## Urinary Tract Infection (Cystitis)

### Date Initial

**1. TYPICAL CLINICAL PRESENTATION** (Day 1)

- At least one criterion between 1-3 OR 4-7 must be present

  **NO indwelling catheter (1-3)**
  1. Acute dysuria or acute pain, swelling or tenderness of the testes, epididymitis or prostate.

  **2. Fever or leucocytosis & one localised urinary tract sub-criteria.**

  **3. In the absence of fever or leucocytosis, two or more localised urinary tract sub-criteria.**

  **Indwelling catheter (4-7)**
  1. Either acute change in mental status or acute functional decline, with no alternate diagnosis & leucocytosis.
  2. New onset supra-pubic pain or costo-vertebral angle pain or tenderness.
  3. Purulent discharge from around the catheter or acute pain, swelling or tenderness of the testes, epididymis or prostate.

### 2. INITIAL MANAGEMENT (Day 1)

- Fluid intake increased.
- Urinary dipstick test performed.
  - Results: Blood Leucocytes Nitrite PH Protein SG
- Treating Doctor informed.
- Provisional diagnosis (tick one only):
  - Cystitis Pyelonephritis Prostatitis Other
  - For cystitis only, proceed with clinical pathway.

### 3. MEDICAL MANAGEMENT (Day 1-2)

- MSU/CSU specimen ordered.
- MSU/CSU specimen collected.
- Antibiotic(s) prescribed.
- Antibiotics prescription consistent with Therapeutic Guidelines Antibiotic (TGA).

### 4. MICROBIOLOGICAL RESULT (Day 2-4)

- Not a significant result & initial antibiotics stopped or not initiated.
- Significant result & organism is susceptible to initial prescribed antibiotic(s).
  - Appropriate antibiotic(s) commenced.
- Significant result & organism is not susceptible to initial prescribed antibiotic(s).
  - Appropriate antibiotic(s) commenced.

**UTI classified as a recurrent infection**

See TGA for specific recommendations regarding recurrent infection (Page 332)

### 5. REASSESSMENT (>Day 3)

- UTI resolved without antibiotic use
- UTI resolved and antibiotic(s) ceased. Date
- UTI resolved yet prophylactic antibiotics commenced. Date
- UTI NOT resolved - Typical clinical presentation still evident.

### Practice points

- Diagnosis of a UTI is based on the presence of a typical clinical presentation.
- Screening for or treatment of asymptomatic bacteruria is not recommended.
- Urine alkalining agents may relieve the symptoms of a UTI.
- Fluid intake is increased unless the resident is on fluid restriction.
- Urinary dipstick testing is only ‘necessary’ if there is a typical clinical presentation.
- The treating Doctor should be informed with an immediacy dictated by the resident’s condition.
- A MSU/CSU should be collected BEFORE antibiotics are commenced.
- Specimens should be transported to Pathology within 30 minutes or if delayed, refrigerated asap.
- Antibiotic therapy should be guided by susceptibility results.
- Early treatment failure can be due to a resistant organism.
- The treating Doctor should be informed if at the completion of the first antibiotic course the clinical presentation is unchanged or worse.
- Reassessment of the medical management (antibiotic therapy) may be required.

### Comments

For further information contact your Infection Control Practitioner.

**ONCE COMPLETED**, this form is to be filed in resident’s medical record and a copy forwarded to your Infection Control Practitioner.
**DEFINITIONS**

- **Cystitis**  Inflammation of the bladder
- **Pyelonephritis**  Inflammation of the renal parenchyma, calyces & pelvis
- **Prostatitis**  Inflammation of the prostate gland

**Asymptomatic bacteruria**  The presence of bacteria in the urine of residents who do not have symptoms of a urinary tract infection. It occurs frequently in women, the elderly and in those with an indwelling catheter insitu.

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**Clinical presentation**

**Fever**
- Single oral temperature >37.8°C
- Repeated oral temperatures >37.2°C or rectal temperatures >37.5°C
- Single temperature >1.1°C over baseline from any site (oral, tympanic, axillary)

**Leucocytosis**
Increase in the number of leukocytes or white blood cells in the blood, not urine.

*As according to full blood examination (FBE) results*
- Neutrophilia (>7.5 x 10^9 g/L). Neutrophils are a common type of leucocyte.
- Left shift (>6% bands or ≥1,500 bands/mm³)  Left shift = increase in no. of immature leukocytes in the peripheral blood.

**Localised urinary tract sub-criteria**
- For residents with No indwelling catheter only - Acute costo-vertebral angle pain or tenderness
- Supra-pubic pain
- Gross hematuria
- New or marked increase in incontinence
- New or marked increase in urgency
- New or marked increase in frequency

**Significant microbiological results**

*NO indwelling catheter*
- At least 10^5 cfu/mL or 10^8 cfu/L of no more than two species of microorganism in a voided urine sample
- At least 10^5 cfu/mL or 10^8 cfu/L of any number of organisms in a specimen collected by in and out catheter

*Indwelling catheter*
- Urinary catheter specimen culture with at least 10^5 cfu/mL or 10^8 cfu/L of any organism(s)

**Classification**

**Recurrent UTI**: May be as a result of a relapse or re-infection
- >3 culture confirmed UTIs in 1 year with the same or different organisms, or
- >2 culture confirmed UTIs in 6 months with the same or different organisms

**Relapse UTI**
- Repeat infection with the same infecting organism, usually occurring within 4 weeks of previous UTI

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**Therapeutic Guidelines Antibiotic Recommendations: Acute cystitis**

**Female** (For non-pregnant women)
- Trimethoprim 300mg orally, daily for 3 days, OR
- Cefalexin 500mg orally, 12 hourly for 5 days, OR
- Amoxicillin+clavulanate 500+125 mg orally, 12 hourly for 5 days, OR
- Nitrofurantoin 100mg orally, 12 hourly for 5 days

Amoxicillin (without clavulanate) is only recommended if susceptibility of the organism is proven.

Quinolones should not be used as first line drugs as they are the only orally active drugs available for infections due to *Pseudomonas aeruginosa* and some other multi-resistant bacteria.

If resistance to all of the above drugs is confirmed and if the pathogen is susceptible, a suitable alternative is: Norfloxacin 400mg orally, 12 hourly for 3 days

**Male**
- Trimethoprim 300mg orally, daily for 7 days, OR
- Cefalexin 500mg orally, 12 hourly for 7 days, OR
- Amoxicillin+clavulanate500+125mg orally, 12 hourly for 7 days, OR
- Nitrofurantoin 100mg orally, 12 hourly for 7 days

If resistance to all of the above drugs is confirmed and if the pathogen is susceptible, a suitable alternative is: Norfloxacin 400mg orally, 12 hourly for 7 days

**Cautionary Note:**
Antimicrobial sensitivities and renal function must be considered when choosing therapy. Urine alkalinising agents do not affect the efficacy of the recommended antibiotics with the possible exception of nitrofurantoin (for which the rate of excretion may be increased). Citrates may reduce the solubility of ciprofloxacin or norfloxacin, in the urine; patients should be observed for signs of crystalluria and nephrotoxicity.


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