They will also depend on what is thought to potentially be causing symptoms to occur. As each woman’s case is different, preferred treatments will vary from woman to woman.

For some women the symptoms will stop after some time with the disease appearing to heal itself.

Conservative treatment options are often explored initially, with dietary changes being the most common. While diet is not a cause of IC, many women report that particular foods and fluids seem to exacerbate the symptoms. Foods often reported as aggravating symptoms include chilli, coffee, chocolate, carbonated drinks, citrus fruits, tomatoes and products containing artificial sweeteners. Women may find it helpful to keep a diary, recording what they eat and drink along with symptoms, to determine if there are particular foods/drinks they should avoid.

Drinking enough water (1.5 – 2 litres per day) is an important aspect of managing the symptoms of IC. Because women with IC experience pain when the bladder fills it is tempting to reduce the amount of water consumed. However, not drinking enough water can result in reduced bladder capacity as well as concentration of noxious agents in urine, which can worsen symptoms.

Smoking is also thought to exacerbate symptoms so quitting can be helpful. Some women find techniques to relax their pelvic floor including warm baths and massage are helpful in relieving symptoms.

Physical therapy to relax pelvic floor muscles can be beneficial. Myofascial release involves a physical therapist slowly massaging and stretching the pelvic floor muscles.

Bladder training may be helpful for those who have found a level of pain relief. It involves urinating to a schedule and gradually increasing the length of time between toilet visits. Techniques like pelvic floor contraction, distraction and breathing exercises are used to resist the urge to urinate before the scheduled time. A bladder diary can assist people to keep a track of their progress.

Participating in regular exercise may also assist, with low impact activities such as walking, yoga, swimming and cycling the most suitable.

While there is limited research on the use of complementary and alternative therapies in the treatment of IC, women report they are beneficial. Therapies with a focus on pain and stress relief may be most relevant. Women interested in using complementary and/or alternative therapies should consult a qualified practitioner.

Oral medications used to treat IC symptoms include those to coat the bladder surface, antihistamines and immunosuppressants as well as non-steroidal anti-inflammatory medications, muscle relaxants and antidepressants to reduce pain.

Following bladder distention for diagnostic purposes it was found that some women reported a decrease in symptoms. This has led to bladder distention being used as a treatment option. Bladder instillation involves filling the bladder with a solution and retaining it for a specific length of time before expelling it. The solution most commonly used...
used is dimethyl sulfoxide (DMSO), either alone or with other substances. Other solutions for use in bladder instillation are being investigated.

Transcutaneous Electrical Nerve Stimulation (TENS) is a treatment used to reduce pain by desensitising nerves. It involves sending small electrical pulses through electrodes placed on the skin and/or through devices inserted into the vagina.

Surgery is reserved for cases where all other treatment options have failed and in which the symptoms experienced are severe and disabling. Surgical treatments include the injection of steroids into the bladder, laser removal of bladder ulcers, bladder augmentation (plastic or reconstructive procedure on the bladder) and urinary diversion (creation of a new urine storage pouch) with or without the removal of the bladder. Sacral nerve stimulation, a variation of TENS, involving the surgical implantation of a permanent electrode, is also currently under investigation.

SUPPORT

People who suffer from IC may also benefit from joining a support group. A support group can provide people with opportunities to share information and management strategies as well as reduce feelings of isolation. There are a number of online support forums available to women (see Further reading section).

Further reading on interstitial cystitis

Interstitial Cystitis Association (US)
www.ichelp.org

Interstitial Cystitis Network (US)
www.ic-network.com

International Painful Bladder Foundation
www.painful-bladder.org

For help understanding this fact sheet or further information on cystitis or interstitial cystitis call the Health Information Line on 3839 9988 (in Brisbane) or 1800 017 676 (toll free outside Brisbane).

This is one of a series of women’s health information fact sheets available at www.womhealth.org.au.

A full list of references is available from Women’s Health or on the website.