NHS
South Yorkshire
Integrated Care Board

Primary Care Antimicrobial Prescribing Guidance

Barnsley Supporting Information

This guideline has been developed to provide supporting information for the safe and effective prescribing of antimicrobials in Barnsley **and should be read in conjunction with the latest version of the NICE/PHE *Summary of antimicrobial prescribing guidance – managing common infections.*** The *Summary* is a rapid reference containing recommendations around antimicrobial prescribing for a range of different infections and is updated at least quarterly. The *Summary* is currently hosted on the BNF.org website at the following link:

https://www.bnf.org/news/2021/07/29/bnf-hosts-antimicrobial-summary-guidance-on-behalf-of-nice-and-phe/

The link is also available on the BEST website:

Antimicrobial prescribing guidance summary - managing common infections Prescribing guideline (barnsleyccg.nhs.uk)

Date Ratified by Area Prescribing Committee: 12th April 2023 (minor amendment Sept 2023 and June 2024)

Date to be Reviewed: April 2026

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1.0 Introduction

Antimicrobial stewardship is an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobial drugs to preserve their future effectiveness. Antibiotic resistance has been recognised as a major public health concern by the World Health Organisation and the UK government. It has been estimated that 80% of all antibiotics are prescribed in the community, and that 50% of these are probably unnecessary. The approach to prescribing in line with the principles of antimicrobial stewardship recommended for primary care is as follows:

- Prescribe an antibiotic only if there is likely to be a clear clinical benefit.
- Consider a no, or delayed (back up), antibiotic strategy for acute self-limiting respiratory tract infections (e.g. acute sore throat, acute bronchitis, acute otitis media and acute sinusitis).
- Limit prescribing over the phone to exceptional cases.
- Use simple generic antibiotics if possible. Avoid broad-spectrum antibiotics (for example, coamoxiclav, quinolones and cephalosporins) if narrow-spectrum antibiotics remain effective, because the former increase the risk of Clostridium difficile, methicillin-resistant Staphylococcus aureus (MRSA) and antibiotic resistant urinary tract infections.

AVOID / DO NOT:

- Use longer courses than are necessary;
- Use combinations where a single drug would be equally effective;
- Prophylactic use of antibiotics unless of proven benefit.
- Avoid widespread use of topical antibiotics (see below for further notes)

Deferred /back- up scripts and patient information leaflets

The use of deferred / back up scripts for other indications of doubtful value (e.g. otitis media) is one method of managing patient expectation. Retaining the prescription in the surgery for future collection is more successful. Providing the patient with an appropriate information leaflet such as the TARGET 'Treating your Infection' leaflet can increase the patient's confidence to self-care and can help facilitate the use of a back-up antibiotic prescription.

For example, the Treating Your Infection Respiratory Tract Infection (TYI-RTI) leaflet is available on the TARGET website at the following link:
Respiratory tract infection resource suite: Patient facing materials (rcgp.org.uk)

The Treating Your Infection Urinary Tract Infection (TYI-UTI) leaflets are available on the TARGET website at the following link: Urinary tract infection resource suite: Patient facing materials (rcgp.org.uk)

Topical antibiotics

Should be used very rarely, if at all (eye infections are an exception). For wounds, topical antiseptics are generally more effective. Avoid widespread use of topical antibiotics (especially those agents also available as systemic preparations, e.g. fusidic acid). Topical antibiotics encourage resistance and may lead to hypersensitivity.

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RCGP TARGET Antibiotics Toolkit

The toolkit has been developed by the RCGP, PHE and The Antimicrobial Stewardship in Primary Care (ASPIC) in collaboration with professional societies including GPs, pharmacists, microbiologists, clinicians, guidance developers and other stakeholders.

The aim of the toolkit is to provide a central resource for clinicians and commissioners about safe, effective, appropriate and responsible antibiotic prescribing:- http://www.rcgp.org.uk/targetantibiotics

1.1 Prescribing in penicillin allergy

Clinicians and other prescribers e.g. nurses must obtain a detailed history of the nature of reported antibiotic reactions to ensure optimal therapy is prescribed. Intolerance to penicillins e.g. GI upset or thrush does not constitute allergy. Document drug allergies and nature in medical notes.

Severe penicillin allergy (Type I hypersensitivity): symptoms occur within 72hrs of administration: pruritus; flushing; urticaria (hives); angioedema; laryngeal oedema; bronchospasm; hypotension.

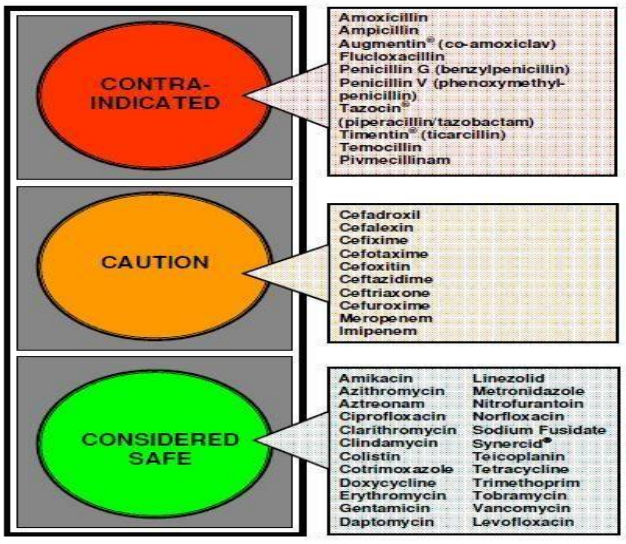
- Non-severe infections: avoid all penicillins, cephalosporins and carbapenems.
- Life threatening infections: if use of a non-beta-lactam antibiotic is suboptimal seek senior advice.

Mild penicillin allergy: symptoms occur >72 hours from exposure e.g. maculopapular or morbiliform rash.

Idiopathic reactions to antibiotics e.g. Stevens-Johnson syndrome, toxic epidermal necrolysis or other exfoliating dermatoses: Do not give a related antibiotic again (e.g. any beta-lactam antibiotic, including Aztreonam, after reaction to penicillins) because re-exposure can trigger recurrence. Patients with erythema multiforme minor or drug fever are also usually managed with avoidance.

For IgE-mediated allergy, cross-reactivity between penicillins and cephalosporins is now thought to be between 0.5% and 6.5%. Patients with IgE-mediated allergy to amoxicillin/ampicillin should not receive a cephalosporin with a similar side-chain, e.g. cefalexin. Cephalosporins with different side-chains, e.g. ceftriaxone, cefixime, are unlikely to produce allergic reactions in penicillin- or amoxicillin-allergic patients.

It is the responsibility of both the prescriber and dispenser to be aware of the patient's allergy status. If unsure a microbiologist can advise on a suitable alternative antibiotic.



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1.2 Pregnancy

The following are believed to be safe in pregnancy:

Penicillins, cephalosporins, erythromycin and nitrofurantoin (for nitrofurantoin only: not after the 8th month).

In pregnancy AVOID tetracyclines, aminoglycosides, quinolones and high dose metronidazole (2g single dose).

Short-term use of nitrofurantoin is unlikely to cause problems to the foetus. Nitrofurantoin has not been associated with any increased risk of congenital malformations. Significant placental transfer does not occur. At term, theoretical risk of neonatal haemolysis. It has been associated with haemolysis in people with glucose-6phosphate deficiency (G6PD), however the risk is very small because placental transfer is so low.

Trimethoprim, a folate antagonist, should be avoided in the first trimester of pregnancy. In the second and third trimester Trimethoprim unlikely to cause problems unless there is poor dietary folate intake or the patient is taking another folate antagonist, e.g. antiepileptics such as phenytoin, sodium valproate or primidone.

Quinolone antibiotics should be avoided in pregnancy and breastfeeding.

Rifampicin has caused teratogenic effects in animal studies in high doses and may increase the risk of neonatal bleeding.

Tetracyclines have been associated with dental discolouration and should not be used in pregnancy or breastfeeding.

1.3 Contraception

The latest recommendations for antibacterials that do not induce liver enzymes are when they are used with combined oral contraceptives no additional contraceptive precautions are required unless diarrhoea or vomiting occur. It is also currently recommended that no additional contraceptive precautions are required when contraceptive patches or vaginal rings are used with this type of antibacterials.

Women taking combined hormone contraceptives who required enzyme-inducing antibacterials e.g. rifampicin should be advised to change to a contraceptive method that is unaffected by enzyme-inducers e.g. some parenteral progesterone only contraceptives or intra-uterine devices for the duration of treatment and for 4 weeks after stopping. If a change in contraceptive method is undesirable or inappropriate, please see BNF under ‘Combined hormonal contraceptives – Interactions’ for further information.

1.4 Interaction with warfarin and other anticoagulants

Experience in anticoagulant clinics suggests that the INR can be altered by a course of most antibiotics. Increased frequency of INR monitoring is necessary during and after a course of antibiotics until the INR has stabilized. Patients should be advised to be vigilant for any signs of increased bleeding. If increased bleeding occurs then the patient should be advised to contact the GP or anticoagulant clinic to arrange additional INR testing and dose review. Cephalosporins, erythromycin, clarithromycin (and other macrolide), ciprofloxacin and trimethoprim seem to cause a particular problem.

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1.5 Prevention of *Clostridium difficile* (C.diff) infection

There must be a clear indication for antibiotic use, particularly in the vulnerable elderly population. The risk factors for acquiring C.difficile infection are as below:-

- **Age** - incidence is much higher in patients aged >65 years
- **Underlying disease** - patients with chronic renal disease, underlying gastrointestinal conditions, and oncology patients
- **Antibiotic therapy** - patients who have recently received or who are receiving antibiotic therapy, especially broad-spectrum antibiotics such as extended-spectrum cephalosporins e.g. (cefotaxime, cefuroxime, cefixime), clindamycin,co-amoxiclav and quinolones (e.g. ciprofloxacin) both in the community and hospital. C. difficile infection has been associated with oral, intramuscular and intravenous routes of administration of the antibiotics.
- **Duration of hospital stay** - Patients who are frequently in hospital, or who have a lengthy stay in hospital.
- **Other medication** - patients receiving anti-ulcer medications including antacids and proton pump inhibitors (e.g. omeprazole).
- **Nasogastric tubes** - patients undergoing treatments requiring nasogastric tubes.
- **Surgery** – patients who have had surgery on the digestive system.

1.6 Barnsley Formulary considerations, antibiotic drug range and dosing frequency

When using the NICE/PHE Summary of antimicrobial prescribing guidance, consideration should also be given to the Barnsley Formulary (Barnsley Area Joint Formulary Formulary (barnsleyformulary.nhs.uk)).For example; consider the Self-Care guidance for minor conditions such as oral thrush and threadworm, and in the case of azelaic acid prescribing for acne vulgaris, the first line choice is azelaic acid 20% cream (Skinoren®) and the second line choice is azelaic acid 15% gel (Finacea®), if stock of the first line choice is unavailable. Every effort has been made to include the antimicrobials within the NICE/PHE Summary on the Barnsley Formulary where appropriate but if you notice a discrepancy please contact Joanne Howlett, Medicines Management Pharmacist joanne.howlett2@nhs.net or Deborah Cooke, Lead Pharmacist deborah.cooke@nhs.net.

Where a drug range is given in the NICE/PHE summary e.g. erythromycin 250mg to 500mg QDS **or** 500mg to 1000mg BD, local microbiologists advise the higher dose particularly in patients with a high BMI. Similarly with dosing frequency, local microbiologists would recommend the greater frequency of dosing e.g. cefalexin 500mg TDS instead of 500mg BD.

1.7 Useful contact numbers

- Main Bacteriology Laboratory (BHNFT)– enquiries and results: 01226 432687
- Virology Laboratory (BHNFT): 01226 432726
- Dr J. Rao Consultant Medical Microbiologist and Director of Infection Control – 01226 432749 or Bleep 207 via switchboard (01226 730000)
- Dr Y.M. Pang Consultant Medical Microbiologist – 01226 434986 or bleep 207
- Secretary to Consultant Microbiologist and Infection Control (BHNFT) – ext. 2825
- Public Health England (South Yorkshire for Barnsley area)- 0114 3211177

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2.0 Supporting Information for NICE/PHE antimicrobial prescribing guidance

2.1 Acute Otitis Media

- Caused by respiratory viruses in 50% of cases. Illness resolves over 4 days in 80% without antibiotics. Optimise analgesia using NSAID or paracetamol.
- In patients who are not acutely unwell, delayed prescription approach could be used.
- In March 2022, NICE (NG91) reviewed the evidence and added a recommendation on eardrops containing an anaesthetic and an analgesic because a licensed preparation, Otigo® (phenazone 40 mg/g with lidocaine 10 mg/g), is now available. Otigo® (4 drops two or three times a day for up to 7 days) can be considered when an immediate antibiotic is not given and there is no eardrum perforation or otorrhoea. Review treatment if symptoms do not improve at 7 days or worsen at any time.
- Antibiotics should be used in an acutely ill child – fever, vomiting, pain for >48 hours and a discharging ear.
- Recurrent Otitis media: Seek advice from ENT specialist and Consultant microbiology. Do not initiate long-term antibiotics.

2.2 Acute Otitis Externa

- Avoid oral antibiotics wherever possible.
- Local treatment of aural toilet (gentle dry mopping, gentle syringing and suction where available).
- Local treatment of aural toilet should be carried out before the use of topical agents or oral antibiotic.
- Send swab for culture in severe cases (cellulitis/disease extending outside ear canal) and patients with diabetes or immunocompromised.
- In severe cases refer to specialist ENT to exclude malignant otitis externa.

2.3 Chronic Otitis Externa

- No antibacterials or antifungals are normally needed. Treat flares as for acute otitis externa.
- Consider referral to ENT specialist if:
  - Does not respond to appropriate treatment in primary care/contact sensitivity is suspected and patch testing would be useful to guide further management.
  - Ear canal is occluded or becomes occluded
  - Malignant otitis externa is suspected

2.4 Community Acquired Pneumonia (CAP)

- Microbiological investigations are not recommended routinely for those managed in the community. Only consider investigation if no response to antibiotic treatment after 48hr of antibiotic.
- Mycoplasma infections are rare in over 65s.
- Investigation for Mycobacterium tuberculosis should be considered for patients with persistent productive cough especially associated with weight loss, night sweats or if other risk factors exist.

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2.5 COVID and Influenza

As part of the winter plan GP practices should ensure viral swabs are available, not out of date and encourage swabbing in care homes as part of the respiratory viral/flu season.

2.6 Epididymitis and Epididymo-Orchitis

Patient presents with acute scrotal pain: EXCLUDE TESTICULAR TORSION
Torsion is more common in men who are younger than 20 years but it is important to recognise it can occur at any age. Testicular torsion is the most important differential diagnosis. It is a surgical emergency. It should be considered in all patients and should be excluded first as testicular salvage IS REQUIRED WITHIN 6 HOURS and becomes decreasingly likely with time.

Patients with severe epididymo-orchitis or features suggestive of bacteraemia may require in patient management.

Clinical Assessment
Likely STI (Gonorrhoea (GC) / Chlamydia) cause: younger age, high risk sexual history, no previous UTI/catheterisation/instrumentation, urethral discharge.

Likely Coliform organism cause: Older age, low risk sexual history, previous urological procedure/UTI, no urethral discharge, urine dipstick positive.

Laboratory Investigations
1. All patients: MSU
2. If likely STI:
    a) First voided urine (white sterile universal container, patient must not urinate for at least 1 hour before sample collection) for Chlamydia PCR and
    b) Urethral swab (Fine Wire Mini Tips) for Gonococcal gram stain and culture
    c) Consider HIV test

Commence empirical antibiotics for all patients with epididymo-orchitis.

Follow up is required
If suspecting STI cause: refer patient to GUM clinic.
If suspecting coliform cause: Follow-up with GP by day 3, checking clinical progress and MSU result. If there is no improvement in the patient's condition after 3 days, the diagnosis should be reassessed.

Most likely due to a sexually transmitted pathogen: **Discuss empirical antibiotic choice** with GUM and also refer patient to GUM clinic. Antibiotics used for sexually transmitted pathogens may need to be varied according to local knowledge of antibiotic sensitivities.

Most likely due to Coliform organisms: Ciprofloxacin** 500mg PO BD 10 days
**Risk of tendon damage with quinolones increases with age and steroid use. It may occur within 48hr of starting antibiotic.

2.7 Urinary Tract Infections

- Resistance and E. Coli bacteraemia in the community is increasing. ALWAYS safety net by checking previous microbiology urine culture results and consider the risks for resistance.
- Risk factors for increased resistance: care home resident, recurrent UTI (2 in 6 months, ≥3 in 12 months), hospitalisation for >7 days in the last 6 months, unresolving urinary symptoms, recent travel to a country with increased resistance, previous UTI resistant to trimethoprim, cephalosporins or quinolones.

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2.8 Recurrent Urinary Tract Infection (UTI) (Non pregnant women)

Adapted from Nottinghamshire Guidelines for Recurrent Urinary Tract Infections in Adults: Antibiotic Prophylaxis
uti-prophylaxis.pdf (nottsapc.nhs.uk)

Definition of recurrent UTI: Patients with 2 or more UTI episodes over a 6 month period or 3 or more UTI over a 12 month period. (It does not include episodes of bacteriuria without UTI symptoms, asymptomatic bacteriuria or in catheterised patients)

Nightly antibiotic prophylaxis reduces UTIs but increases risk of adverse effects e.g. Clostridium difficile or antibiotic associated diarrhoea and long-term compliance poor with increase resistance in organisms isolated.

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

Rule out **"red-flag"** factors (patients presenting with recurrent urinary tract infection) requiring specialist referral (e.g. urology referral):-

- Pregnancy - all recurrent UTIs in pregnancy should be discussed with the obstetrics team
- All Male patients
- Neurological disease (spina bifida, spinal cord injury)
- Suspected stone
- Proteus on repeat urine cultures
- Pneumaturia (air in urine) or faecaluria
- Obstructive symptoms, or structural/functional abnormality, causing ≥200ml residual urine on bladder scan
- History of frank haematuria even in the context of confirmed UTI (refer to current '2 week wait' guidelines
- Persistence of microscopic haematuria (dipstick positive) in the absence of UTI
- Symptoms persisting for greater than 7 days

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 recurrent UTIs 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.

2. Conservative Management of Initial Presentation of Recurrent UTI in non-pregnant females prior to prophylaxis prescribing:

- 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.

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Recurrent UTI Prophylaxis 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/tablets or D-mannose products helpful (available to purchase; do not prescribe), however the evidence for their benefit is variable and compliance is low, so they are not routinely recommended. Cranberry juice/tablets are contraindicated in patients on Warfarin.

Summary of Prescribing Strategy Options (refer to NICE/PHE Summary)	
Consider prescribing a vaginal oestrogen in post-menopausal women	
Standby Antibiotics	A 'self-start' course of antibiotics if <1episode a month
Post Coital Antibiotics	For recurrent UTIs that are triggered by sexual intercourse
Continuous Antibiotic Prophylaxis	Continuous low-dose antibiotic prophylaxis
Continuous Urinary Antiseptic Prophylaxis	Continuous prophylaxis with methenamine hippurate can be considered as a first-line alternative to continuous antibiotic prophylaxis (NICE guidance currently being updated. See below for further information*)

Standby Antibiotics

- 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.
- 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.
- Review repeat prescriptions at 6 month to assess benefit and if any resistant urine cultures.

Post Coital Antibiotics

For recurrent UTIs that are triggered by sexual intercourse, this strategy is as effective as continuous antibiotic prophylaxis, and limits antibiotic exposure and risk of resistance emerging.

Review repeat prescriptions at 6 month to assess benefit and if any resistant urine cultures.

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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 recurrent UTIs 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 (at 6 months) in the patient's record, and on the repeat prescription, is strongly advised to avoid prolonged courses of antibiotics without review. Antibiotic prophylaxis should be stopped at 6 months unless breakthrough UTIs (see below).

***Continuous Urinary Antiseptic Prophylaxis (Methenamine Hippurate)**

- Methenamine Hippurate (methenamine in combination with hippuric acid) is a urinary antiseptic agent that is converted to formaldehyde in an acidic urine environment which is directly toxic to bacteria.
- A randomised control trial in 2022 (ALTAR trial) demonstrated methenamine hippurate was non-inferior to prophylactic antibiotics for reducing the incidence of symptomatic UTIs over a 12-month period BMJ.
- Using continuous methenamine prophylaxis instead of long-term prophylactic antibiotic treatment, reduces the risk of developing antimicrobial resistance.
- Methenamine can be considered as a first-line alternative to continuous antibiotic therapy for UTI prevention in non-pregnant women. NICE are updating the guideline on recurrent UTI, the focus of the update being on methenamine as prophylaxis NICE surveillance decision.
- A trial of 6 months methenamine can be considered and then reviewed with a view to stopping prophylaxis unless breakthrough UTIs (see below).
- **Methenamine should NOT be used for the treatment of UTIs.**
- There is some evidence that methenamine requires an acidic urine for its antimicrobial activity BNF. In the ALTAR study, the value of urinary acidification was not explored (despite the practice of some clinicians to advise vitamin C alongside methenamine hippurate to encourage acidic urine). The SPC suggests that the hippuric acid part acts to keep the urine acidic.
- The dose of methenamine is 1g twice a day in adults (in adult patients with catheters the dosage may be increased to 1g three times daily).
- Cautions and monitoring (This list is not exhaustive. Refer to the BNF and SPC for a complete list):
  - Check baseline LFTs, U&Es and eGFR.
  - Not for the treatment of UTI.
  - Avoid in patients with a history of febrile UTI or previous urosepsis.
  - Contra-indications: Gout, metabolic acidosis, severe dehydration.
  - Renal impairment: Avoid if eGFR <10ml/min
  - Hepatic impairment: Avoid.
  - Pregnancy: Preferable to avoid as inadequate evidence of safety.
  - Uncommonly can cause epigastric discomfort and skin reactions.
  - Methenamine should not be administered concurrently with sulphonamides (e.g. co-trimoxazole)

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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%.
- 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
- Consider referring patients who relapse after stopping continuous prophylaxis, if not already been investigated.
- Longer term prophylaxis with an antibiotic or methenamine may be helpful in those patients whose UTIs are suppressed when on prophylaxis and recur when prophylaxis is discontinued after 6 months.

3. Managing 'breakthrough' UTIs in patients on a continuous prophylactic agent

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 to an alternative prophylactic agent (antibiotic or methenamine).
- Consider referral to Urology at this point if not already been investigated.

Methenamine prophylaxis

- The breakthrough infection should be treated according to culture and sensitivity results if available
- Methenamine prophylaxis should be continued alongside the antibiotic course for the breakthrough infection if there has been a good response
- If multiple breakthrough UTIs occur (≥2 UTIs in 6 months), methenamine should be stopped or changed to an alternative prophylactic agent (antibiotic)
- Consider referral to Urology at this point if not already been investigated

4. Managing a patient who has had a prolonged course of a continuous prophylactic agent

Antibiotic prophylaxis

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.

Methenamine prophylaxis

Identifying patients for review:

- Patients should be reviewed after 6 months of prophylactic methenamine with a view to stopping
- If the patient starts to suffer from recurrent UTIs again and methenamine was effective previously, this can be restarted. Consider referral for investigation (if the patient has not already been investigated)

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General principles of urine sampling and culture.

MSUs sent in the absence of symptoms are unlikely to be helpful and may be counterproductive. Presence of bacteriuria in the absence of symptoms of UTI (i.e. asymptomatic bacteriuria) does not need treatment except in certain key groups (e.g. pregnant women). Antibiotic treatment of asymptomatic bacteriuria is more likely to be harmful than beneficial.

Do not send urine for culture in asymptomatic elderly women and men > 65years old with positive dipsticks. Only send urine for culture if there are signs of lower urinary tract infections (frequency, dysuria or new onset of confusion).

Follow-up urine samples to check for clearance are usually not indicated, except when treating asymptomatic bacteriuria in pregnancy.

Patients with consistently **sterile urine (absence of white blood cells in urine microscopy)** but with persistent symptoms of dysuria and lower urinary tract symptoms should be assessed for other diagnoses including urethral diverticulum or bladder pathology (consider specialist referral e.g. urology) or screened for sexually transmitted disease (STI) where appropriate.

All patients with **long-term indwelling urinary catheters have bacteriuria** and therefore urine dipstick and/or microscopy are not useful in making a diagnosis of catheter-associated UTI. Inappropriate use of multiple antibiotic treatments may not eradicate colonising bacteria but will induce multi-resistance. Symptoms suggestive of a UTI in a catheterised patient are: new costovertebral or suprapubic tenderness; rigors; delirium; fever; features of systemic inflammatory response syndrome. Send a catheter sample of urine (CSU) for culture if patient has symptoms suggestive of UTI.

DO NOT collect 'routine' CSU samples from catheterised patients. If done incorrectly this procedure may introduce infection to the urinary tract. CSU samples should only be sent if the urinary tract is a suspected source of the systemic infection.

2.9 Genital Tract Infections

Contact UKTIS (UK Teratology Information Service: 0844 892 0909) for information on foetal risks if patient is pregnant.

Only treat those who are unlikely to attend - the use of antibiotics will affect screening results. In order to prevent re-infection and treatment failure it is important to treat the patient and their sexual partner(s), plus advise to avoid sexual contact during treatment. Pregnant patients need follow-up to ensure successful eradication of infections (ideally by GUM clinic).

Always culture for gonorrhoea and chlamydia. If gonorrhoea likely (partner has it, severe symptoms, sex abroad), resistance to quinolones is high, use ceftriaxone regimen or refer to GUM. 28% of gonorrhoea isolates now resistant to quinolones.

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2.10 Bacterial Vaginosis

Confirm diagnosis: Charcoal swab from anterior fornix, Exclude STI, Chlamydia/ gonorrhoea NAAT test on low vaginal swab, Syphilis and HIV blood tests (brown bottle)

General advice: Use moisturising soap substitute (e.g. aqueous cream) to wash

No need to do test cure if symptoms resolve

Recurrent Bacterial Vaginosis
Discuss management with gynaecologist or GUM Specialist. Consider referral

2.11 Vaginal Candida

1. Candida glabrata is usually sensitive to azoles, although longer courses of treatment may be required. Candida krusei is intrinsically resistant to fluconazole (Discuss with microbiologist) Refer to BASHH guidelines for the management of non-albicans types

2. For those without clearance of symptoms, cetirizine 10 mg once daily may be useful to use alongside maintenance.

3. Topical clotrimazole may sometimes cause worsening of symptoms (can cause vulvovaginal irritation)

General advice:

Use moisturising soap substitute (e.g. aqueous cream) to wash

Recurrent Candida:

More than 4 episodes per year, with at least partial resolution between episodes, and a moderate/heavy growth of Candida on at least two occasions when symptomatic

Exclude other causes of itch - Dermatitis, eczema, lichen sclerosis

Confirm diagnosis:
Bacterial Charcoal swab from anterior fornix. Request TYPE for non-albicans species.

Exclude STI:
Chlamydia/gonorrhoea NAAT test on low vaginal swab

Syphilis and HIV blood tests (brown bottle)

Exclude underlying causes - Diabetes, immune suppression, steroid use, antibiotics, high Oestrogen (OCP, HRT)

Consider FBC, RBS

After a six-month period of suppression, if episodes are infrequent manage each episode individually. If recurrent candida infection is re-established, suppressive therapy can be recommenced

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2.12 Gastrointestinal Tract Infections

- Please state clinical details e.g. patient has travelled abroad or are a known contact so that other specific pathogens are looked for in stool sample.
- Indicate in clinical details i.e. recent hospitalisation, recent antibiotics use within last 8 weeks, previous Clostridium difficile infection or colonisation, on proton pump inhibitors and recent chemotherapy.
- Fluid replacement essential.
- Antibiotic therapy is not usually indicated as it only reduces diarrhoea by 1-2 days in uncomplicated infections and can cause bacterial resistance. If severe diarrhoea present or if patient systemically unwell discuss with Consultant Microbiologist.
- Antibiotic therapy is contraindicated if patient is infected with Escherichia coli (E.coli) O157 as it can lead to Haemolytic Uraemic syndrome.
- Please notify known or suspected cases of food poisoning or infectious bloody diarrhoea to local Public Health England team (Tel: 0114 321 1177) and seek advice on exclusion of patients with diarrhoea. Send stool samples in these cases.
- Prescribers are reminded to check ICE regularly for results following the initial sample request in order to ensure prompt treatment for C.diff infection. Microbiology will not routinely phone the results through to the Practice.
- CAMPYLOBACTER - Antibiotics are NOT usually indicated. Antibiotics may be indicated if systemically unwell (High fever / bloody diarrhoea / > 8 stools per day / worsening clinical condition / ill for > 7 days / pregnancy / immunocompromised)

2.13 Clostridium difficile

Fidaxomicin has an Amber-G classification on the Barnsley Formulary. Amber-G guidance is available at the following link: Fidaxomicin Amber G Guideline Shared care guideline (barnsleyccg.nhs.uk)

The APC agreed that primary care clinicians with the appropriate knowledge and competencies can initiate fidaxomicin in line with NICE guidance NG199 Clostridioides difficile infection: antimicrobial prescribing (nice.org.uk). Fidaxomicin can also be prescribed on the advice of the microbiologist.

2.14 Skin Infections

Tick Bites (Lyme disease)

Prophylaxis not routinely recommended in Europe

If **immunocompromised**, consider prophylactic doxycycline. Risk increased if high prevalence area and longer tick is attached to the skin. Only give prophylaxis within 72 hours of tick removal. Give safety net advice about erythema migrans and other possible symptoms which may occur within 1 month of tick removal

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2.15 MRSA Swabbing and Decolonisation

MRSA Swabbing

Please note:
Bacterial swabs in the charcoal transport medium must be used.
The tip of the swab should be moistened with 0.9% sodium chloride (sterile saline) when taking nose and skin swabs.

Specimens to be taken:

It is important that patients do not do their own swabs as poor technique may give a false negative result.

Nose: use one swab for both nostrils (moisten swab with sterile saline).
Groin: Use one swab for both sides (moisten swab with sterile saline).
Skin lesions/wound swab: one swab for each site. Sites should be clearly identified. Swab should be moistened with sterile saline and rubbed into the area.
CSU: In catheterised patients. Ensure correct technique is used and the sample is not taken from the drainage bag.
All manipulated sites e.g. IV-line site, tracheostomies, peg site etc.
Sputum depending on clinical presentation for example a productive cough

Decolonisation

All adult first isolate MRSA positive patients should be prescribed the following decolonisation regime in an attempt to eradicate or a least temporarily suppress MRSA.
For a first isolate decolonisation treatment should be given for all sites regardless of where positive, for example nasal treatment and body decolonisation should be given for a wound swab along with octenillin wound irrigation and a review for systemic antibiotics. If any subsequent decolonisation is required treat the positive site only.

Procedure	Product	Directions	Duration
Nasal Clearance	Mupirocin cream 2% (Bactroban R)	Apply to both nostrils 3 times day	**5 days**
	Naseptin® (Chlorhexidine dihydrochloride 0.1%w/w/ Neomycin sulphite 0.5%w/w) nasal cream. **Caution** Naseptin is contra indicated if the patient has a peanut allergy	Apply to both nostrils 4 times day	**10 days**
	Octenisan® nasal gel Apply BD (Water based gel, can be used with nasal oxygen cannulae)	Apply to both nostrils twice daily	**5 days**
Daily shower/bath	4% chlorhexidine wash **This is considered 1st line treatment, please assess skin integrity of patient prior to prescribing this treatment**	Moisten the skin, apply the wash, and leave for 1-3min After each wash, clean clothing, bedding and towels should be used.	**5 days**

	Octenisan® solution 2%	Thoroughly apply product directly on to wet skin covering all areas, paying particular attention to the axilla, groin and perineal area; allow 1minute contact time then rinse. After each wash, clean clothing, bedding and towels should be used.	**5 days**
Hair wash	4% chlorhexidine wash **1st line** Octenisan® solution 2%	Wash hair with the product twice during this period Wash hair with the product twice during this period	**5 days** **5 days**
If throat positive	Chlorhexidine spray (Corsodyl®) Three times daily	Three times daily	**5 days**
If wound swab positive	Octenilin® wound irrigation	If infected systemic antibiotics may be required	**Based on wound assessment may continue for the duration of systemic antibiotics**

Following completion of the above treatment please assess if a re screen for MRSA is required, generally this is not considered necessary for colonisation. If a re screen is deemed necessary leave 2-3 days before repeating swabs. Nose, groin, wound, urine if catheterised, any manipulated site, any other previously positive site and throat swab for those with dentures, must be sent. If found to positive again repeat the decolonisation regime. If still positive after second decolonisation contact Community IPCT or the medical microbiologist for further advice.
Please note it is now not considered necessary to swab patients in the community until 3 negative screens are obtained, however treatment should consider any risk factors, for example indwelling devices that may put the patient at higher risk of developing an MRSA bacteraemia.

Please find below the guidance used to support this document.

MRSA guidance.pdf

Patient MRSA leaflet is available at the link below

mrsa-positive-leaflet-final.pdf (his.org.uk)

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3: Appendix A

CLINICAL GUIDELINE:

SIMPLE MANAGEMENT OF COMMON INFECTIONS

INTRODUCTION

Prescribing for respiratory and urinary tract infections accounts for 65% of all antibiotic use in the UK. Many of these conditions are highly likely to be due to viral infection or be self-limiting conditions with a low absolute risk of complications.

Prescribing antibiotics widely in these cases increases resistance (a major threat to public health) and puts patients at risk of adverse reactions from the treatment that may be worse than the infection itself! On average 1 patient in 17 prescribed an antibiotic suffers a significant adverse effect.

Often the problem for professionals is working out which infections are most likely to be bacterial or who may develop a complication. This guideline aims to provide some simple techniques to assist this process and support a decreased use of antibiotics in conditions where they are often not required.

NB: Doses stated are for adults (except otitis media) and are subject to the normal cautions and contraindications – refer to SPC.

ACUTE OTITIS MEDIA

- **Serious complications are rare;** initial antibiotic treatment does not prevent them all anyway and there is no difference in incidence between antibiotic and placebo treated patients.
- No difference in complication rate between UK and Holland (where very few get antibiotics)
- **60% resolve in 24 hours with no antibiotic treatment**
- **For one child to have no pain at 2-7 days need to treat 17 with antibiotics or about 5 with paracetamol or ibuprofen**
- **If treat 17 with antibiotics, one will suffer significant harm as a result**
- **Any benefit from antibiotics appears to be confined to children with a high temperature or vomiting** (NNT = 5); others do not benefit compared to placebo
- Decongestants and antihistamines appear to offer little benefit

MANAGEMENT: Routinely offer paracetamol or ibuprofen; offer to reassess children again if necessary. **Consider using delayed prescriptions (3 days) in borderline cases if symptoms worsen: many parents do not collect them. Consider antibiotics if any of the following are present:**

- child <2 years,
- bilateral infection,
- systemically unwell,
- temperature >38.5ºC.
- Chronic or Purulent discharge

Reserve antibiotics for those with fever or vomiting

1st line: add Amoxicillin (125-500mg TDS for 5 days depending on age/severity) to analgesia.

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SORE THROAT

- **Serious complications are rare**; initial antibiotic treatment does not prevent them all
- **Need to treat 190 people to prevent a case of otitis media** resulting from a sore throat
- **Treating 190 people is likely to cause 11 to come to significant harm** as a result
- **90% of people are better at 7 days** whether treated or not
- **Those given antibiotics are more likely to come back again** - avoid one repeat attendance for every 9 patients not given an antibiotic

Antibiotics may only shorten the course of the illness by 8 hours overall, compared to placebo.

Paracetamol and ibuprofen also shorten the duration of symptoms

MANAGEMENT: Offer analgesia routinely. Use criteria below to determine who is at higher risk:

a) Fever in last 24 hours	Score +1
b) Purulence	Score +1
c) Attend rapidly under 3 days	Score +1
d) Severely inflamed tonsils	Score +1
e) No cough or coryza	Score +1

If patient scores 4: then the chance of infection with streptococci is about 62-65%. Use immediate antibiotic if severe, or 48 hour short delayed prescription. Avoid amoxicillin / ampicillin – risk of rash if glandular fever.

Patients scoring 2-3: The chance of infection with streptococci is between 34-40%. Use 3 day delayed prescription or no antibiotic strategy.

Patients scoring 0-1: The chance of infection with streptococci is between 13-18%. Use NO antibiotic strategy.

ACUTE SINUSITIS

- Diagnosis based on clinical signs and symptoms but **only 30-40% of patients have a bacterial infection**
- Up to **80% resolve in 14 days** with no treatment
- In a group of patients treated with decongestants and steam, **antibiotics conferred no extra benefit than a placebo (but caused harm)**

MANAGEMENT: Symptoms lasting less than 10 days in adults and 10-14 days in children are unlikely to be bacterial – **offer analgesia routinely**.
For longer lasting symptoms consider an antibiotic:
1st line: add phenoxymethylpenicillin (500mg QDS for 5 days)

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SIMPLE COUGH OR PNEUMONIA?

Risk depends on patient characteristics and signs / symptoms.

The **CRB65** score helps to assess the severity of the condition. **Each element present scores 1:**

Confusion AMT<8 **R**espiratory rate>30/min **B**P systolic<90 or diastolic≤60 Age≥**65** years

CRB65= 0 suitable for home treatment
CRB65= 1-2 Moderate Severity
CRB65= 3-4 High Severity

CRB65 score is calculated by giving 1 point for each of the following prognostic features:

confusion (abbreviated Mental Test score 8 or less, or new disorientation in person, place or time)[b]
raised respiratory rate (30 breaths per minute or more)
low blood pressure (diastolic 60 mmHg or less, or systolic less than 90 mmHg)
age 65 years or more.

Patients are stratified for risk of death as follows:
0: low risk (less than 1% mortality risk)
1 or 2: intermediate risk (1-10% mortality risk)
3 or 4: high risk (more than 10% mortality risk).

The **Abbreviated Mental Test** (AMT) is used to assess the level of confusion (see box below):

The Abbreviated Mental Test (AMT)

- What is your age?
- What is the time to the nearest hour?
- Give the patient an address and ask him or her to repeat it at the end of the test.
- What year is it?
- What is the name of the hospital or number of the residence where the patient is situated?
- Can the patient recognize two persons (the doctor, nurse, home help, etc.)?
- What is your date of birth?
- In which year did the First World War begin (adjust this for a world event the patient would have known during childhood)?
- What is the name of the present monarch (head of state, etc.)?
- Count backwards from 20 down to 1.

Pneumonia is more likely if:

- Fever (also beware of hypothermic patients)
- Tachycardia (> 100-125 beats per minute) Tachypnoea (> 24 breaths per minute)
- New focal chest signs
- Confusion of recent onset
- Hypotension (SBP < 90 and/or DBP <60 mmHg)
- Increasing age (especially above 70)
- Very young (under 1 year)
- Presence of co-morbidities
- Pleuritic chest pain

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Pneumonia is less likely if:

Rhinorrhoea, Sore throat or Colour of sputum does **NOT** indicate higher risk of pneumonia or need for antibiotics

MANAGEMENT: If following all present, pneumonia unlikely:

a) Pulse ≤ 100 beats per minute

b) Respiratory rate ≤ 24 breaths per minute

c) Oral temperature ≤ 38ºC

d) No signs of focal consolidation on chest exam

In acute bronchitis antibiotics are of little benefit: only reducing the duration of coughing and feeling ill by about half a day. For every 17 treated one will suffer significant harm as a result.

No evidence of benefit with beta-2 agonists in patients with no evidence of airways obstruction.

Patient Advice

Explain to patients with community-acquired pneumonia that after starting treatment their symptoms should steadily improve, although the rate of improvement will vary with the severity of the pneumonia, and most people can expect that by:

- 1 week: fever should have resolved
- 4 weeks: chest pain and sputum production should have substantially reduced
- 6 weeks: cough and breathlessness should have substantially reduced
- 3 months: most symptoms should have resolved but fatigue may still be present
- 6 months: most people will feel back to normal.

Advise patients with community-acquired pneumonia to consult their healthcare professional if they feel that their condition is deteriorating or not improving as expected.

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3: Appendix B

SIMPLE URINARY TRACT INFECTION

Non-recurrent (<3 per year) lower urinary tract symptoms (cystitis) in non-pregnant women 16-65 years old.

- **50% of cases are non-bacterial**
- **Of the 50% that are bacterial, half resolve by 3 days without treatment anyway**
- **Bacteriuria in the elderly and patients who are catheterized is common and does not require treatment if the patient is systemically well**

Bacterial UTI less likely if: Absence of dysuria, history of vaginal discharge, history of vaginal irritation

Send MSSU if: Treatment failure or persistent symptoms, GU abnormalities or renal impairment

MANAGEMENT: In patients with typical symptoms of UTI consider waiting until 3 days to see if it resolves. Offering a delayed prescription with reassurance and advice (below) may be of use.

Where antibiotics being considered:

- **Urine dipstick positive** for blood, nitrite and leucocyte esterase
- **All negative:** 95% chance is not a bacterial UTI; reassure and offer advice
- **Positive nitrite with positive or negative leucocyte esterase and protein:** probable bacterial UTI, offer antibiotics and advice
- **Negative nitrite and positive leucocyte esterase:** clinical decision based on symptom set, consider watchful waiting (with delayed prescription) or empirical antibiotics, send MSSU, offer advice
- **Negative nitrite and leucocyte esterase with positive blood or protein:** consider other diagnosis, review symptoms, consider MSSU, empirical treatment if appropriate
- **If dipstick testing not available:** make clinical decision based on symptom set

Whether or not prescribing antibiotics **advise: fluids, urinary alkalisers, hot water bottle and analgesics.**

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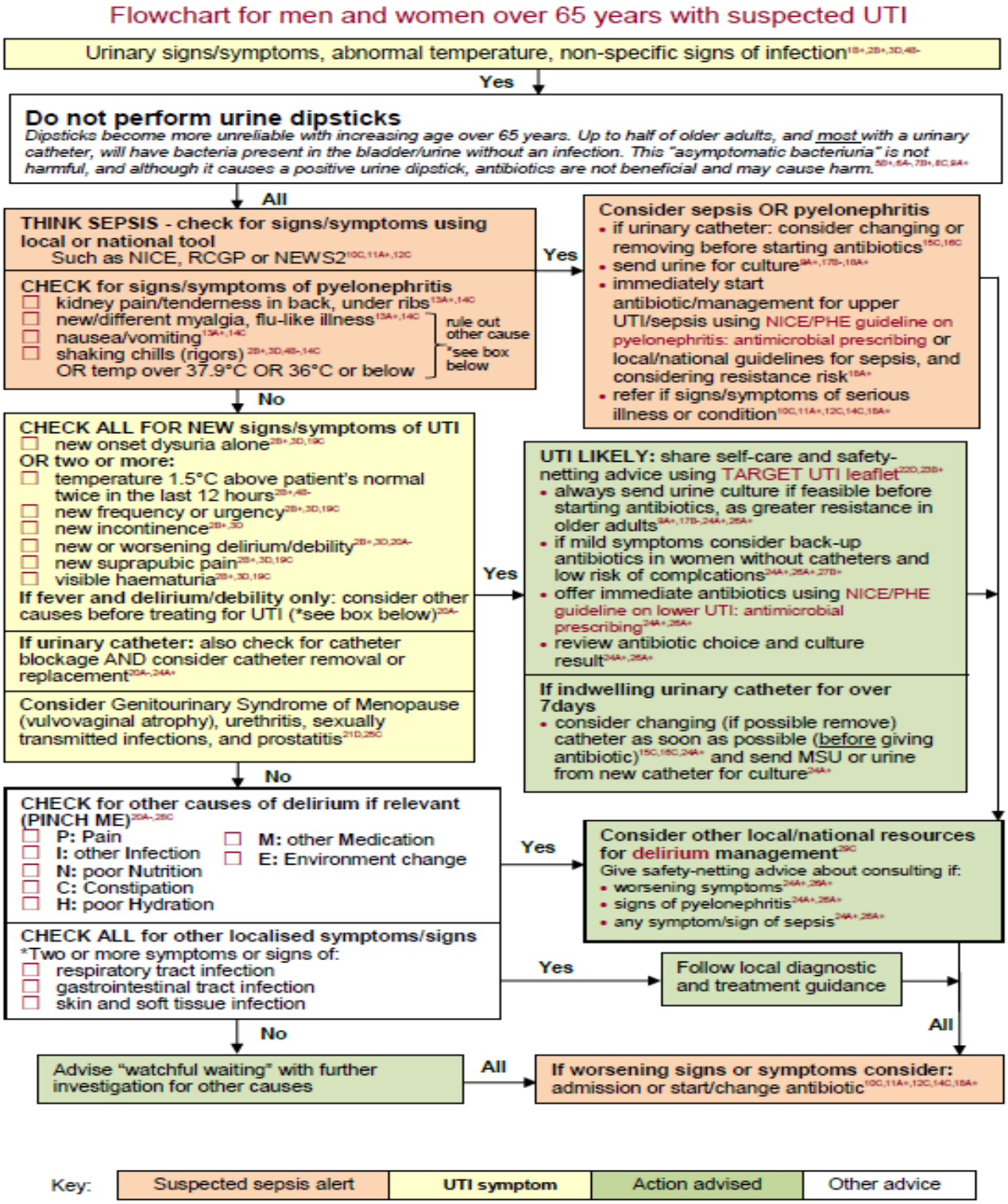
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755889/PHE_UTI_flowchart_-_over_65.pdf

Diagnosis of urinary tract infections: quick reference tool for primary care



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Diagnosis of urinary tract infections: quick reference tool for primary care

Table summary of flowchart for those over 65 years with suspected UTI

Men and women over 65 years may present with:

- ☐ localised signs or symptoms of a UTI including new onset dysuria; incontinence; urgency[1B+]
- ☐ temperature: 38°C or above; 36°C or below; 1.5°C above normal twice in the last 12 hours[2B+,3D,4B-]
- ☐ non-specific signs of infection: for example delirium; loss of diabetic control[2B+,3D,4B-,20A-,30D,31D]

Do not perform urine dipstick as they become more unreliable with increasing age over 65 years

- up to half of older adults in long term care facilities, and most of those who have had a urinary catheter for over 30 days, will have bacteria present in the bladder/urine without an infection[6C]
- this so called asymptomatic bacteriuria is not harmful, and although it causes a positive urine dipstick, antibiotics are not beneficial[5B+,6A-,7B+,8C, 9A+]

Use symptoms and signs to determine the most appropriate management

First think sepsis: check for signs using local or national tool such as NICE, RCGP or NEWS2[10C,11A+,12C]

Exclude pyelonephritis checking for any 1 sign:

- ☐ kidney pain/tenderness in back, under ribs[13A+,14C]
- ☐ new/different myalgia, or flu-like symptoms[1B+,14C]
- ☐ nausea/vomiting[1B+,14C]
- ☐ shaking chills (rigors) or temp over 37.9°C or 36°C or below [2B,3D,4B,14C]

If signs of sepsis or pyelonephritis
(if no kidney pain rule out other localised infection *see symptoms of other infection box below*):

- if urinary catheter for more than 7 days: consider changing or removing as soon as possible and before starting antibiotics[15C,16C]
- send urine for culture[9A+,17B-,18A+]
- assess antibiotic resistance risk and immediately start antibiotic for upper UTI/sepsis using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing or local/national guidelines for sepsis[18A+]
- refer if signs or symptoms of serious illness or condition[10C,11A+,12C,14C,18A+]

Then check all for NEW URINARY symptoms/signs

- ☐ NEW onset dysuria alone[2B,3D,19C]

OR 2 or more new:

- ☐ temperature: 1.5°C above normal twice in the last 12 hours[2B+,4B-]
- ☐ new frequency or urgency[2B+,3D,19C]
- ☐ new incontinence[2B+,3D]
- ☐ new or worsening delirium/debility[2B+,3D,20A-]
- ☐ new suprapubic pain[2B+,3D,19C]
- ☐ visible haematuria[2B+,3D,19C]

If fever and delirium/debility only: consider other infections before treating for UTI[20A-]

If urinary symptoms suggest UTI:

- always send urine culture if feasible, as greater resistance in older adults[9A+,17B-,24A+]
- if mild symptoms consider back-up antibiotics in women without catheters and low risk of complcations[24A+,25A+,26B+]
- consider immediate antibiotics for lower UTI[24A+,25A+]
- for antibiotic choice use NICE/PHE guideline on lower UTI: antimicrobial prescribing, and consider antibiotic resistance risk using patient history[24A+,25A+]

If indwelling URINARY CATHETER for over 7 days:

- check for catheter blockage AND consider catheter removal[20A-]
- if treating for a UTI consider changing or removal as soon as possible and before giving antibiotic[15C,16C,24A+]
- send sample from mid-stream urine or urine from new catheter[24A+]

Consider: Genitourinary Syndrome of Menopause (vulvovaginal atrophy) as can present with dysuria.[21D]
Also consider risk of urethritis, prostatitis or STI[13A+]

Check all for 2 or more signs or symptoms suggesting other infection[20A-]

- ☐ respiratory tract infection: shortness of breath; cough or sputum production; new pleuritic chest pain[3D]
- ☐ gastrointestinal tract infection: nausea/vomiting; new abdominal pain; new onset diarrhoea[32C,33C]
- ☐ skin and soft tissue infection: new redness; warmth[3D]

Follow diagnostic and treatment guidance if infection suspected

Check all for other causes of DELIRIUM (PINCH ME) and manage as needed[20A-,27C]

- ☐ **P:** Pain
- ☐ **I:** other Infection
- ☐ **N:** poor Nutrition
- ☐ **C:** Constipation
- ☐ **H:** poor Hydration
- ☐ **M:** other Medication
- ☐ **E:** Environment change

- using PINCH ME can help identify other potential underlying causes of delirium superimposed on dementia. It can be used in different clinical settings[28C]
- consider other local/national resources for delirium management[29C]
- **Advise watchful waiting, with further investigation if needed**

Share self-care and safety-netting advice using TARGET UTI leaflet for older adults

Safety-netting advice

- ☐ worsening symptoms[24A+,25A+]
- ☐ signs of pyelonephritis[24A+,25A+]
- ☐ signs/symptoms of sepsis[24A+,25A+]

Self-care advice

- ☐ drink enough fluids to avoid feeling thirsty and to keep urine pale[25D,34C,35C]
- ☐ taking paracetamol regularly up to 4 times daily for relief of pain or fever[32D,25B+]
- ☐ ways of preventing further episodes of UTI

Please refer to the information and reference tables in joint NICE/PHE guidance: NICE guidelines on UTI (lower): antimicrobial prescribing or NICE guidelines on pyelonephritis (acute): antimicrobial prescribing

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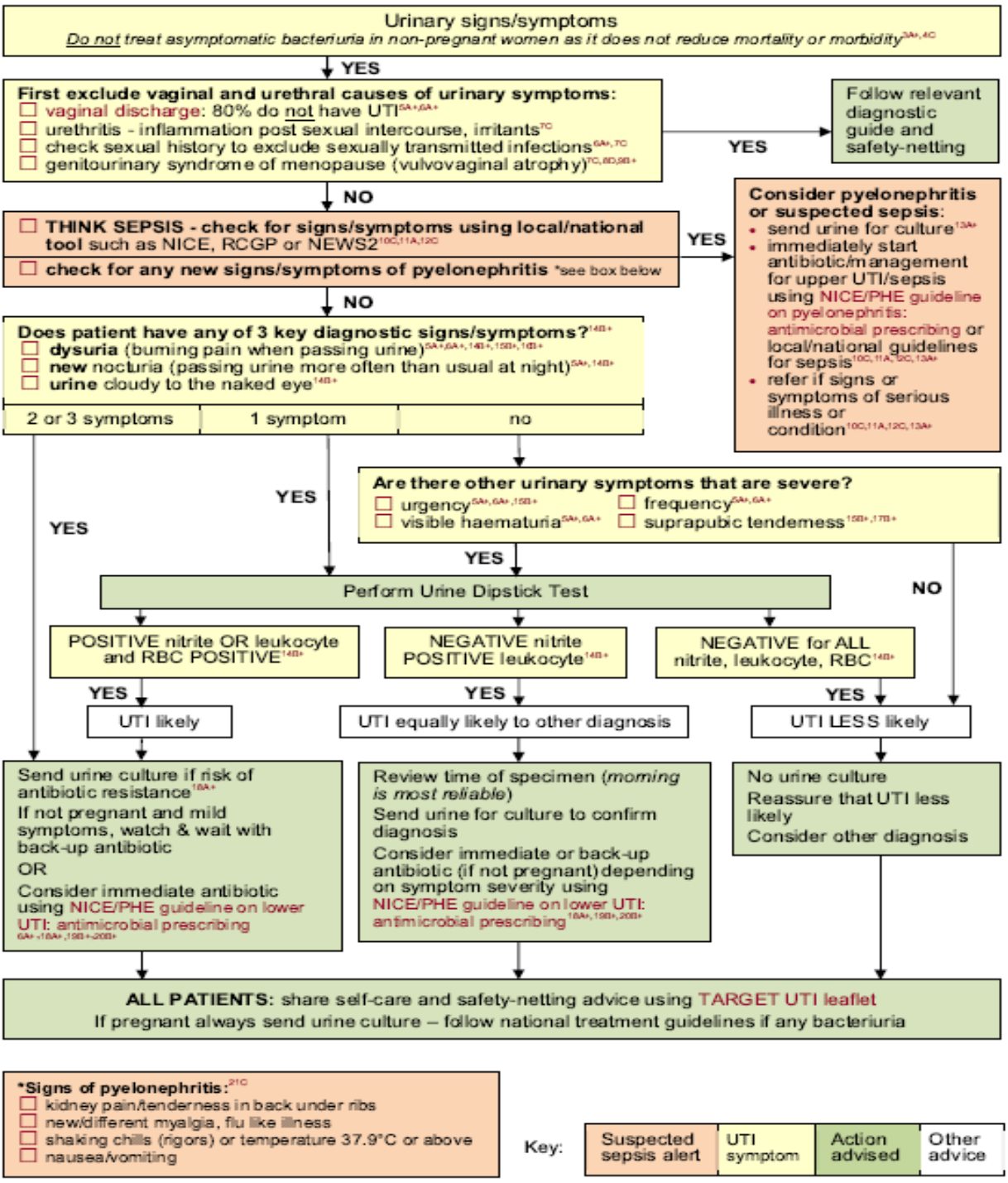
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755890/PHE_UTI_flowchart_-_Under_65_women.pdf

Diagnosis of urinary tract infections: quick reference tool for primary care

Flowchart for women (under 65 years) with suspected UTI

This guide excludes patients with recurrent UTI (2 episodes in last 6 months, or 3 episodes in last 12 months)



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RCGP Royal College of General Practitioners

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Diagnosis of urinary tract infections: quick reference tool for primary care

Table summary of diagnostic points for women under 65 years

Using symptoms and dipsticks to help diagnose UTI: [5A+,6A+,14B+,18B+,18B+,17B+] no individual or combination are completely reliable in diagnosing UTI, thus severity of symptoms and safety-netting are important in all

First exclude other genitourinary causes of urinary symptoms

- ☐ 75-80% with vaginal discharge will not have UTI [5A+,6A+]
- ☐ in sexually active check sexual history for STIs for example chlamydia and gonorrhoea [6A+,7C]
- ☐ urethritis - urinary symptoms may be due to urethral inflammation post sexual intercourse, irritants, or STIs [7C]
- ☐ genitourinary symptoms of menopause/atrophic vaginitis/vaginal atrophy [7C,8D,9B+]

In all, check for new signs of pyelonephritis, systemic infection, or risk of suspected sepsis [10C,11A,12C,13A+,21C]
If pyelonephritis or suspected sepsis: send urine for culture to inform definitive treatment and immediately start antibiotic using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing or local/national guidelines for sepsis; refer if signs or symptoms of serious illness or condition [10C,11A,12C,13A+]

In women <65yrs use signs/symptoms of dysuria, new nocturia or cloudy urine to guide treatment [14B+]

- ☐ **2 or more** of these 3 signs/symptoms in general practice are likely to have a UTI: consider immediate antibiotic, or back-up if mild symptoms and woman is not pregnant [14B+,18A+]
- ☐ **1** sign/symptom: UTI possible as 68% will have a culture confirmed UTI ($\geq 10^6$ cfu/L) therefore use urine dipstick to increase diagnostic certainty [14B+]
- ☐ **none** of the 3: UTI less likely - use urine dipstick if other severe urinary symptoms (frequency, urgency, haematuria, suprapubic tenderness) [14B+]

Dysuria, new nocturia or cloudy urine present [14B+]	% of GP patients with suspected UTI presenting with these sign/symptoms [14B+]	% with these symptoms who have culture confirmed UTI ($\geq 10^6$ cfu/L) [14B+]	Suggested management
All 3	29%	82%	Consider immediate antibiotic OR back-up if mild symptoms and not pregnant [18A+]
≥2	71%	74%	
1	25%	68%	Use urine dipstick to increase diagnostic certainty [14B+]
None	4%	not specified	Use urine dipstick if other severe urinary symptoms

For antibiotic choice: use NICE/PHE guideline on lower UTI: antimicrobial prescribing; **check history to determine resistance risk** [18A+]

Using urine dipsticks to predict UTI in women <65 years with only 0 or 1 of dysuria, new nocturia, cloudy urine increases the diagnostic certainty, and reduces unnecessary antibiotics [14B+]

- ☐ positive nitrite OR positive leukocyte and blood: UTI likely [14B+] - offer empirical antibiotics for lower UTI OR if milder symptoms (and not pregnant) consider back-up antibiotic with self-care and safety-netting [6A+,18A+,19B+,20B+]
- ☐ leukocyte positive but nitrite negative: UTI equally likely to other diagnosis [14B+] - review time of specimen (morning is best); send urine for culture; use back-up (if not pregnant) or immediate antibiotic depending on symptom severity [18A+,19B+,20B+]
- ☐ ALL nitrite, leukocyte and blood negative: UTI Less likely - consider other diagnosis; reassure; give self-care and safety-netting advice [14B+]

If pregnant: always send urine culture; follow NICE/PHE guideline on lower UTI: antimicrobial prescribing if any bacteriuria

ALL patients: share self-care and safety-netting advice using TARGET UTI leaflet

For all patients please refer to the information and reference tables in joint NICE/PHE guidance:

NICE guidelines on UTI (lower): antimicrobial prescribing or NICE guidelines on pyelonephritis (acute): antimicrobial prescribing

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755891/PHE_UTI_flowchart_-_children.pdf

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Flowchart for infants/children under 16 years with suspected UTI[1A+]

Consider UTI in any sick child and every young child with unexplained fever

Check temperature and symptoms in all infants/children
- unexplained fever 38°C or more OR
- loin pain/ tenderness suggesting pyelonephritis

YES → **Consider referral** to a paediatric specialist
Test urine within 24 hours
If urine test positive, treat with antibiotic using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing

NO

Management depends on age and symptoms

Infants younger than 3 months:
Most common symptoms: fever, vomiting, lethargy, irritability, poor feeding, failure to thrive
Less common: abdominal pain, jaundice, haematuria, offensive urine

Refer urgently to paediatric specialist care AND send a urine sample for urgent microscopy and culture

Infant or child over 3 months with suspected UTI:
Most common symptoms: fever, frequency, dysuria, abdominal pain, loin tenderness, vomiting, poor feeding, dysfunctional voiding, changes to continence
Less common: lethargy, irritability, haematuria, offensive urine, failure to thrive, malaise, cloudy urine

Perform a urine dipstick test

POSITIVE nitrite AND POSITIVE leucocyte	POSITIVE nitrite NEGATIVE leucocyte	NEGATIVE nitrite POSITIVE leucocyte	NEGATIVE nitrite AND NEGATIVE leucocyte
Treat as UTI AND start antibiotic **Send urine for culture if:** • under 3 years • suspected pyelonephritis • risk of serious illness • past UTI • no response to treatment and urine sample not already sent	**Treat as UTI** AND start antibiotic if dipstick on fresh urine sample Send urine for culture to confirm diagnosis and reassess with result Repeat urine if not fresh (as old samples can give false positives)	**Send urine for culture** **Under 3 years:** start antibiotic and reassess with culture result **Over 3 years**: only start antibiotics if good clinical evidence of UTI; leucocytes may indicate infection outside urinary tract	**UTI unlikely** Do not start antibiotics Exclude other causes **Send urine for culture if:** • suspected pyelonephritis • risk of serious illness • under 3 months • recurrent UTI • no response to treatment within 24-48 hours and urine sample not sent • symptoms and dipsticks results do not correlate

In ALL follow NICE/PHE guideline on lower UTI: antimicrobial prescribing, safety-net and give self-care advice: advise carer to bring the infant or child for reassessment if the infant or child is not improved or worse after 24–48 hours

Refer to NICE CG54 for other things to consider in suspected UTI in children
For treatment refer to joint NICE/PHE guidance: NICE guidelines on UTI (lower): antimicrobial prescribing or NICE guidelines on pyelonephritis (acute): antimicrobial prescribing

Key: Urgent alert | UTI signs/symptoms | Action advised | Other advice

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Diagnosis of urinary tract infections: quick reference tool for primary care

Key points for infants/children under 16 years with suspected UTI

Sampling in children:

- if sending a urine culture, obtain sample before starting antibiotics[2A+]
- if child has alternative site of infection do not test urine unless remain unwell - then test within 24 hour[1A+]
- in infants/toddlers, clean catch urine advised;[1A+,4B+,5A-] gentle suprapubic cutaneous stimulation using gauze soaked in cold fluid helps trigger voiding;[6B+] clean catch urine using potties cleaned in hot water with washing up liquid;[3B+] nappy pads cause more contamination, and parents find bags more distressing[7B-]
- if non-invasive not possible consider: catheter sample, or suprapubic aspirate (with ultrasound guidance)[1A+]
- culture urine within 4 hours of collection, if this is not possible refrigerate, or use boric acid preservative. Boric acid can cause false negative culture if urine not filled to correct mark on specimen bottle[1A+]

Interpretation of culture results in children:

- single organism $\geq 10^6$ cfu/L (10^3 cfu/mL) may indicate UTI in voided urine[1A+,8A-]
- any growth from a suprapubic aspirate is significant[1A+,8A-]
- pyuria $\geq 10^7$ WBC/L (10^4 WBC/mL) usually indicate UTI, especially with clinical symptoms but may be absent[1A+,8A-]

Other diagnostic tests: do not use CRP to differentiate upper UTI from lower UTI[1A+]

Ultrasound:

- if proven UTI is atypical (seriously ill, poor urine flow, abdominal or bladder mass, raised creatinine, septicaemia, failure to respond to antibiotic within 48 hours, non-*E.coli* infection): ultrasound all children in acute phase and undertake renal imaging within 4-6 months if under 3 years[1A+]
- ALL ages with recurrent UTI[1A+]
- for children under 6 months OR those with non-*E.coli* UTI: ultrasound within 6 weeks if UTI not atypical AND responding to antibiotics[1A+]

Refer to NICE CG54 **for other things to consider in suspected UTI in children**
For treatment refer to joint NICE/PHE guidance:
NICE guidelines on UTI (lower): antimicrobial prescribing or NICE guidelines on pyelonephritis (acute): antimicrobial prescribing

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