Guidelines for Recurrent Urinary Tract Infections in Adults:

Definition
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).

Referral
Consider whether the patient requires specialist referral for the following factors:

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
- All recurrent UTIs in pregnancy should be discussed with the Obstetrics team.

All patients to have a urinary tract ultrasound with post void residual

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.

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

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.
UTI (recurrent): antimicrobial prescribing

- **Non-pregnant woman**
  - Consider vaginal (not oral) oestrogen for postmenopausal women if behavioural and personal hygiene measures not effective or appropriate
  - Review within 12 months (or earlier if agreed)

- **If no improvement, consider single-dose antibiotic prophylaxis for exposure to an identifiable trigger**
  - If no improvement or no identifiable trigger, consider a trial of daily antibiotic prophylaxis
  - Refer or seek specialist advice if underlying cause unknown or cancer suspected

- **Pregnant woman, or Man, or Child or young person under 16 years, or Any person with recurrent upper UTI**
  - If no improvement after behavioural and personal hygiene measures, consider a trial of daily antibiotic prophylaxis with specialist advice

- **NICE uses ‘offer’ when there is more certainty of benefit and ‘consider’ when evidence of benefit is less clear.**

**Background**
- Recurrent UTI includes lower and upper UTI
- Recurrent UTI may be due to relapse (same strain of bacteria) or reinfection (different strain or species of bacteria)

**Self-care**
- Non-pregnant women may wish to try D-mannose
- Non-pregnant women may wish to try cranberry products (evidence uncertain)
- Under 16s may wish to try cranberry products with specialist advice (evidence uncertain)
- Advise people taking cranberry products or D-mannose about the sugar content of these products
- Inconclusive evidence for probiotics

**Treatments**
- Vaginal oestrogen - take account of severity and frequency of symptoms, risk of complications, benefits for other symptoms (vaginal dryness), possible adverse effects (breast tenderness and vaginal bleeding), unknown long-term endometrial safety and preferences for treatment
- Antibiotics - ensure any current UTI is treated and take account of severity and frequency of symptoms, risk of complications and long-term antibiotic use, previous urine culture and susceptibility results, previous antibiotic use, local antimicrobial resistance, and preferences for treatment

**Review at least every 6 months should include:**
- Assessing prophylaxis success
- Reminders about behavioural and personal hygiene measures, and self-care
- Discussing whether to continue, stop or change antibiotic prophylaxis

**H**
- Refer or seek specialist advice

**NICE National Institute for Health and Care Excellence**

- October 2018
## UTI (recurrent): antimicrobial prescribing

### Choice of antibiotic: people aged 16 years and over

<table>
<thead>
<tr>
<th>Antibiotic prophyaxis</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First choice</strong></td>
<td></td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>200 mg single dose when exposed to a trigger, or 100 mg at night</td>
</tr>
<tr>
<td>Nitrofurantoin - if eGFR ≥45 ml/minute</td>
<td>100 mg single dose when exposed to a trigger, or 50 to 100 mg at night</td>
</tr>
<tr>
<td><strong>Second choice</strong></td>
<td></td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>500 mg single dose when exposed to a trigger, or 250 mg at night</td>
</tr>
<tr>
<td>Cefalexin</td>
<td>500 mg single dose when exposed to a trigger, or 125 mg at night</td>
</tr>
</tbody>
</table>

1. See [BNF](#) for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breastfeeding.
2. Choose antibiotics according to recent culture and susceptibility results where possible, with rotational use based on local policies. Select a different antibiotic for prophylaxis if treating an acute UTI.

### Choice of antibiotic: children and young people under 16 years

<table>
<thead>
<tr>
<th>Antibiotic prophyaxis</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children under 3 months - Refer to paediatric specialist</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Children aged 3 months and over (specialist advice only) - First choice</strong></td>
<td></td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>3 to 5 months, 2 mg/kg at night (maximum 100 mg per dose) or 12.5 mg at night</td>
</tr>
<tr>
<td></td>
<td>6 months to 5 years, 2 mg/kg at night (maximum 100 mg per dose) or 25 mg at night</td>
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<tr>
<td></td>
<td>6 to 11 years, 2 mg/kg at night (maximum 100 mg per dose) or 50 mg at night</td>
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<tr>
<td></td>
<td>12 to 15 years, 100 mg at night</td>
</tr>
<tr>
<td>Nitrofurantoin - if eGFR ≥45 ml/minute</td>
<td>3 months to 11 years, 1 mg/kg at night</td>
</tr>
<tr>
<td></td>
<td>12 to 15 years, 50 to 100 mg at night</td>
</tr>
<tr>
<td><strong>Children aged 3 months and over (specialist advice only) - Second choice</strong></td>
<td></td>
</tr>
<tr>
<td>Cefalexin</td>
<td>3 months to 15 years, 12.5 mg/kg at night (maximum 125 mg per dose)</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>3 to 11 months, 62.5 mg at night; 1 to 4 years, 125 mg at night; 5 to 15 years, 250 mg at night</td>
</tr>
</tbody>
</table>

1. See [BNF for children](#) (BNFC) for appropriate use and dosing in specific populations, for example, hepatic impairment and renal impairment.
2. Choose antibiotics according to recent culture and susceptibility results where possible, with rotational use based on local policies. Select a different antibiotic for prophylaxis if treating an acute UTI. If 2 or more antibiotics are appropriate, choose the antibiotic with the lowest acquisition cost.

### Abbreviations:
- eGFR, estimated glomerular filtration rate.
- [BNF](#): British National Formulary.
- [BNFC](#): British National Formulary for Children.

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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.

- **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.

- **Continuous Antibiotic Prophylaxis**
  - Longer term antibiotic prophylaxis is strongly associated with the development of antimicrobial resistance.
  - A 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.

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 or changed.
- Consider referral to Urology at this point if not already been investigated.
Managing a patient who has had a prolonged course of prophylactic antibiotics:

Identifying patients for review:

- Patients should be reviewed after 6 months of prophylactic antibiotics with a view to stopping.
- 12 months is a suggested trigger for audit purposes for patients on long-term prophylaxis.
- 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.
Management of Recurrent Lower UTI’s (in non-pregnant adults) Referral Pro-forma

**STOP!** Prior to onward referral, please ensure you have followed the NICE guidance provided in these guidelines and the below steps have been taken.

<table>
<thead>
<tr>
<th>Have you?</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offered verbal advice to the patient about behavioural and personal hygiene measures, and self-care to reduce the risk of UTI.</td>
<td>☐</td>
</tr>
<tr>
<td>Provide the patient with the recurrent urinary tract infections information booklet?</td>
<td>☐</td>
</tr>
<tr>
<td>Considered vaginal (not oral) oestrogen for post-menopausal women if behavioural and personal hygiene measures not effective or appropriate? (Review within 12 months, or earlier if agreed)</td>
<td>☐</td>
</tr>
<tr>
<td>Considered <strong>single-dose</strong> antibiotic prophylaxis (<em>first choice: Trimethoprim or Nitrofurantoin, second choice: Amoxicillin or Cefalexin</em>) for exposure to an identifiable trigger?</td>
<td></td>
</tr>
<tr>
<td><strong>Advised patient:</strong></td>
<td>☐</td>
</tr>
<tr>
<td>• How to use</td>
<td></td>
</tr>
<tr>
<td>• Possible adverse effects of antibiotics, particularly diarrhoea and nausea</td>
<td></td>
</tr>
<tr>
<td>• Returning for review within 6 months</td>
<td></td>
</tr>
<tr>
<td>• Seeking medical help if symptoms of an acute UTI develop</td>
<td></td>
</tr>
<tr>
<td>If no improvement or no identifiable trigger from single-dose antibiotic considered a trial of <strong>daily</strong> antibiotic prophylaxis?</td>
<td></td>
</tr>
<tr>
<td><strong>Advised patient:</strong></td>
<td>☐</td>
</tr>
<tr>
<td>• Risk of resistance with long-term antibiotics</td>
<td></td>
</tr>
<tr>
<td>• Possible adverse effects of long-term antibiotics</td>
<td></td>
</tr>
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<td>• Seeking medical help if symptoms of an acute UTI develop</td>
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</tbody>
</table>

**Always refer or seek specialist advice if underlying cause unknown or cancer is suspected**
References
Urinary tract infection (recurrent): antimicrobial prescribing NICE guideline [NG112]
Published date: October 2018 accessed online https://www.nice.org.uk/guidance/ng112
July 2019

*Original version was provided by Nottingham Area Prescribing Committee for editing into a version that could be used for Joined Up Care Derbyshire. Permission has been granted for the original document to be used as necessary.*