

COMPLICATED URINARY TRACT INFECTIONS (UTIs)

Complicated UTI (cUTI) occurs in an individual in whom factors related to the host (e.g. underlying diabetes or immunosuppression) or specific anatomical or functional abnormalities related to the urinary tract (e.g. obstruction, incomplete voiding due to detrusor muscle dysfunction) are believed to result in an infection that will be more difficult to eradicate than an uncomplicated infection.

Common factors associated with complicated UTIs:

Obstruction at any site in the urinary tract	UTI in males
Foreign body	Pregnancy
Incomplete voiding	Diabetes mellitus
Vesicoureteral reflux	Immunosuppression
Recent history of instrumentation	Healthcare-associated infections
Isolated ESBL-producing organisms	Isolated multi-drug resistant organisms

ESBL: extended-spectrum beta-lactamases

DIAGNOSTIC EVALUATION:

Clinical presentation

A cUTI is associated with clinical symptoms (e.g. dysuria, urgency, frequency, flank pain, costovertebral angle tenderness, suprapubic pain and fever), although in some clinical situations the symptoms may be atypical.

Urine culture

Laboratory urine culture is the recommended method to determine the presence or absence of clinically significant bacteriuria in patients suspected of having a cUTI. A broad range of micro-organisms cause cUTIs. The spectrum is much larger than in uncomplicated UTIs and the bacteria are more likely to be resistant

DISEASE MANAGEMENT:

- Appropriate management of the urological abnormality or the underlying complicating factor is mandatory.
- Optimal antimicrobial therapy for cUTI depends on the severity of illness at presentation, as well as local resistance patterns.
- Urine culture and susceptibility testing should be performed, and initial empirical therapy should be tailored and followed by (oral) administration of an appropriate antimicrobial agent.
- Treatment for 7 to 14 days (for men 14 days when prostatitis cannot be excluded), is generally recommended, but the duration should be closely related to the treatment of the underlying abnormality.

Recommendations	Strength rating
Use the combination of: <ul style="list-style-type: none"> • amoxicillin plus an aminoglycoside; • a second-generation cephalosporin plus an aminoglycoside; • a third-generation cephalosporin intravenously as empirical treatment of complicated UTI with systemic symptoms. 	Strong
Only use ciprofloxacin provided that the local resistance percentages are < 10% when; <ul style="list-style-type: none"> • the entire treatment is given orally; • patients do not require hospitalisation; • patient has an anaphylaxis for beta-lactam antimicrobials. 	Strong
Do not use ciprofloxacin and other fluoroquinolones for the empirical treatment of complicated UTI in patients from urology departments or when patients have used fluoroquinolones in the last six months.	Strong
Manage any urological abnormality and/or underlying complicating factors.	Strong

CATHETER-ASSOCIATED UTIS

Catheter-associated UTI (CA-UTI) refers to UTIs occurring in a person whose urinary tract is currently catheterised or has been catheterised within the past 48h.

EPIDEMIOLOGY, AETIOLOGY AND PATHOPHYSIOLOGY:

CA-UTI are the leading cause of secondary healthcare-associated bacteraemia. Approximately 20% of hospital-acquired bacteraemias arise from the urinary tract, and the mortality associated with this condition is approximately 10%.

- Urinary catheterisation perturbs host defence mechanisms and provides easier access of uropathogens to the bladder.
- Indwelling urinary catheters facilitate colonisation with uropathogens by providing a surface for the attachment of host cell binding receptors recognised by bacterial adhesins, thus enhancing microbial adhesion.
- Catheter associated UTIs are often polymicrobial and caused by multiple-drug resistant uropathogens.

DIAGNOSTIC EVALUATION:

Clinical presentation

Signs and systemic symptoms include new onset or worsening of fever, rigors, altered mental status, malaise, or lethargy with no other identified cause, flank pain, costovertebral angle tenderness, acute haematuria, pelvic discomfort and in those whose catheters have been removed dysuria, urgent or frequent urination and suprapubic pain or tenderness.

Laboratory diagnosis

Microbiologically, CA-UTI is defined by microbial growth of ≥ 103 cfu/mL of one or more bacterial species in a single catheter urine specimen or in a mid-stream voided urine specimen from a patient whose urethral, suprapubic, or condom catheter has been removed within the previous 48 hours

DISEASE MANAGEMENT:

Recommendations	Strength rating
Treat symptomatic catheter-associated-UTI according to the recommendations for complicated UTI (see section 3.7.5).	Strong
Take a urine culture prior to initiating antimicrobial therapy in catheterised patients in whom the catheter has been removed.	Strong
Do not treat catheter-associated asymptomatic bacteriuria in general.	Strong
Treat catheter-associated asymptomatic bacteriuria prior to traumatic urinary tract interventions (e.g. transurethral resection of the prostate).	Strong
Replace or remove the indwelling catheter before starting antimicrobial therapy.	Strong
Do not apply topical antiseptics or antimicrobials to the catheter, urethra or meatus.	Strong
Do not use prophylactic antimicrobials to prevent catheter-associated UTIs.	Strong
Do not routinely use antibiotic prophylaxis to prevent clinical UTI after urethral catheter removal.	Weak
The duration of catheterisation should be minimal.	Strong
Use hydrophilic coated catheters to reduce CA-UTI.	Strong
Do not routinely use antibiotic prophylaxis to prevent clinical UTI after urethral catheter removal or in patients performing intermittent self-catheterisation	Weak

Recommendations	Strength rating
Do not carry out routine urine culture in asymptomatic catheterised patients.	Strong
Do not use pyuria as sole indicator for catheter-associated UTI.	Strong
Do not use the presence or absence of odorous or cloudy urine alone to differentiate catheter-associated asymptomatic bacteriuria from catheter-associated UTI.	Strong