



## Urinary Tract Infection and Acute Pyelonephritis 泌尿道感染與急性腎盂腎炎(英文)

### What are the urinary tract infection and acute pyelonephritis?

Urinary tract infection (UTI) is the infection of the urinary system which includes kidney, ureter, urinary bladder and urethra. It is frequently caused by the migration of the bacteria in the peri-anal and perineal region to the aseptic urinary tract. It can then result in ascending infection from the urethra all the way up to the kidney. It can be classified into lower and upper urinary tract infection. The lower urinary tract infection includes cystitis and urethritis which frequently manifested with increased urinary frequency, hematuria, turbid urine, painful urination, and lower abdomen pain. The upper urinary tract infection or acute pyelonephritis can manifest with flank pain, fever, chills and nausea. If treatment is delayed, it can result in renal abscess or severe systemic life threatening infection.

### The causes

There are many risk factors in UTI, including:

1. Gender: The women have much higher infection rate than men, because women's urethra is shorter than the men and have closer proximity to the anus, making it prone to bacterial migration.
2. Age: Among babies less than one year old, boys have more incidence of UTI than girls. After infancy, and during sexual active years, and pregnancy, the women have higher incidence of UTI than men. The infection risk of men increases as they get older because of enlarging prostate gland that can result in urinary retention and hence UTI.
3. Urinary tract obstruction caused by congenital urinary tract dysfunction or anatomic abnormalities, or urolithiasis.
4. Neurogenic bladder and prostate hypertrophy result in urinary retention.

5. Chronic disease such as diabetes mellitus and immunodeficiency.
6. Iatrogenic causes, such as cystoscopy or Foley catheter insertion.  
These procedures may increase the risk of urinary tract infection.

## Laboratory examinations

1. Routine Urine examination such as urinalysis.
2. Urine culture.
3. Other examinations such as pyelography or renal sonography may be needed for further evaluation of renal stone and anatomic abnormalities.

## The treatment

1. Antibiotics and anti-spasmodic drugs.
2. Increase oral fluids intake (2000 cc/day) for enhancing frequency and amount of urination. However, for the elderly and patients with heart disease, such increased fluids intake may not be appropriate for them and can result in fluid retention or even pulmonary edema. Consultation with cardiologist is recommended prior to such treatment approach.
3. Correct associated urine stone or anatomic anomaly that causes the UTI or acute pyelonephritis.

## The prophylaxis

1. Urinate frequently and avoid holding in pee.
2. Take vitamin C supplement and vegetables, fruits or cranberry juice containing vitamin C for acidification of the urine to reduce the growth of bacteria in urinary tract.
3. Avoid drinking coffee or wine.
4. Drink water before sexual intercourse; take a bath before and after sexual intercourse; urinate after sexual intercourse.
5. After defecation, avoid wiping the toilet paper from anus to the direction of vagina and urethra opening.
6. Shower is better than tub bath.
7. Keep the underwear dry and clean.
8. High-risk groups for urinary tract infection are hospitalized patients and patients with diabetes mellitus, urolithiasis, prostate hypertrophy, and pregnant women.
9. If there is an indwelling Foley catheter, it needs to be cleansed every day.
10. If there is recurrent urinary tract infection, urinary tract stone formation, anatomic abnormalities or voiding dysfunction must be considered. Consultation with urologist for further evaluation is advised.

## Conclusion

The recurrent rate of urinary tract infection is very high. Prevention is always better than treatment. In order to avoid UTI, it is important to maintain a healthy lifestyle, regular exercise, proper personal hygiene, balanced diet, adequate fluids intake, and good habit of urination.

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若有任何疑問，請不吝與我們聯絡  
電話：(04) 22052121 分機 3255  
HE-10022-E