Recurrent Urinary Tract Infections in Urogynaecology - Full Clinical Guideline

Gynae/07:22/U4

Contents

1. 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 [1]

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) [2].

2. Abbreviations

MSU - Midstream Urine
rUTI - Recurrent Urinary Tract Infection
UTI - Urinary Tract Infection

3. Consider whether Referral is Required for Patient with Recurrent UTIs

Consider whether the patient requires specialist referral for the following factors1, 3:

Red Flags for Referral to Urology:

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

4. 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.

5. 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[3]. Patients should be counselled on how to provide a specimen to minimise the chance of contamination.
https://www.uhdb.nhs.uk/pathology-test-database

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.[4]
'Clearance' cultures are not recommended if symptoms have resolved, with the exception of pregnant women.

6. Management of Initial Presentation of Recurrent UTI in Non-Pregnant Females

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

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.
- Non-pregnant women may wish to try D-mannose
- Non-pregnant women may wish to try cranberry products (evidence uncertain)
- Advise people taking cranberry products or D-mannose about sugar content of these products
- Inconclusive evidence for probiotics

Intra-Vaginal Oestrogens:

- For post-menopausal women with recurrent UTIs, consider intravaginal oestrogens[4].
  (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.

7. 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 recommended6. It is also contraindicated in patients on Warfarin.

- **Standby Prescription**
  - If the patient is able to wait, infection should first be confirmed by MSU prior to commencing standby antibiotics.
  - A patient advice sheet and boric acid container for pre-antibiotic MSU should be provided to the patient, see pages 9-11.
  - 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.

- **Post Coital Antibiotics**
  - For rUTIs that are triggered by sexual intercourse, this strategy is as effective as continuous antibiotic prophylaxis[7], 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 trigger 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.

Stopping continuous prophylaxis
It is understandable for patients to be anxious about a return to frequent UTIs after stopping continuous prophylaxis. However, a prolonged period of antibiotic treatment may allow bladder epithelial healing, reducing the risk of future UTIs when antibiotics are then stopped.

- The proportion of patients who will return to suffering recurrent UTIs after stopping continuous prophylaxis may be around 50%.[7]
- 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 6 months.

UTI (recurrent): antimicrobial prescribing

NICE National Institute for Health and Care Excellence

Choice of antibiotic: people aged 16 years and over

Antibiotic prophylaxis[1,2]	Dosage[3]
First choice	
Trimethoprim[4]	200 mg single dose when exposed to a trigger, or 100 mg at night
Nitrofurantoin - if eGFR ≥45 ml/minute[5]	100 mg single dose when exposed to a trigger, or 50 to 100 mg at night
Second choice	
Amoxicillin[6]	500 mg single dose when exposed to a trigger, or 250 mg at night
Cefalexin	500 mg single dose when exposed to a trigger, or 125 mg at night

[1] See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breast-feeding.
[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.
[3] Doses given are by mouth using immediate-release medicines, unless otherwise stated.
[4] Teratogenic risk in first trimester of pregnancy (folate antagonist; BNF, August 2018). Manufacturers advise contraindicated in pregnancy (trimethoprim summary of product characteristics).
[5] Avoid at term in pregnancy; may produce neonatal haemolysis (BNF, August 2018).
[6] Amoxicillin is not licensed for preventing UTIs, so use for this indication would be off label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

Abbreviations: eGFR, estimated glomerular filtration rate.

Choice of antibiotic: children and young people under 16 years

Antibiotic prophylaxis[1,2]	Dosage[3]
Children under 3 months - Refer to paediatric specialist	
Children aged 3 months and over (specialist advice only) - First choice	
Trimethoprim[4]	3 to 5 months, 2 mg/kg at night (maximum 100 mg per dose) or 12.5 mg at night 6 months to 5 years, 2 mg/kg at night (maximum 100 mg per dose) or 25 mg at night 6 to 11 years, 2 mg/kg at night (maximum 100 mg per dose) or 50 mg at night 12 to 15 years, 100 mg at night
Nitrofurantoin – if eGFR ≥45 ml/minute[5]	3 months to 11 years, 1 mg/kg at night 12 to 15 years, 50 to 100 mg at night
Children aged 3 months and over (specialist advice only) - Second choice	
Cefalexin	3 months to 15 years, 12.5 mg/kg at night (maximum 125 mg per dose)
Amoxicillin[6]	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

[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.
[3] The age bands apply to children of average size and, in practice, the prescriber will use the age bands in conjunction with other factors such as the severity of the condition and the child's size in relation to the average size of children of the same age. Doses given are by mouth using immediate release medicines, unless otherwise stated.
[4] Teratogenic risk in first trimester of pregnancy (folate antagonist; BNFC, August 2018). Manufacturers advise contraindicated in pregnancy (trimethoprim summary of product characteristics).
[5] Avoid at term in pregnancy; may produce neonatal haemolysis (BNFC, August 2018).
[6] Amoxicillin is not licensed for preventing UTIs, so use for this indication would be off label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

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If resistance to both first line agents, 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.

8. 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/Urogynaecology at this point if not already been investigated

9. 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 (refer to 'Stopping Continuous Prophylaxis' above).
- 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.

10. References

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2. Nicolle, L. E., Bradley, S., Colgan, R., Rice, J. C., Schaeffer, A., & Hooton, T. M. (2005). Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. *Clinical Infectious Diseases*, 643-654.

3. NICE Clinical Knowledge Summaries: https://cks.nice.org.uk/urinary-tract-infection-lower-women#!scenario:2 accessed 23/11/16

4. Scottish Intercollegiate Guideline Network Clinical Guideline 88. Management of Suspected Bacterial urinary Tract Infection. Updated 2012.

5. Public Health England. Diagnosis of UTI. Quick Reference Guide for Primary Care. Updated 2011.

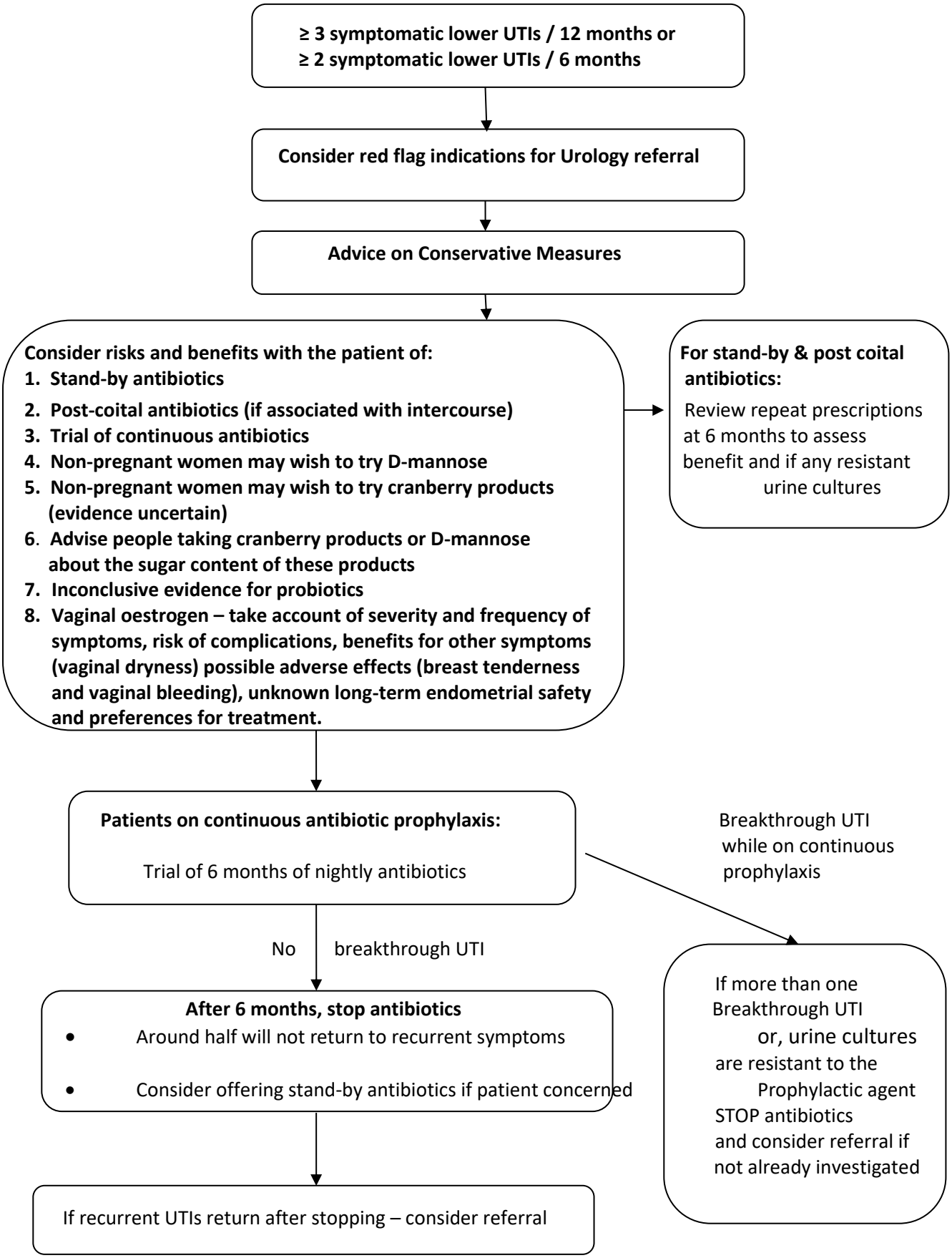
6. Jepson RG, Williams G, Craig JC. Cranberries for preventing urinary tract infections. Cochrane Database of Systematic Reviews 2012, Issue 10. Art. No.: CD001321. DOI: 10.1002/14651858.CD001321.pub5

7. Albert X, Huertas I, Pereiro I, Sanfélix J, Gosalbes V, Perrotta C. Antibiotics for preventing recurrent urinary tract infection in non-pregnant women. Cochrane Database of Systematic Reviews 2004, Issue 3. Art. No.: CD001209. DOI: 10.1002/14651858.CD001209.pub2

8. Lee BSB, Bhuta T, Simpson JM, Craig JC. Methenamine hippurate for preventing urinary tract infections. Cochrane Database of Systematic Reviews 2012, Issue 10. Art. No.: CD003265. DOI: 10.1002/14651858.CD003265.pub3

9. NICE Guidance / ng112

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



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