The ‘How to…?’ Series

How to undertake a structured clinical review with patients aged 16 and over who experience:

Recurrent Urinary Tract Infection

User feedback consultation draft

First Edition

March 2025

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1 Introduction

1.1 Aim

This booklet is part of the 'How to…?' series and aims to support primary care teams to carry out an evidence-based structured clinical review of patients with recurrent Urinary Tract Infections (rUTIs) to reduce the risk of future urine infection and reduce the need for antibiotic treatment or prophylaxis. Further information on the 'How to…?' series can be found in Appendix 5.3.

The booklet is not intended to represent, duplicate or replace national guidelines; its purpose is to provide steps and resources to review patients who have received antimicrobials for the prevention or treatment of rUTI. Please refer to the relevant national guidance noted in the text for further information. Throughout this document, clinical recommendations follow the gender terminology in NICE guidance and when referencing research the terminology used is what is reported in the research study.

This version of the booklet and associated tools is being published for a 6-month user feedback consultation on the TARGET toolkit website. While you may use the tool and associated resources in practice during this time, please provide feedback on the usability of the tool and any further comments using the link provided in section 5.7.

1.2 Context

The English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR) annual report 2019-2020 records a 32% increase in infections resistant to antibiotics from 2015 to 2019 [1]. The most recent report (2023-2024) shows the prevalence of antibiotic resistant organisms is 3.5% higher than 2019 [2]. Antibiotic resistance can be accelerated by antibiotic overuse [3], thus antimicrobial stewardship (AMS) efforts are crucial to ensure optimal antibiotic prescribing and reduce avoidable antibiotic resistance.

General practice generates over 80% of total antibiotic prescriptions in England [4]. Ongoing and regular structured clinical reviews of patients receiving repeated acute courses or long-term prophylaxis with antibiotics are vital to ensure antimicrobial prescribing appropriateness and highlight the importance of AMS in line with the UK 5-year action plan for antimicrobial resistance 2024 to 2029 [5] and the NHS long-term plan [6] (see Appendix 5.4 and 5.5).

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1.3 Background

Patients who are treated with antibiotics might become colonised or infected with antibiotic-resistant bacteria and may possibly transfer these bacteria to other people [7, 8].

National data show that rUTI is a common indication linked to long-term and/or repeated antibiotic use (where 'long-term' use refers to ongoing prophylactic use of antibiotics available on repeat prescription, and 'repeated' use refers to acute antibiotic courses issued 3 or more times in the past 6 months). Patients with rUTI are more likely to develop infections caused by resistant bacteria. A recent study looking at data from women registered to Welsh general practices (N=1,547,919) showed 6.0% of women had rUTIs over a 10-year period, and 1.7% of all women were prescribed prophylactic antibiotics [9]. Only 49.0% of prophylactic antibiotic users met the definition of rUTIs before initiation, and 80.8% of women with rUTIs had a urine culture result in the preceding 12 months, with high rates of resistance to trimethoprim and amoxicillin. Of women taking prophylactic antibiotics, 64.2% had a urine culture result before initiation, and 18.5% of women prescribed trimethoprim had resistance to it on the antecedent sample.

NICE guidance recommends that prescribing for rUTI should be reviewed within 6 months [10]. However, sometimes patients can remain on antibiotics without appropriate structured clinical review. For example, of patients taking prophylaxis for >6 months (n=160) in 3 Welsh general practices, only 24% had a prophylactic review within the previous 6 months as per NICE guidance [11]. Self-help preventative measures are available as well as alternatives to antibiotics that can be explored with patients. Some patients may not be aware of these preventative measures and antibiotic-sparing strategies and may benefit from them. Other patients may have breakthrough acute UTIs and would benefit from a change in treatment or referral.

This booklet is designed to support primary care teams to conduct a structured clinical review of the appropriateness of long-term and repeated antibiotic use for the management of rUTI.

2 Information for the primary care team

2.1 Diagnosis of recurrent LOWER urinary tract infections (rUTIs)

Common symptoms and signs of a lower urinary tract infection can include new nocturia (urinating at night), dysuria (painful urination), cloudy urine, new urinary frequency or urgency, haematuria (blood in the urine) and pain just above the pelvic bone [12]. Some people may experience other urinary symptoms like new incontinence. Increased confusion and/or functional decline become more common signs in older adults who are frail or living with conditions like dementia [12]. Offensive smelling urine or a change in urine smell or colour has not been shown to be diagnostically predictive of a UTI [13, 14].

Recurrent urinary tract infection (rUTI) is defined as: 2 or more episodes of urinary tract infection in the last 6 months OR 3 or more episodes of urinary tract infection in the last 12 months [15]. If patients are experiencing recurrent pyelonephritis or upper UTI, please see NG111 guidance.

It is important to distinguish between infection and asymptomatic bacteriuria (ASB) to avoid unnecessary antibiotic use. Asymptomatic bacteriuria is diagnosed when significant levels of bacteria (greater than 10^5 colony forming units/ml) are in the urine with no symptoms of UTI [16], which is more common in catheterised patients [17]. It is not routinely screened for, or treated, in patients who are not pregnant [17]. It is eradicated with antibiotics in pregnant patients and other

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"at risk" groups (e.g., prior to urological surgery). See Urinary tract infection (recurrent): antimicrobial prescribing (NG112) for more information on management of ASB in pregnancy [15].

2.2 Recurrent UTI management

Which patients are in scope for this resource?
This resource targets adults with recurrent lower UTI where there is no identifiable structural or functional abnormality of the urogenital tract.

When should you refer or seek specialist advice on further investigation and management?
NICE recommends:

- men, and trans women and non-binary people with a male genitourinary system, aged 16 and over
- people with recurrent upper UTI
- people with recurrent lower UTI when the underlying cause is unknown
- pregnant women, and pregnant trans men and non-binary people
- children and young people aged under 16 years in line with NICE's guideline on urinary tract infection in under 16s
- people with suspected cancer in line with NICE's guideline on suspected cancer: recognition and referral
- anyone who has had gender reassignment surgery that involved structural alteration of the urethra [15].

What investigations may be ordered in primary care?
Primary Care investigations could include ultrasound scan (USS) and bladder residual volume [18]. Tests to look at other related conditions or risk factors (such as HbA1C, urea and electrolytes and renal function) may also be considered [19, 20].

When and how should a urine sample be sent?
Patients with rUTIs should have a mid-stream urine (MSU) sample sent for culture when symptomatic, prior to antibiotics being initiated, to guide antibiotic therapy.

Patients should be counselled on how to provide a specimen to minimise the chance of contamination, passing the first part of the urine stream into the toilet and the next part into the pot.

Urine culture should be obtained with each symptomatic episode in rUTI to provide susceptibility results, identify antibiotic resistant UTI and guide antibiotic therapy.

Do not send a urine sample after treatment for test of cure as urine cultures sent in the absence of symptoms are unlikely to be helpful, may detect asymptomatic bacteriuria and lead to inappropriate antibiotic use.

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3 In practice

Follow an audit cycle approach to improve antimicrobial prescribing and management of rUTI in clinical practice (see Figure 1).

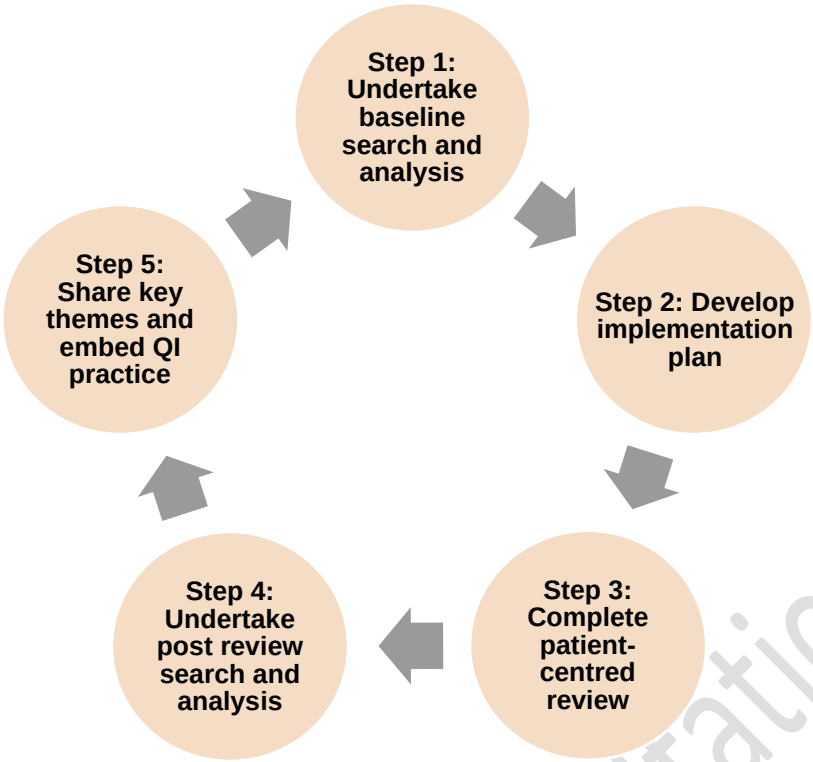

Figure 1. Improving antimicrobial prescribing in clinical practice, adapted from 'Guide to the TARGET Resources' [21].

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3.1 Step 1: Undertake baseline search and analysis

Run a search of practice records to find patients prescribed continuous long-term prophylaxis and/or repeated acute courses of antibiotics for rUTI (see Appendix 5.6 for a sample search strategy). Review the urinary antibiotic prescribing and trend data for your practice using the ePACT2 UTI dashboard. In addition, review your data in the context of benchmarking against other practices for repeated and long-term prescribing of urinary antibiotics where data are available, for example from Model Health System NHS England » The Model Health System (registration required),or ePACT2 dashboards ePACT2 | NHSBSA, (registration required).

3.2 Step 2: Develop implementation plan

To develop an implementation plan to include the following:

- Identify a practice quality or governance lead who will take accountability for the relevant actions being undertaken.
- Discuss at a practice meeting the findings of the antibiotic prescribing and trend data analysis, the number of patients identified on long-term and repeated antibiotics, as well as any benchmarking information.
- Assign practice staff to identify patients with rUTI and undertake patient-centred structured clinical reviews.
- Use resources such as those within this booklet and the TARGET website (https://rcgp.org.uk/TARGETantibiotics) to inform conversations with patients.

3.3 Step 3: Complete patient-centred structured clinical review

3.3.1 Flowchart for the structured clinical review of adults (aged 16 and over) on long-term management for rUTIs

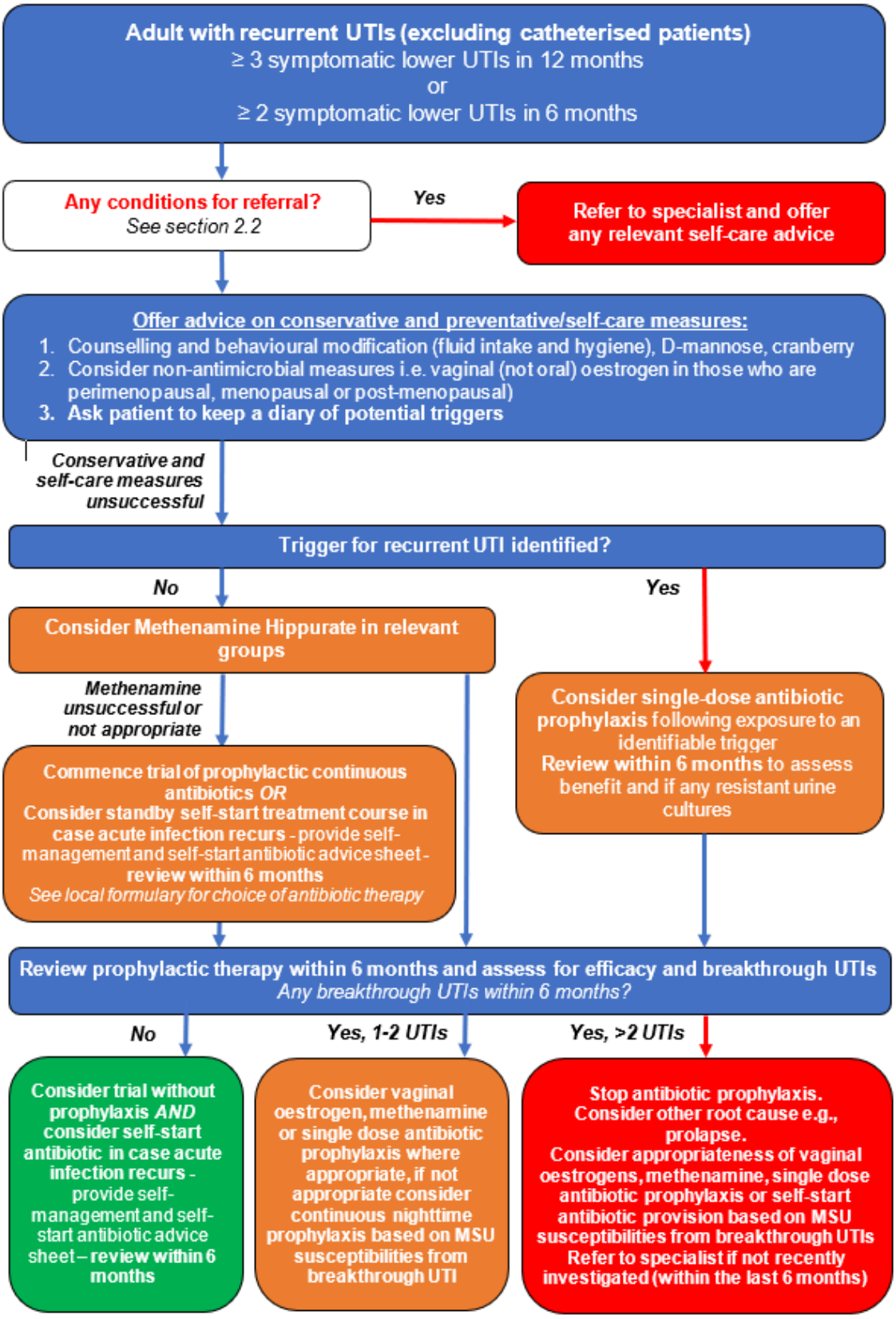

Figure 3.3.1 This flowchart provides an overview of the steps in the structured clinical review process. Please refer to the following text for a more detailed summary of the content.

3.3.2 During the patient consultation

During the patient consultation:

- Establish a clear history of the patient's condition, including any acute UTI breakthroughs and use of recommended prevention strategies, antibiotic-sparing treatments, current use of medication and baseline behaviours to identify opportunities to implement evidence-based recommendations.
- Explore any impact their condition has on their day-to-day life, self-esteem and mental health (see section 4.2 if more information is required). *To note: This may need special consideration and appropriate referral (consider referral to social prescriber or mental health support as appropriate).*
- Encourage self-care measures and recording of symptoms, e.g., encourage patient to write journal of symptoms and preceding activities to identify any triggers that can be avoided or managed with single dose antibiotic prophylaxis (see section 4.1 for example journal template).
- Manage patient expectations regarding use of antibiotics and discuss the rationale behind using/not using antibiotic treatment. Shared decision making is key for management – follow NICE shared decision making guidance (NG197) [22].

    - Take patient through NICE information for the public – Information for the public | Urinary tract infection (recurrent): antimicrobial prescribing | Guidance | NICE

- **Provide** all patients with TARGET – Treat Your Infection Urinary Tract Infection Patient Information Leaflet.

- Be aware of any special considerations and refer to appropriate services. For example:

    - a sexual history and investigations for sexually transmitted infections should be performed if appropriate;
    - in peri- and post-menopausal patients, genitourinary syndrome of menopause may cause urinary symptoms and may increase the risk of bacteriuria. Vaginal oestrogen should be considered in these patients;
    - the presence of cystocoele (anterior vaginal prolapse);
    - or a history of urinary incontinence.

Advise on self-care measures:

Patients should be given advice about behavioural, lifestyle and personal hygiene measures to reduce the risk of UTI.

Be aware that some people with rUTI may find these messages repetitive and/or stigmatizing if they are already aware or they relate to personal or intimate behaviours, so check before going into detail and follow shared decision making guidance (NG197) [22].

The following self-care measures may be tried by patients with rUTIs (if they aren't already doing them). If the patient is in the relevant group for vaginal oestrogens (see 3.3.4) consider use alongside these other interventions:

Consume more fluid:

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There is evidence from good quality studies to show that consuming more fluid may help prevent rUTI [23-25]:

- A trial where premenopausal women with rUTI who reported drinking less than 1.5 litres of fluid per day were asked to drink an additional 1.5L of fluid per day showed they had significantly fewer UTIs compared to a control group of similar women with low volumes of total fluid intake. The NHS recommends about 6-8 cups or glasses of non-caffeinated fluid a day, but this will depend on the patients age, medical condition, gender and environment. Use caution about suggesting that a patient drink more when they are on fluid restriction.

Use of cranberry products:
There is evidence from moderate quality studies to show that cranberry products may help prevent rUTI [26]:

- Cranberry products may be moderately effective at reducing UTI episodes in non-pregnant women, however, appear not to be as effective in women or men who live in care homes [26].
- Cranberry products are not available on prescription but can be purchased over the counter.
- Cranberry products interact with warfarin medication, so do not recommend the use of cranberry if the patient is taking that medicine.

Use of D-mannose and probiotics:
Evidence for the interventions listed below for preventing rUTIs is conflicting or inconclusive, with the largest and only placebo controlled trial suggesting no evidence of benefit of D-mannose, but some patients may wish to try them [27, 28]:

- D-mannose is a type of sugar that is available to buy as powder or tablets; it is not a medicine. It is not available on prescription but can be purchased over the counter.
  - Advise patients taking D-mannose about the sugar content, which should be considered as part of the person's daily sugar intake, especially if they are diabetic.
- Be aware that evidence is inconclusive about whether probiotics (lactobacillus pessaries or oral solution) reduce the risk of UTI in people with rUTI [29, 30].

Other potential interventions:

Limited to no evidence that these interventions prevent rUTI, but the following activities are suggested for a trial period based on expert consensus:

- For women, trans men and non-binary people with a female urinary system who are sexually active, advise:
  - not to hold in urine but try and make time to go when needed;
  - post-coital voiding;
  - to avoid use of contraceptive diaphragm and spermicide (may be included in some condoms).
- Encourage wiping from front to back, particularly after defaecation.
- Wash the perineum with water only and consider avoiding harsh/scented cleaning products as these can irritate the vulva and urethra.
  - avoid using feminine hygiene products (e.g. cosmetic bath products)
  - avoid feminine douches
- To prevent the transmission of microbes that may cause infection, some people may wish

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to avoid re-using flannels/wash cloths for bathing. A clean non-scented washcloth laundered between uses is preferable, if this is not possible, disposable, non-scented, water-based wipes can be used for cleansing including after bowel movements.

- If someone develops a problem with their bowels, like constipation or faecal incontinence, make sure they follow up promptly with a clinician.

Share the TARGET – Treat Your Infection Urinary Tract Infection Patient Information Leaflet

3.3.3 Treatment options for recurrent UTI (based on NICE management guidelines for recurrent UTI)

For men, and trans women and non-binary people with a male genitourinary system, if this person has attended for acute UTI, follow NICE management guidelines for men (NG112) and refer.

For women, trans men and non-binary people with a female urinary system, with recurrent UTIs, the aim of treatment is to reduce the frequency of UTI, this effect may not be immediate.

3.3.4 Non antibiotic prescribing strategies

Vaginal oestrogens:

NICE management guidelines for recurrent UTI state that vaginal oestrogens [off-label use] can be used for perimenopausal, menopausal or postmenopausal women, trans men and non-binary people with a female urinary system, with rUTIs. [10].

Do NOT offer systemic oestrogens (hormone replacement therapy) specifically to reduce the risk of rUTI in postmenopausal patients.

Discuss the following with the patient to ensure shared decision-making:

- the severity and frequency of previous symptoms;
- the risk of developing complications from rUTIs;
- the possible benefits of treatment, including for other related symptoms, such as vaginal dryness;
- that serious side effects are very rare;
- that vaginal oestrogen is absorbed locally – a minimal amount is absorbed into the bloodstream, but this is unlikely to have a significant effect throughout the body;
- and the person's preferred treatment option for vaginal oestrogen (for example, a cream or a ring).

Review treatment with vaginal oestrogen within 12 months, or earlier if agreed with the person. As with any treatment discussed, the risks and benefits for the individual patient should be outlined.

Because use of vaginal oestrogen is off-label, explain to the patient that the information leaflet may contain topical HRT information, but this is not necessarily applicable.

Methenamine Hippurate:

Methenamine hippurate is a urinary antiseptic and non-antibiotic alternative prophylactic intervention for rUTIs.

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NICE management guidelines for rUTI include recommendations to consider methenamine hippurate as an alternative to daily antibiotic prophylaxis for rUTI in women, and trans men and non- binary people with a female urinary system, who:

- are not pregnant and
- have rUTI that has not been adequately improved by behavioural and personal hygiene measures, vaginal oestrogen or single-dose antibiotic prophylaxis (if any of these have been appropriate and are applicable).

The dose recommended is 1g twice daily for adult patients without a catheter. It is contra-indicated in gout; metabolic acidosis; severe dehydration.

If discussing methenamine hippurate as a preventative treatment, explain that:

- over-the-counter sachets that make urine more alkaline (such as sachets used to relieve UTI symptoms that contain potassium citrate or sodium citrate) should not be used while taking methenamine hippurate because these can make the medicine less effective;
- medical help should be sought for acute UTI symptoms.

Discuss the following with the patient to ensure shared decision-making:

- the severity and frequency of previous symptoms;
- the risk of developing complications from recurrent UTIs;
- the possible benefits of non-antibiotic treatment, including reduced risk of antimicrobial resistance;
- the possible adverse effects which are uncommon, rashes, itching, stomach irritation, bladder irritation, nausea, and vomiting;
- advising avoidance of concurrent use of urine alkalinisation agents (such as potassium citrate)
- consideration should be given to continuing methenamine hippurate for three months and then review;
- and, as with any treatment discussed, the risks and benefits for the individual patient should be outlined.

3.3.5 Antibiotic prescribing strategies for women, trans men and non-binary people with a female urinary system, who are not pregnant

The relative risks and benefits of the following antibiotic prescribing strategies should be discussed with the patient. These strategies should be undertaken in addition to appropriate vaginal oestrogen and behavioural measures.

Choose antibiotics according to recent culture and susceptibility results where possible. Consideration must be given to causative organism and resistance reporting. Broad spectrum antibiotics (e.g. co-amoxiclav and quinolones) should be reserved for treatment only where narrow spectrum antibiotics are ineffective or unsuitable. MHRA has issued an alert restricting the use of fluoroquinolone antibiotics, like ciprofloxacin.

The authors of this “How to guide…” could not find any guidance or evidence to suggest cycling between different prophylactic antibiotics is beneficial in primary care settings [31].

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Self-start standby antibiotic course prescription

For patients who are prescribed a self-start/standby course of antibiotics it is important to:

- advise them how to send urine sample, as soon as UTI symptoms develop and before starting the standby antibiotic;
- explain how patients should provide a sample on an evening or a weekend;
- advise that if symptoms are mild only to await susceptibility results and start according to the results. If moderate to severe start standby antibiotic immediately and change, if necessary, based on susceptibility when results are available;
- provide the patient with:
    - a TARGET – Treating your urinary tract infection patient information leaflet;
    - a urine sample collection bottle for pre-antibiotic MSU (red top bottle or a white top bottle with a separate pot of boric acid with instructions for use);
    - the 'self-start' standby course of antibiotics - prescribing an agent according to previous known sensitivities and clinical response, and choosing the narrowest spectrum agent available and shortest effective course length;
    - safety advice to seek medical attention if they develop any of the following: shivering, chills and muscle pain, feel confused or very drowsy, have not passed urine all day, are vomiting, see blood in their urine, temperature above 38°C or less than 36°C, kidney pain in the back just below the ribs, loin pain, any symptoms getting worse or are not starting to improve within 48 hours of taking antibiotic.

Patient will need to return for a structured clinical review within 6 months.

Single-dose antibiotic prophylaxis when exposed to an identifiable trigger (for example, sexual intercourse)

Single-dose antibiotic prophylaxis limits antibiotic exposure and risk of adverse events. For example, in a study by Zhong and others, there were significantly fewer adverse events with single-dose antibiotic prophylaxis compared with daily antibiotic prophylaxis (NNH 3 [range 2 to 9]) [32].

In situations where you are prescribing antibiotics for an identified trigger for women, trans men and non-binary people with a female urinary system with rUTIs who are not pregnant ensure that:

- any current UTI has been adequately treated then consider single-dose antibiotic prophylaxis for use when exposed to a known, identifiable trigger e.g. post-coital, only if behavioural and personal hygiene measures, and vaginal oestrogen are not effective or not appropriate;
- discuss what self-care measures including post-coital voiding are already being practised by the patient and where known trigger is sexual intercourse, confirm that the patient passes urine post-coitally
- you consider single dose antibiotic as the first option with an identifiable trigger as it:
    - is as effective as continuous antibiotics
    - limits antibiotic exposure therefore reducing the risk of resistance emerging,

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    - and reduces the risk of adverse events to antibiotic treatment including gastrointestinal symptoms;
- you take account of:
    - the severity and frequency of previous symptoms,
    - the risk of developing complications,
    - previous urine culture and susceptibility results,
    - previous antibiotic use, which may have led to resistant bacteria,
    - and the person's preferences for antibiotic use;
- when single-dose antibiotic prophylaxis is offered, you give advice about:
    - how to use the antibiotic,
    - possible adverse effects of antibiotics, particularly diarrhoea and nausea,
    - returning for a structured clinical review within 6 months,
    - and seeking medical help if there are symptoms of an acute UTI.

Continuous antibiotic prophylaxis

For non-pregnant women, trans men and non-binary people with a female urinary system, with rUTI who have implemented behavioural interventions, tried vaginal oestrogen (if post- or peri-menopause) and had no improvement after single-dose antibiotic prophylaxis or methenamine Hippurate (if either of these have been appropriate or applicable), ensure that any current UTI has been adequately treated then consider a trial of daily antibiotic prophylaxis.

Take account of the following:

- the severity and frequency of previous symptoms;
- the risks of long-term antibiotic use;
- the risk of developing complications;
- previous urine culture and susceptibility results;
- previous antibiotic use, which may have led to resistant bacteria;
- any further investigations (for example, ultrasound) that may be needed to identify an underlying cause;
- and the person's preferences for antibiotic use.

When offering a trial of daily antibiotic prophylaxis, give advice about:

- the risk of resistance with long-term antibiotics, which means they may be less effective in the future;
- possible adverse effects of long-term antibiotics;
- returning for a structured clinical review within 6 months;
- seeking medical help if there are symptoms of an acute UTI;
- and the need for urine culture to ensure the right antibiotic is used.

Patients should be counselled that low-dose continuous antibiotic treatment will be commenced for 3-6 months and a review date should be included within the patient's record to ensure that the prophylaxis is reviewed within a 6-month interval. Do not add antibiotic prophylaxis to a repeat prescription template.

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3.3.6 Choice of antibiotic agents

NICE management guidelines for recurrent UTI highlight that choice of antibiotic should be based on confirmed culture and susceptibility results (wherever possible). Consider the patient's co-morbidities, renal function, and any contraindications or allergies that the individual patient may have (see full guidance for more information) [10].

Trimethoprim and nitrofurantoin are the first-choice oral antibiotics for the prophylaxis of rUTIs. Trimethoprim should only be prescribed if a lower risk of resistance is likely, for example, if trimethoprim has not been used in the past 3 months, if previous urine culture results suggest trimethoprim susceptibility (but this was not used as treatment) and in younger adults in areas where local epidemiology data suggest resistance is low. There is a higher risk of trimethoprim resistance with recent use and in older people in residential facilities. Review cautions and monitoring advice in BNF when prescribing.

The risk of adverse effects, and common side-effects should be discussed with the patient.

If resistance to trimethoprim and nitrofurantoin is confirmed, other agents may be considered depending on susceptibility and after discussion with Urology, Urogynaecology and/or Microbiology. Broader spectrum agents such as ciprofloxacin and co-amoxiclav have a higher risk of *C. difficile* diarrhoea and should not be routinely used for prophylaxis.

Remember that the MHRA have issued an alert restricting the use of fluoroquinolone antibiotics e.g. ciprofloxacin.

3.3.7 Reviewing a patient on long term rUTI prophylaxis

Review antibiotic prophylaxis for rUTI at least every 6 months. This should include:

- assessing the success of prophylaxis;
- assessing any adverse effects of prophylaxis (see BNF for individual antibiotic information);
- discussion of continuing, stopping or changing prophylaxis (considering the person's preferences for antibiotic use, antibiotic susceptibility and the risk of antimicrobial resistance);
- and a reminder about behavioural and personal hygiene measures and self-care treatments (see the recommendations in step 3.3.2 above).

Stopping continuous prophylaxis at the review:

If no acute UTI breakthroughs, explain that a significant number of patients can stop continuous prophylaxis without a return of symptoms and therefore avoid the risks of antimicrobial resistance emerging and side effects.

Test of cure is not required in asymptomatic patients at the end of a course of prophylaxis. Ensure the patient is provided self-care advice.

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To provide reassurance:

- explain to the patient that this is a trial off antibiotics, not a permanent stop;
- supply education on UTI symptoms to look out for;
- supply urine specimen bottles with instructions of when to use;
- for patients capable of recognising symptoms of UTI, provide a 'self-start' prescription of standby antibiotics based on most recent UTI susceptibility;
- and consider a phone call to follow up with the patient monthly for first 3-6 months, and then 3-6 monthly to assess progress. This review can be done by medicines management or the nursing teams.

Changing antibiotic prophylaxis at the review:

Patients who have breakthrough infection and 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, considering changing to an effective agent and/or whether a referral is required.

Continuing treatment for a further 3 months and stopping continuous prophylaxis at the 6-month review:

A significant number of patients can stop continuous prophylaxis without a return of symptoms and therefore avoid the risks of antimicrobial resistance emerging and side effects. A recent trial found that half (48%%, 95% CI: 0.28-0.68) of patients who stopped continuous antibiotic prophylaxis after 12 months, did not return to suffering rUTIs in the following 6 months [33].

Test of cure is not required in asymptomatic patients at the end of a course of prophylaxis.

Supply urine specimen bottle with instructions of when to use and consider providing a 'self-start' prescription of standby antibiotics based on most recent UTI susceptibility result.

Consider referring patients who relapse after stopping continuous prophylaxis to urology, if not already tried methenamine or vaginal oestrogen if appropriate or recently had their rUTI investigated.

Managing 'breakthrough' UTIs in patients on antibiotic prophylaxis:

The first breakthrough infection should be treated according to culture and susceptibility results, using a different antibiotic to the agent used for prophylaxis. The original prophylaxis can be 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, prophylaxis can be changed to an antibiotic that shows susceptibility, or a self-start standby antibiotic prescription given. Consider methenamine if not already tried and addition of vaginal oestrogen if appropriate.

If multiple breakthrough UTIs occur (≥2 UTIs in 6 months), prophylaxis has proved ineffective and should be stopped as the patient is exposed to all the risks with none of the benefits of antibiotic treatment. Consider methenamine if not already tried and addition of vaginal oestrogen if appropriate.

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If antibiotic prophylaxis is stopped, ensure that patients have rapid access to treatment if they have an acute UTI. Supply sample bottle with instructions of when to use and provide a 'self-start' standby prescription of antibiotics based on most recent UTI susceptibility.
Explain if patients do develop UTI after stopping prophylaxis, then future treatment can be tailored to sample results.
Refer or seek specialist advice on further investigation and management.

Other information available for patients

These websites have been identified by patient representatives and clinicians as places where patients can find additional support and information if experiencing recurrent UTIs or related conditions:

- Bladder Health UK: www.bladderhealthuk.org
- Bladder & bowel UK: www.bbuk.org.uk
- NHS digital patient information: https://www.nhs.uk/conditions/urinary-tract-infections-utis/
- CONfidence App: https://www.expertselfcare.com/health-apps/confidence-app/

Note: These sites/groups are not sponsored or endorsed by UKHSA or TARGET

3.3.8 UTIs associated with urinary catheters including rUTIs:

Cloudy or offensive urine alone, or catheter blockage, does not merit treatment or investigation for UTIs in patients with urinary catheters [17, 34].

A catheter-associated UTI (CAUTI) is a symptomatic infection of the bladder or kidneys in a person with a urinary catheter, therefore, look for associated localising or systemic features of infection including flank pain and/or haematuria and exclude other potential sources of infection in catheterised patients who present with fever or new confusion/functional decline [17, 35].

See NICE NG113 guidance Recommendations | Urinary tract infection (catheter-associated): antimicrobial prescribing | Guidance | NICE

Patients with recurrent catheter associated UTIs should be referred for specialist review.

Do not routinely offer antibiotic prophylaxis to people with a short-term or long-term catheter.

Antibiotic prophylaxis does not significantly decrease symptomatic infections in catheterised patients and increases the risk of antimicrobial resistance [36]. It is therefore not usually recommended to reduce the frequency of UTIs in patients with urinary catheters. Seek explicit guidance from a microbiologist before commencing antibiotic prophylaxis in patients with a urinary catheter.

3.3.9 Referral to specialist care for rUTI

According to NICE, refer or seek specialist advice on further investigation and management for:

- men, and trans women and non-binary people with a male genitourinary system, aged 16 and over;
- people with recurrent upper UTI;
- people with recurrent lower UTI when the underlying cause is unknown;

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- pregnant women, and pregnant trans men and non-binary people;
- children and young people aged under 16 years in line with NICE's guideline on urinary tract infection in under 16s;
- people with suspected cancer in line with NICE's guideline on suspected cancer: recognition and referral;
- anyone who has had gender reassignment surgery that involved structural alteration of the urethra [15].

3.3.10 Stand-by self-start antibiotic advice sheet:

This section provides information you can give a patient who has been prescribed stand-by self-start antibiotics.

Self-Management and standby pack advice sheet

You have been provided with a urine sample pot and a standby pack of antibiotics.

What to do if you experience urinary tract infection symptoms:

1. Collect a mid-stream sample of your urine in the sample pot provided. Place the pot of urine in a sealed plastic bag and hand in to the GP reception straight away (if there is a delay, store in the fridge and hand in on the next working day).
2. Take the first dose of the antibiotic supplied.
3. Follow the instructions for taking the full course of antibiotics.
4. Contact your GP practice to discuss the results of the urine culture (usually available 48-72 hours after handed into the practice), and to obtain a new sample pot and standby pack of antibiotics. The GP will check whether the same antibiotics are still appropriate for your next standby pack (i.e. whether the antibiotic will still work against the bacteria in the urine).

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

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

Urinary Infections Diary

	Date of start of symptoms	Date urine sample provided	Date of start of antibiotics (if given)	Date symptoms settled
1				
2				
3				
4				
5				
6				

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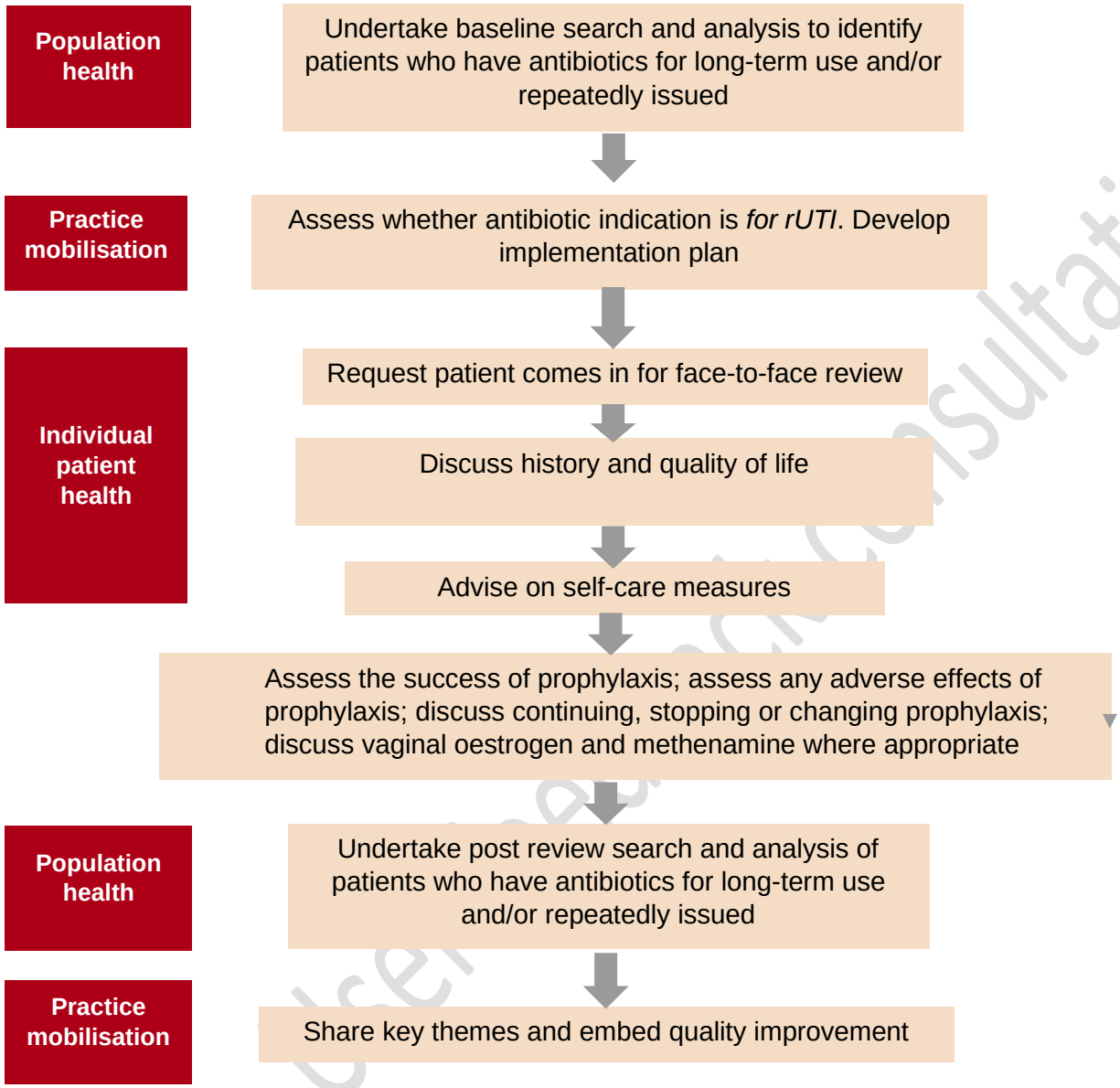
3.3.11 Process flowchart to conduct a structured clinical review of long-term and repeated antibiotic prescribing for recurrent UTI



Patients who need referral:

- men, and trans women and non-binary people with a male genitourinary system, aged 16 and over
- people with recurrent upper UTI
- people with recurrent lower UTI when the underlying cause is unknown
- pregnant women, and pregnant trans men and non-binary people
- children and young people aged under 16 years in line with NICE's guideline on urinary tract infection in under 16s
- people with suspected cancer in line with NICE's guideline on suspected cancer: recognition and referral
- anyone who has had gender reassignment surgery that involved structural alteration of the urethra
- Consider referring patients to urology who relapse after stopping continuous prophylaxis, if not already recently investigated.

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3.4 Step 4: Undertake post review search and analysis

Analyse general practice data for long term and/or repeated antimicrobial prescribing for rUTI prevention (see **Appendix 5.6** for a sample 'Search strategy') and benchmarking against baseline.

To note: Suggest undertaking 6 months after Step 1 baseline search and analysis.

3.5 Step 5: Share key themes and embed quality improvement practice

Share key themes identified from both baseline and post review searches with the primary care team and embed quality improvement through staff learning.

3.5.1 Learning for staff

To support staff learning:

- Present TARGET worked examples to illustrate key points.
- Present audit data and any key themes for improvement
- Present cases studies from the practice

4.0 Further resources

4.1 Daily urinary symptom tracker

A daily journal may help to identify triggers that can be avoided or managed to prevent rUTIs and/or enable a single dose prophylaxis strategy. This template is based on other similar patient facing resources and provides a place for patients to keep daily track of:

- activities that might trigger a UTI (based on patient feedback) such as sexual intercourse, sports, travel etc…
- number of drinks,
- dietary supplements,
- UTI symptoms and severity,
- menstruation,
- bowel movements,
- and antibiotic use.

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Daily urinary symptom tracker

The table in this form can be used each day to track things that might be related to frequent urinary tract infections. Please circle the relevant information in each column and start a new table each day.

Date:												
Was today a good or bad day for your symptoms?	**What urinary symptoms have you had today?**	**Did you have sex today?**	**Did you have a bowel movement today?**	**Are you on your period?**	**Did you take any dietary supplements today?**	**How many glasses of water or other liquid did you drink today?**	**Did you have any of these to eat or drink today?**	**Did you exercise today?**	**Did you take an antibiotic to prevent a UTI today?**	**Did you do anything else different to prevent getting a UTI?**	**Are you being treated for any infection?**	**Are you being treated with antibiotics?**
Good	Burning or pain when peeing	Yes	Yes - normal	Yes	Yes (state which ones in the notes)	Free text water:	None of the following	Rigorous	Yes	Yes (please state what in the notes)	Yes (identify what kind in the notes)	Yes
Bad	Blood in pee	No	Yes – poo harder than usual	No	No	Free text other liquid:	Alcohol	Normal	No	No	No	No
	Peeing more than usual, especially at night	Unsure	Yes – poo softer than usual				Caffeine	Core Exercise				
	Pain in lower tummy		No				Spicy Food	None or minimal				
	Needing to pee more urgently than usual		Can't remember				Acidic food	Pelvic floor exercise				
	Pee is cloudy						Other (clarify in notes)					
	New incontinence											
	Feeling tired/less active											
	Feeling more confused											
	Pain in lower back											
	Fever or chills											
	None (if other clarify in notes)											
Notes:												
If you have urinary symptoms, take a urine sample and contact GP or 111. If you have urinary symptoms and/or you have a fever, lower back pain or new confusion or feel very unwell, seek urgent medical attention via GP, urgent care centre or A+E.												

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4.2 Recurrent Urinary Tract Infection Impact Questionnaire (RUTIIQ)

The Recurrent UTI Impact Questionnaire (RUTIIQ) is a patient-reported outcome measure of rUTI psychosocial impact, which has been developed with patient and clinician input to facilitate rUTI management and research [37].

4.3 Future work

This 'How to…?' booklet is in its first edition. The authors recognise future work may be required to further optimise the booklets.

Future work to include:

- A pilot of booklet use by primary care teams across the UK
  - To ensure booklet relevance and usefulness for the structured clinical review of patients on long-term and repeated antibiotics.
- Ongoing multi-disciplinary consultation, particularly with urologists, microbiologists, and GPs with a special interest in recurrent UTI.
  - To incorporate specialist knowledge and widen practice perspective.

Information collated via the feedback form (see link in **Appendix 5.7**) will be used to inform revisions and update future editions.

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5.0 Appendix

5.1 Glossary

Term	Definition
Recurrent UTI	2 or more episodes of *lower u*rinary tract infection in the last 6 months OR 3 or more episodes of lower urinary tract infection in the last 12 months
Asymptomatic bacteriuria	Asymptomatic bacteriuria is significant levels of bacteria (greater than 10^5 colony forming units/ml) in the urine with no symptoms of UTI
Trigger	An identifiable action that brings on a UTI e.g. sexual intercourse
Prophylaxis	Treatment or actions taken to prevent a disease: Antibiotic prophylaxis refers to the use of antibiotics to prevent infection.
Off-label use	There are clinical situations when use of medicines outside the terms of the product licence (i.e., 'off-label') may be judged by the prescriber to be in the best interest of the patient based on available evidence. The responsibility that falls on healthcare professionals when prescribing a medicine off-label may be greater than when prescribing a licensed medicine within the terms of its licence.
Metabolic acidosis	Metabolic acidosis is indicated by a decrease in the plasma bicarbonate level and/or a marked increase in the serum anion gap (AG). The presence of metabolic acidosis is a clue to the possible existence of several underlying medical conditions

5.2 Abbreviations

Term	Definition
BMJ	British Medical Journal
°C	°Centigrade

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CAUTI	Catheter-associated urinary tract infection
mL	Millilitres
MSU	Mid-stream urine
NICE	National Institute for Health and Care Excellence
PHE	Public Health England
RCGP	Royal College of General Practitioners
rUTI	Recurrent urinary tract infection
UTI	Urinary tract infection

5.3 The 'How to…?' series

The 'How to…?' series focuses on supporting healthcare professionals in primary care teams on how to review patients on long-term and repeated antimicrobials as part of AMS initiatives. The series supports the ambitions of the UK's five-year national action plan for antimicrobial resistance 2024-2029 as outlined in **Appendix 5.4**.

Booklet development involved:

1) Identification of gaps in primary care AMS interventions to inform a novel AMS intervention focused on long-term/repeated antimicrobials
2) Retrieval and analysis of primary care data to determine common indications that have high use of long-term/repeated antimicrobials
    - Local source data from Primary Care Networks
    - National source data from OpenSAFELY
3) Completion of booklet draft per identified common indication
4) Involvement of stakeholders in booklet feedback via questionnaire and email correspondence
5) Completion of final booklet draft based on received feedback
6) Governance submission of booklets to:
    - English Surveillance Programme for Antimicrobial Utilisation and Resistance Oversight Group
    - NHS England
    - Royal College of General Practitioners
    - UK Health Security Agency

Each booklet within the series can be used for individual patient consultations, as well as wider initiatives such as:

- Practice prescribing audits
- Quality improvement projects
- Local projects to tackle antimicrobial resistance
- Community pharmacy projects

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The booklets in the ‘How to…?’ series are not intended to replace national guidance, but to be used alongside guidance and other resources highlighted within individual booklets.

5.4 UK’s five-year national action plan for antimicrobial resistance 2024-2029

Outcome 4 – Antimicrobial stewardship and disposal

By 2029, the UK has strengthened antimicrobial stewardship and diagnostic stewardship by improved targeting of antimicrobials and diagnostic tools for humans, animals and plants, and improved the disposal of antimicrobials, informed by the right data, risk stratification and guidance [5].

Outcome 8 – Health disparities and health inequalities

By 2029, the UK targets interventions and associated funding where there is the most burden from AMR, where it will have the greatest impact in controlling AMR, and where it will be cost-effective, including targeting specific regions, population groups and settings if appropriate [5].

5.5 The NHS long-term plan

5.5.1 Conducting Structured Medication Reviews

The Royal Pharmaceutical Society and the Royal College of General Practitioners have developed a Repeat Prescribing Toolkit which sets out what should be included within a good practice repeat prescribing system [38]. The toolkit takes the form of a self-assessment process, to enable a practice and/or a PCN to assess their local arrangements against the questions and then discuss and agree as a team where any gaps lie or where improvements can be made.

5.6 Search strategy

You can access the search strategy documents outlined below by linking to this folder:

https://app.box.com/s/xr294wnd7lf7izsmjr2gdqk6fn1mhzpa

If you have difficulties accessing this folder, email: TARGETAntibiotics@ukhsa.gov.uk

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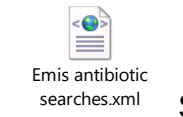
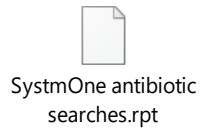
5.6.1 EMIS



Save this .xml file to your desktop and then follow the guide.

5.6.2 SystmOne



Save this .rpt file to your desktop and then follow the guide.

5.6.3 Vision

5.7 Providing feedback

To provide feedback on the information included within this booklet, please provide feedback via this link or the QR code below.

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6.0 Acknowledgments

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