Guidelines for Recurrent Urinary Tract Infections in Adults: Antibiotic Prophylaxis

Definition of recurrent lower urinary tract infection:

The symptoms of a lower urinary tract infection include: frequency, dysuria, urgency and suprapubic pain. Recurrent lower urinary tract infection (rUTI) is defined as:

2 or more episodes of lower urinary tract infection in the last 6 months, OR 3 or more episodes of lower urinary tract infection in the last 12 months.

It does not include bacteriuria in the absence of symptoms or in catheterised patients i.e. asymptomatic bacteriuria. Asymptomatic bacteriuria should not be screened for or treated, unless prior to urological surgery or in pregnancy (positive cultures in pregnancy should be confirmed with a second culture confirming the same organism prior to treating).

1. Managing a patient who has had a prolonged course of prophylactic antibiotics:

1.1 Identifying patients for review:

- Patients should be reviewed after 3-6 months of prophylactic antibiotics with a view to stopping.
- Patients who have urine cultures confirming resistance to the prophylactic agent they are on, should have their prophylaxis stopped (exposure to antibiotic without benefit) and a clinical review to discuss ongoing management and/or need for referral.

1.2 Stopping continuous prophylaxis:

- The proportion of patients who will return to suffering rUTIs after stopping continuous prophylaxis may be around 50%.
- This means a significant number of patients are able to stop continuous prophylaxis without a return of symptoms and therefore avoid the risks of resistance emerging and side-effects.
- One option is to provide ‘standby’ antibiotics when stopping continuous prophylaxis which may give sufficient reassurance to patients for a trial off antibiotics.
• Consider referring patients who relapse after stopping continuous prophylaxis, if not already been investigated.
• Longer term prophylaxis may be helpful in those patients whose UTIs are suppressed when on prophylaxis and recur when prophylaxis is discontinued after 3-6 months.

2. **Consider whether referral is required for patient with recurrent UTIs:**

Consider whether the patient requires specialist referral for the following:

2.1 **Red Flags for Referral to Urology:**

- All men
- Frank haematuria, even in the context of confirmed UTI
- (refer to current ‘2 week wait’ guidelines for further information)
- Neurological disease e.g. spinal cord injury, spina bifida
- Pneumaturia or faecaluria
- Proteus on repeat urine cultures
- Suspected stone
- Obstructive symptoms, or structural/functional abnormality, causing >200ml residual urine on bladder scan

**In pregnancy:**
- All rUTIs in pregnancy should be discussed with the Obstetrics team.

2.2 **Consider risk factors:**

A sexual history and investigations for sexually transmitted infections should be performed if appropriate. In peri- and post-menopausal women, atrophic vaginitis may cause urinary symptoms and may increase the risk of bacteriuria.

2.3 **Microbiological Confirmation:**

Patients with rUTIs should have a mid-stream urine (MSU) sample sent for culture prior to antibiotics being initiated, in order to confirm infection and guide antibiotic therapy. Patients should be counselled on how to provide a specimen to minimise the chance of contamination. [http://patient.info/health/midstream-specimen-of-urine-msu](http://patient.info/health/midstream-specimen-of-urine-msu)

Urine cultures sent in the absence of symptoms are unlikely to be helpful, may detect asymptomatic bacteriuria and lead to inappropriate antibiotic use. Antibiotic treatment of asymptomatic bacteriuria is more likely to be harmful than beneficial.

‘Clearance’ cultures are not recommended if symptoms have resolved, with the exception of pregnant women.
3. Management of Initial Presentation of Recurrent UTI in non-pregnant females

The following conservative measures should be tried prior to antibiotic prophylaxis:

3.1 Conservative Measures:

- Encourage better hydration and more frequent voiding
- For sexually active women:
  - Advise post-coital voiding
  - Avoid use of contraceptive diaphragm and spermicide
- Avoid using cosmetic bath products or feminine hygiene douches.
- Perineal hygiene i.e. wiping front to back.
- Avoid using flannels. A clean non scented disposable wipe is preferable.

3.2 Intra-vaginal oestrogens:

- For post-menopausal women with rUTIs, consider intravaginal.

4. Antibiotic Prescribing Strategies

The relative risks and benefits of the following antibiotic prescribing strategies should be discussed with the patient. These strategies should be in addition to conservative measures. Some patients may find cranberry juice or products helpful, however the evidence for their benefit is variable and compliance is low, so they are not routinely recommended. It is also contraindicated in patients on Warfarin.

4.1 Standby Antibiotics

- If the patient is able to wait, infection should first be confirmed by MSU prior to commencing standby antibiotics.
- Consider giving TARGET – Treat Your Infection Patient Information Leaflet
- A patient advice sheet and boric acid container for pre-antibiotic MSU should be provided to the patient, see page 9.
- A ‘self-start’ course of antibiotics, prescribing an agent according to previous known sensitivities and choosing the narrowest spectrum agent available.
- Safety-net with advice to seek medical attention if they develop fever, loin pain, or symptoms are not improving by 48 hours.
- This option limits antibiotic exposure and risk of resistance emerging, and may be the more suitable option for patients with <1 UTI per month.
4.2 Post Coital Antibiotics
• For rUTIs that are triggered by sexual intercourse, this strategy is as effective as continuous antibiotic prophylaxis, and limits antibiotic exposure and risk of resistance emerging.

4.3 Continuous Antibiotic Prophylaxis
• Longer term antibiotic prophylaxis is strongly associated with the development of antimicrobial resistance.
• A 3-6 month trial of low-dose continuous antibiotic treatment may be beneficial if rUTIs are occurring ≥1 per month and are not triggered by sexual intercourse.
• Patients should be counselled at an early stage that antibiotic prophylaxis is not usually a lifelong treatment. Documenting and triggering a review date in the patient’s record, and on the repeat prescription, is strongly advised to avoid prolonged courses of antibiotics without review.

Choice of Agents:
Choice of antibiotic should be based on confirmed culture and sensitivity results (wherever possible), and consider the patient's co-morbidities, renal function and any contra-indicating factors. Trimethoprim and nitrofurantoin are licensed for the prophylaxis of rUTIs. Nitrofurantoin is the first line choice for antibiotic prophylaxis.

The risk of adverse effects (see box below), as well as common side-effects such as rashes, oral/vaginal thrush and gastro-intestinal upset, should be discussed with the patient. If resistance to trimethoprim and nitrofurantoin, other agents may be considered after discussion with Urology, Urogynaecology and/or Microbiology. Broader spectrum agents such as cefalexin, ciprofloxacin and co-amoxiclav have a higher risk of C. difficile diarrhoea and should not be routinely used for prophylaxis.
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<tr>
<th>Antibiotic</th>
<th>Dose</th>
<th>Cautions and Monitoring</th>
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| Nitrofurantoin      | 100mg immediate release One dose post-coital (off label) or nightly | - Avoid if renal function eGFR <45ml/min. Consider checking renal function prior to commencing continuous prophylaxis, especially in the elderly.  
- Avoid if G6PD deficiency.  
- Use with caution in anaemia, diabetes, vitamin B or folate deficiencies.  
- Monitor full blood count, renal function and liver function tests every 3-6 months  
- **Advise the patient on the risk of pulmonary and hepatic fibrosis, and the symptoms to report if they develop during treatment. Reactions can develop acutely or insidiously.**  
- Advise the patient on the risk of peripheral and optic neuropathy, and the symptoms to report if they develop during treatment. |
| Trimethoprim        | 100mg One dose post-coital (off label) or nightly | - Hyperkalaemia: caution when prescribing with drugs such as spironolactone, ACE inhibitor or angiotensin inhibitors.  
- Renal Impairment: Avoid if eGFR <15ml/min. Discuss with renal physician if eGFR <30ml/min. May increase serum creatinine.  
- Patients should be counselled on the risk of blood disorders and advised to seek attention if fever, sore throat, purpura, mouth ulcers, bruising or bleeding occurs. |
5. Managing ‘breakthrough’ UTIs in patients on antibiotic prophylaxis:

- The first breakthrough infection should be treated according to culture and sensitivity results, with the original prophylaxis being re-started once the infection has resolved if the culture confirms it is still sensitive to the prophylactic agent.
- If the culture shows resistance to the prophylactic agent, or multiple breakthrough UTIs occur (≥2 UTIs in 6 months), prophylaxis has therefore proved ineffective and should be stopped.
- Consider referral to Urology or Urogynaecology at this point if not already been.

6. Recurrent UTIs associated with urinary catheters:

- Cloudy or offensive urine alone does not merit treatment or investigation for UTIs in patients with urinary catheters.
- Do not use dipsticks to diagnose UTIs in patients with urinary catheters as symptomatic UTIs cannot be differentiated from asymptomatic bacteriuria on the basis of dipstick urinalysis.
- Look for associated localising or systemic features including flank pain, and exclude other potential sources of infection in catheterised patients who present with fever.
- In general, antibiotic prophylaxis does not significantly decrease symptomatic infections and increases the risk of antimicrobial resistance. It is therefore not usually recommended to reduce the frequency of UTIs in patients with urinary catheters.
- Seek explicit guidance from a microbiologist before commencing antibiotic prophylaxis in patients with a urinary catheter.
- Obtain a urine sample from the sampling port of the catheter using an aseptic technique (in line with the NICE guideline on healthcare-associated infection) and send for culture and susceptibility testing.
  - If the catheter has been changed, obtain the sample from the new catheter.
  - If the catheter has been removed obtain a midstream specimen of urine.
References


4. NICE Clinical Knowledge Summaries: https://cks.nice.org.uk/urinary-tract-infection-lower-women accessed 09/04/18


Summary of Management of Recurrent Lower UTIs (in non-pregnant adults):

- **No Breakthrough UTIs**
- **Breakthrough UTI whilst on continuous prophylaxis**

- > 3 symptomatic lower UTIs / 12 months or
- > 2 symptomatic lower UTIs / 6 months

Consider red flag indications for Urology referral

Advice on conservative measures

Consider risks and benefits with the patient of:

1. Stand-by antibiotics
2. Post-coital antibiotics (if associated with intercourse)
3. Trial of continuous antibiotics

For stand-by or post-coital antibiotics:
Review repeat prescriptions at 6 month to assess benefit and if any resistant urine cultures

Patients on continuous antibiotic prophylaxis

- Trial of 3-6 months of nightly antibiotics

- If recurrent UTIs return after stopping, consider referral.

- No Breakthrough UTIs

After 3-6 months, stop antibiotics

- Around half will not return to recurrent symptoms
- Consider offering stand-by antibiotics if patient concerned

- If more than one breakthrough UTI or the urine cultures are resistant to the prophylactic agent:
Antibiotic Prophylaxis has failed and should be stopped.
Consider referral if not already investigated.
You have been provided with a red-top urine sample pot and a stand-by pack of antibiotics.

**What to do if you experience urinary tract infection symptoms:**

1. Collect a mid-stream sample of your urine in the sample pot provided.
2. Place the pot of urine in a sealed plastic bag and hand in to the GP reception straight away. If there is a delay, store in the fridge and hand in on the next working day.
3. Take the first dose of the antibiotic supplied.
4. Follow the instructions for taking the full course of antibiotics.
5. Contact your GP practice to discuss the results of the urine culture (usually available 24-72 hours after handed into the practice), and to obtain a new sample pot and stand-by pack of antibiotics. The GP will check whether the same antibiotics are still appropriate for your next stand-by pack (if the antibiotic will still work against the bacteria in the urine).

**What to do if the symptoms of urinary tract infection do not improve:**

Your symptoms should start to improve once you start taking the antibiotics. If you have not improved within 48 hours, or the symptoms have got worse, or you feel feverish, develop new back pain or feel generally unwell, contact the GP practice, or call 111 if the GP practice is shut.

**Urinary Infections Diary**

<table>
<thead>
<tr>
<th>Date of start of symptoms</th>
<th>Date urine sample provided</th>
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