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Quality standards

Briefing paper: Urinary tract infections in adults (update)

**Quality Standards Advisory Committee meeting**: 12th July 2022

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1. Introduction

This briefing paper presents a structured overview of potential quality improvement areas for urinary tract infections in adults. It provides the committee with a basis for discussing and prioritising quality improvement areas for development into draft quality statements and measures for public consultation.

This briefing paper includes a brief description of the topic, a summary of each of the suggested quality improvement areas and supporting information.

Recommendations selected from the key development source are included to help the committee in considering potential statements and measures.

* 1. Development source

The main development sources referenced in this briefing paper are:

* [Management of suspected bacterial lower urinary tract infection in adult women. SIGN guideline 160](https://www.sign.ac.uk/our-guidelines/management-of-suspected-bacterial-lower-urinary-tract-infection-in-adult-women/) (2020). Will be considered for review in 2023
* [Urinary tract infection (catheter-associated): antimicrobial prescribing. NICE guideline NG113](https://www.nice.org.uk/guidance/ng113) (2018)
* [Urinary tract infection (recurrent): antimicrobial prescribing. NICE guideline NG112](https://www.nice.org.uk/guidance/ng112) (2018)
* [Pyelonephritis (acute): antimicrobial prescribing. NICE guideline NG111](https://www.nice.org.uk/guidance/ng111) (2018)
* [Urinary tract infection (lower): antimicrobial prescribing. NICE guideline NG109](https://www.nice.org.uk/guidance/ng109) (2018)

Other development sources referenced are:

* [Pyelonephritis – acute. NICE clinical knowledge summary](https://cks.nice.org.uk/topics/pyelonephritis-acute/) (2021)
* [Urinary tract infection (lower) – women. NICE clinical knowledge summary](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/) (2021)
* [Urinary tract infection (lower) – men. NICE clinical knowledge summary](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-men/) (2018)
* [Healthcare-associated infections: prevention and control in primary and community care. NICE guideline CG139](https://www.nice.org.uk/guidance/cg139) (2012, updated 2017)

1. Overview
   1. Focus of quality standard

The updated quality standard will cover diagnosing and managing urinary tract infections in adults aged 16 and over. It will update and replace the existing [NICE quality standard for urinary tract infections in adults](https://www.nice.org.uk/guidance/qs90) (QS90).

* 1. Definition

Urinary tract infection (UTI) results from the presence and multiplication of microorganisms, within the urinary tract. A urinary tract infection can result in a number of clinical syndromes including acute and chronic pyelonephritis (kidney and renal pelvis), cystitis (bladder), urethritis (urethra), epididymitis (epididymis) and prostatitis (prostate gland). Infection may spread to surrounding tissues (e.g. perinephric abscess) or to the bloodstream[[1]](#footnote-1). A urinary tract infection is defined by a combination of clinical features and the presence of bacteria in the urine.

Different classification systems of UTI exist[[2]](#footnote-2). NICE’s Clinical Knowledge Summaries use the following categories:

* Lower UTI: An infection of the bladder (also known as cystitis) usually caused by bacteria from the gastrointestinal tract.
* Uncomplicated UTI: UTI caused by typical pathogens in people with a normal urinary tract and kidney function, and no predisposing co-morbidities. European Association of Urology (EAU) guidelines say this group is limited to non-pregnant women.
* Complicated UTI: UTI with an increased likelihood of complications such as persistent infection, treatment failure and recurrent infection. EAU guidelines say this group includes all men, pregnant women, and people with indwelling urinary catheters.
* Upper UTI: Infection of the upper part of the urinary tract — the ureters and kidneys (pyelonephritis).
* Recurrent UTI: Usually defined as two or more episodes of UTI in six months or three or more episodes in one year. It is more common in women and can be due to relapse (infection due to the same strain of organism) or reinfection (infection due to a different organism).
* Catheter associated UTI: A symptomatic infection of the bladder or kidneys in a person who is catheterised or who has had a urinary catheter in place within the previous 48 hours.
* Bacteriuria: The presence of bacteria in the urine — the person may or may not be symptomatic.
  1. Incidence and prevalence

The incidence of UTIs is influenced by age, sex or by predisposing factors[[3]](#footnote-3). Incidence is highest in young women. Around 10–20% of women will experience a symptomatic UTI at some time. A population-based survey of adult women in England reported that over a third reported having had at least one UTI in their lifetime[[4]](#footnote-4). Almost half of all women will experience at least one episode of cystitis during their lifetime[[5]](#footnote-5). 20–30% of women who have had a UTI will have a recurrence[[6]](#footnote-6)

Most infections in adult men are complicated and related to abnormalities of the urinary tract, although a low incidence occurs spontaneously in otherwise healthy young men3.

UTI incidence increases with age for both sexes and is one of the most common infections associated with older people3.

UTI is the most common hospital-acquired infection in the UK, accounting for 23% of all infections6. The majority of hospital acquired UTIs are associated with catheter use. UTI is also one of the most common conditions presenting in primary care.

* 1. Management

For patients with symptoms of urinary tract infection and bacteriuria the main aim of treatment is relief of symptoms. For asymptomatic patients the main outcome from treatment is prevention of future symptomatic episodes.

The majority of non-pregnant women with symptoms of UTI present in the community4. Women with symptoms of UTI account for a significant proportion of acute presentations to GP practices and out-of-hours services.

The diagnosis of UTI can be difficult in older patients, who are more likely to have asymptomatic bacteriuria, and may experience increased frailty and comorbidities. In these patients, urine culture ceases to be a diagnostic test unless there are other signs of infection. Frail elderly patients, particularly those with dementia in long-term care facilities, may receive unnecessary antibiotic treatment due to asymptomatic bacteriuria and non-specific symptoms with consequent risk of adverse effects and no clinical benefit.

Prudent antibiotic prescribing is a key component of the UK’s action plans for reducing antimicrobial resistance. Unnecessary antibiotic treatment of asymptomatic bacteriuria is associated with significantly increased risk of clinical adverse events including Clostridium difficile infection or methicillin resistant Staphylococcus aureus infection, and the development of antibiotic-resistant UTIs.

Criteria for the diagnosis of UTI vary and are dependent on the patient and the context. Public Health England developed a [tool aimed at improving the diagnosis of UTI and more appropriate antibiotic use in primary care](https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis). This tool is currently being reviewed and updated by the UK Health Security Agency.

* 1. Resource impact

This quality standard is not expected to be associated with a significant resource impact. No significant resource impact was identified for any of the underlying recommendations in guidelines NG109; NG112 and NG113 published in 2018. This is because the main focus of these guidelines was the use of antibiotics which are inexpensive treatments. Suggested improvement areas that are based on other underlying NICE and SIGN guidelines are also not expected to have a significant resource impact, however it is difficult to assess current UK practice for some of these areas.

1. Summary of suggestions
   1. Responses

In total 24 registered stakeholders and specialist committee members responded to the 2-week engagement exercise.

* 15 stakeholders suggested areas
* 2 stakeholders submitted a response saying they had no comments to make

7 specialist committee members suggested areas

The responses have been summarised in table 1 for further consideration by the committee. Note that the suggestions of one SCM were not obtained in time to be included in this section of the report but are included in appendix 1 instead.

Table 1 Summary of suggested quality improvement areas

|  |  |
| --- | --- |
| Suggested area for improvement | Stakeholder |
| **Diagnosing UTIs** |  |
| * Dipstick testing and assessment | Adv Pharma, BAUS, BGS, CU, H.io, SCM1, SCM2, SCM5, SCM6, RCP, UKHSA, WH |
| * Urine samples, cultures and lab testing | BAUS, BIA, CU, SCM1,  NHSE&I, SCM3, SCM4 |
| **Treatment** |  |
| * Self-care /delayed prescribing | CU, CCA, RCP, SCM1, SCM2, SCM3, SCM6 |
| * Choice of antibiotic and course duration | Adv Pharma, BGS, CU, NHSE&I, SCM 2, SCM3, SCM5, SCM6 |
| * Alternative treatments | Asp Pharma |
| **Catheter associated UTI (prevention and management)** | Adv Pharma,  CRB, NHS E&I |
| **Recurrent UTI** |  |
| * UTI and the menopause | BAUS, POGP, WH |
| * Management and treatment | Asp Pharma, BAUS, BGS, BIA, NHSE&I, RCGP, RCP, SCM4, SCM5, SCM6, WH |
| * Referral | RCP, SCM6 |
| **Additional areas** |  |
| * Coding / recording of UTIs in primary care | SCM5 |

Abbreviations:

|  |  |
| --- | --- |
| Adv Pharma | ADVANZ Pharma |
| Asp Pharma | Aspire Pharma Limited |
| BAUS | British Association of Urological Surgeons |
| BGS | British Geriatrics Society |
| BIA | British Infection Association |
| CCA | Company Chemists Association |
| CRB Inc | C.R. Bard Inc. |
| CU | Cardiff University |
| H.io | Healthy.io |
| NHSE&I | NHS England and NHS Improvement |
| POGP | Pelvic Obstetric & Gynaecological Physiotherapy |
| RCGP | Royal College of General Practitioners |
| RCP | The Royal College of Pathologists |
| SCM1 to SCM6 | Specialist Committee Members |
| UKHSA | UKHSA |
| WH | Whittington Health |

Full details of all the suggestions provided are given in appendix 2 for information.

1. Suggested improvement areas

Section 4 presents a summary of the suggested improvement areas, with provisional recommendations that may support statement development and information on current UK practice.

* 1. Diagnosing UTIs

### Dipstick testing and assessment

Stakeholders suggested that diagnosis of UTIs should not rely on dipstick testing as it can be inaccurate and inappropriate. Specific populations that it may not be appropriate for include, older frail people, women aged over 65, and people with catheters. A full clinical assessment should be carried out to diagnose UTIs. The importance of assessing for serious illness such as pyelonephritis, sepsis and urosepsis was highlighted. Some components of an assessment were suggested, such as asking about vaginal discharge and irritation and using patient questionnaires to understand symptoms. Specific criteria for diagnosis including two or more symptoms and a positive dipstick test result for nitrite were suggested.

#### Selected recommendations

A SIGN guideline is referenced in the following text. SIGN does not use specific recommendation numbers, so in this report the recommendations have been assigned the section of the guideline they are found in. Also, the symbol R represents a guideline recommendation, the symbol ✓ represents ‘recommended best practice based on the clinical experience of the guideline development group’.

SIGN’s guideline on management of lower urinary tract infection in adult women (SIGN 160)

3.1.3 Dipstick testing (women aged under 65)

* Diagnose a UTI in the presence of two or more urinary symptoms (dysuria, frequency, urgency, visible haematuria or nocturia) and a positive dipstick test result for nitrite.

4.1.2 Clinical assessment (women aged 65 and over)

* Be aware that women aged 65 years and over, especially those in long-term care facilities, may not display the usual symptoms and signs of UTI that are seen in younger women.
* Be aware that functional deterioration and/or changes to performance of activities of daily living may be indicators of infection in frail older people.
* A holistic assessment is needed in the frail elderly to rule out other causes with both classical and non-classical signs of UTI. Signs and symptoms which may lead to functional decline include dehydration, constipation, electrolyte abnormality, polypharmacy, pain and urinary retention.
* Consider sepsis, non-urinary infections and other causes of delirium in an unwell older adult with abnormal vital signs (for example, fever, tachycardia, hypotension, respiratory rate and saturations)

4.1.3 Urinalysis and dipstick testing (women aged 65 and over)

* Use of dipsticks for diagnosis of UTI in women aged 65 years and above in long-term care facilities or in frail elderly people requiring assisted living services is not recommended.

6.1.1 Clinical assessment (catheterised women)

* Clinical signs and symptoms compatible with CA-UTI should be used to diagnose infection in catheterised patients with urine culture and sensitivity testing employed to confirm the diagnosis and pathogen.

6.1.2 Dipstick testing (catheterised women)

* Urinary dipsticks should not be used as part of the diagnostic assessment for UTI in patients with indwelling catheters.

NICE’s clinical knowledge summary on urinary tract infection (lower) – men: Diagnosing a UTI

* In men aged under 65 years suspected of having a urinary tract infection (UTI) consider other causes of urinary symptoms.
* In men aged 65 years or over suspected of having a UTI: Conduct a full clinical assessment before making a diagnosis of UTI.
* In men with symptoms suggestive of a UTI, confirm the diagnosis by urine culture and sensitivity, by arranging collection of a mid-steam urine (MSU) or catheter specimen of urine (CSU), to determine the infecting micro-organism.
* Do not use urine dipstick tests or microscopy to diagnose UTI in men:

NICE’s clinical knowledge summary on Pyelonephritis – acute: Diagnosis

* Acute pyelonephritis is diagnosed by taking a detailed medical history and a physical examination.

#### Current UK practice

No national data or published large studies on current practice have been identified.

### Urine samples, cultures and lab testing

Targeted use of urine cultures for people with suspected UTI was suggested as there is variation in practice. Comments recommended sending urine samples for culture for pregnant women, adults with acute pyelonephritis, people aged 65 and over and those with a UTI which is not responding to initial antibiotic treatment.

Improved sensitivity of testing was also suggested as there are different techniques and thresholds in use. Improving how urine samples are collected, stored and transported is important to ensure the success of a diagnostic test and would reduce the number of samples being rejected by a GP practice or laboratory. Improving the quality of laboratory testing was also suggested as an area for quality improvement.

#### Selected recommendations

SIGN’s guideline on management of lower urinary tract infection in adult women (SIGN 160)

3.1.3 Dipstick testing (women aged under 65)

* Diagnose a UTI in the presence of two or more urinary symptoms (dysuria, frequency, urgency, visible haematuria or nocturia) and a positive dipstick test result for nitrite.
* On diagnosis of UTI in the presence of two or more urinary symptoms and a positive dipstick test result for nitrite, a urine specimen should only be sent for culture if the patient has a history of resistant urinary isolates, has taken any antibiotics in the past six months or fails to respond to empirical antibiotics.
* Consider sending a urine specimen for culture to inform the diagnosis in patients who present with suspected UTI and two or more urinary symptoms and a negative dipstick test result for nitrite.

4.1.3 Urinalysis and dipstick testing (women aged 65 and over)

* Use of dipsticks for diagnosis of UTI in women aged 65 years and above in long-term care facilities or in frail elderly people requiring assisted living services is not recommended.
* In women aged 65 years and over with symptoms suggestive of UTI a positive test for nitrite in the urine is a marker for bacteriuria, and this should be assessed in the context of the background incidence of asymptomatic bacteriuria.
* Send a urine specimen for culture to confirm the pathogen and antibiotic susceptibility in women aged 65 years and above prior to starting antibiotics for a UTI.

6.1.1 Clinical assessment (catheterised women)

* Clinical signs and symptoms compatible with CA-UTI should be used to diagnose infection in catheterised patients with urine culture and sensitivity testing employed to confirm the diagnosis and pathogen.

NICE’s clinical knowledge summary on urinary tract infection (lower) – women: Assessment

* A sample should be sent for urine culture in all women with suspected lower UTI who:
  + Are pregnant.
  + Are older than 65 years.
  + Have symptoms that are persistent or do not resolve with antibiotic treatment.
  + Have recurrent UTI (2 episodes in 6 months or 3 in 12 months).
  + Have a urinary catheter in situ or have recently been catheterised.
  + Have risk factors for resistance or complicated UTI such as abnormalities of genitourinary tract, renal impairment, residence in a long term care facility, hospitalisation for more than 7 days in the last 6 months, recent travel to a country with increased resistance or previous resistant UTI.
  + Have atypical symptoms.
  + Have visible or non-visible (on urine dipstick) haematuria.

NICE’s clinical knowledge summary on urinary tract infection (lower) – men: Diagnosing a UTI

* In men with symptoms suggestive of a UTI, confirm the diagnosis by urine culture and sensitivity, by arranging collection of a mid-steam urine (MSU) or catheter specimen of urine (CSU), to determine the infecting micro-organism.
  + Only send a urine sample for culture in a man with an indwelling catheter if there are features of systemic infection.

NICE’s clinical knowledge summary on Pyelonephritis – acute: Diagnosis

* In all people suspected of having acute pyelonephritis, arrange collection of a mid-steam urine (MSU) or catheter specimen of urine (CSU), to determine the infecting micro-organism.

NICE’s guideline on Urinary tract infection (lower): antimicrobial prescribing (NG109)

1.1.6 Obtain a midstream urine sample from pregnant women and men before antibiotics are taken,and send for culture and susceptibility testing.

NICE’s guideline on Pyelonephritis (acute): antimicrobial prescribing (NG111)

1.1.2 In people aged 16 years and over with acute pyelonephritis, obtain a midstream urine sample before antibiotics are taken and send for culture and susceptibility testing.

#### Current UK practice

The [Pathology GIRFT Programme National Specialty Report](https://www.gettingitrightfirsttime.co.uk/clinical-work-stream/pathology) identifies considerable variation in the use of urine cultures in primary care. The national average was 105 urine specimens from primary care per 1,000 list size. The report also found a six-fold variation in the rejection of urine samples from primary care and a ten-fold variation in rejection rates for urine samples from trusts.

[Mar Pujades-Rodriguez et al](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(19)30120-8/) published a retrospective study based on a cohort of all patients with a lower UTI diagnosis between 2011 and 2015 in 390 GP practices. Data were extracted from ResearchOne; a healthcare research database drawn from electronic patient health records from GP practices spread throughout England. The results showed that 22% of UTI episodes for pregnant women had a urine sample for culture or microscopy collected within 10 days. For men aged 18-64yrs, 30.6% of episodes had a sample collected. These findings suggest that samples are not being taken or sent in line with guideline recommendations. It is unclear, however, to what extent GP practices were recording and coding this information correctly on the electronic patient records. It is also not known if practice has changed since 2015.

### Resource impact

Resource impact for this area would be challenging to estimate. This is because there is no existing data source on the number of patients for whom a dipstick test is used to inform diagnosis of UTI. The size of the eligible population (to predict usage) would need to be estimated using epidemiological or prescription data for other conditions/indications as proxies. Coupled with the uncertainty surrounding other parameters such as the large variety of tests available from supply chains, variations in prices of different brands, and estimating changes in practice and future usage, this would not provide sufficiently robust resource impact information.

### Issues for consideration

**For discussion:**

* What is the priority for improvement?
* What is the key action that will lead to improvement?
* Is there a specific age / sex group where diagnosis of UTIs needs improving?

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Treatment

### Self-care and delayed prescribing

Comments identified self-care, providing advice, pharmacy-led interventions and avoiding unnecessary treatment of asymptomatic bacteriuria as important for reducing antimicrobial resistance and minimising adverse effects. Delayed prescribing would encourage self-management as a first step, but also allows access to antimicrobials without another appointment if someone’s condition worsens. Monitoring and reviewing prescribing data, and collecting information on medicines received by patients, were suggested as ways to improve antimicrobial stewardship.

Target population groups identified for avoiding inappropriate antibiotic prescribing included adults with indwelling catheters, and non‑pregnant women.

#### Selected recommendations

SIGN’s guideline on management of lower urinary tract infection in adult women (SIGN 160)

3.2.2.2 Predicting patients more likely to benefit from NSAIDs rather than immediate antimicrobial therapy (women aged under 65)

* Consider NSAIDs as first-line treatment in women aged <65 years with suspected uncomplicated lower UTI who describe their symptoms as mild.

3.2.4.4 Treatment of asymptomatic bacteriuria in non-pregnant women

* Do not treat asymptomatic bacteriuria in non-pregnant women of any age.

NICE’s guideline on Urinary tract infection (lower): antimicrobial prescribing (NG109):

1.1.2 Give advice about managing symptoms with self-care (see the recommendations on self-care) to all people with lower UTI.

1.1.3 Consider a back-up antibiotic prescription (to use if symptoms do not start to improve within 48 hours or worsen at any time) or an immediate antibiotic prescription (see the recommendations on choice of antibiotic) for women with lower UTI who are not pregnant. Take account of:

* the severity of symptoms
* the risk of developing complications, which is higher in people with known or suspected structural or functional abnormality of the genitourinary tract or immunosuppression
* the evidence for back-up antibiotic prescriptions, which was only in non-pregnant women with lower UTI where immediate antibiotic treatment was not considered necessary
* previous urine culture and susceptibility results
* previous antibiotic use, which may have led to resistant bacteria
* preferences of the woman for antibiotic use

1.2.1 Be aware that asymptomatic bacteriuria:

* is significant levels of bacteria (greater than 105 colony forming units/ml) in the urine with no symptoms of UTI
* is not routinely screened for, or treated, in women who are not pregnant, men, young people and children
* is treated with antibiotics in pregnant women because it is a risk factor for pyelonephritis and premature delivery (see the recommendations on choice of antibiotic).

1.3.1 Advise people with lower UTI about using paracetamol for pain, or if preferred and suitable ibuprofen.

1.3.2 Advise people with lower UTI about drinking enough fluids to avoid dehydration.

1.3.3 Be aware that no evidence was found on cranberry products or urine alkalinising agents to treat lower UTI.

NICE’s guideline on Urinary tract infection (catheter-associated): antimicrobial prescribing (NG113)

1.1.1 Be aware that:

* a catheter-associated urinary tract infection (UTI) is a symptomatic infection of the bladder or kidneys in a person with a urinary catheter
* the longer a catheter is in place, the more likely bacteria will be found in the urine; after 1 month nearly all people have bacteriuria
* antibiotic treatment is not routinely needed for asymptomatic bacteriuria in people with a catheter.

1.1.2 Give advice about managing symptoms with self-care (see the recommendations on self-care) to all people with catheter-associated UTI.

1.2.1 Advise people with catheter-associated UTI about using paracetamol for pain.

1.2.2 Advise people with catheter-associated UTI about drinking enough fluids to avoid dehydration.

#### Current UK practice

[Mar Pujades-Rodriguez et al’s](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(19)30120-8/) study of patients with lower UTI diagnosis between 2011 and 2015 in 390 GP practices reported that 86% of UTIs were treated with a same-day antibiotic prescription. The authors described this as reflecting routine clinical practice in primary care and said that that the proportion of patients being offered delayed prescriptions, or symptomatic treatment and follow-up, seems to be low.

[Gharbi et al](https://www.bmj.com/content/364/bmj.l525) undertook a retrospective population-based cohort study in England on patients attending GP practices between 2007 and 2015. Data was extracted from the Clinical Practice Research Datalink (a primary care electronic health database) for adults aged 65 years or older presenting to a GP with at least one diagnosis of suspected or confirmed lower UTI. Out of 312,896 UTI episodes identified, 7.2% did not have a record of antibiotics being prescribed and 6.2% showed a delay in antibiotic prescribing.

### Choice of antibiotic and course duration

Prescribing of antibiotics for older people was suggested as a key area, with early initiation of recommended first line antibiotics. Some comments identified the key priority as ensuring a short course of antibiotics (3 days) for treatment of uncomplicated lower UTI in adult women as this is beneficial in terms of adverse effects and impact on antimicrobial resistance. Others suggested that the key area is that 3 days duration is not suitable for lower UTIs in men, pregnant women, complicated UTIs and recurrent UTIs. Specific criteria were also given in relation to types of antibiotics not to be used: do not use nitrofurantoin, oral fosfomycin, and pivmecillinam to treat pyelonephritis; and do not use trimethoprim if it has been given in the previous 3 months, unless a specimen of urine shows sensitivity.

#### Selected recommendations

SIGN’s guideline on management of lower urinary tract infection in adult women (SIGN 160)

3.2.4.2 Duration of treatment (women aged under 65)

* Use short (3-day) courses of antimicrobials for treatment for LUTI, as this is clinically effective and minimises the risk of adverse events.

4.2.2.1 Choice of agent (women aged 65 and over)

* Consider use of a narrow-spectrum antimicrobial with activity against common uropathogens for treatment of LUTI in women aged 65 years and over. Consider individual patient factors such as impaired renal function, polypharmacy and adverse effects, such as CDI and antimicrobial resistance.

NICE’s guideline on urinary tract infection (lower): antimicrobial prescribing (NG109)

1.4.1 When prescribing antibiotic treatment for lower UTI, take account of local antimicrobial resistance data and follow:

* table 1 for non-pregnant women aged 16 years and over
* table 2 for pregnant women aged 12 years and over
* table 3 for men aged 16 years and over

[Tables not included for brevity. They cover first and second choice antibiotics, dosage, and course length. Full tables are available [here](https://www.nice.org.uk/guidance/ng109/chapter/Recommendations).]

NICE’s guideline on pyelonephritis (acute): antimicrobial prescribing (NG111)

1.3.1 When prescribing an antibiotic for acute pyelonephritis, take account of local antimicrobial resistance (AMR) data from Public Health England and follow:

* table 1 for non-pregnant women and men aged 16 years and over
* table 2 for pregnant women aged 12 years and over

[Tables not included for brevity. They cover first and second choice antibiotics, dosage, and course length. Full tables are available [here](https://www.nice.org.uk/guidance/ng111/chapter/Recommendations).]

#### Current UK practice

[Mar Pujades-Rodriguez et al’s](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(19)30120-8/) retrospective study of patients diagnosed with lower UTI in primary care practices in England, found that 86% received empirical antibiotic therapy on the day of diagnosis, and 83% had no evidence of urine sample collection for microbiological investigation in their electronic health records. The findings showed that initial treatment was generally limited to two antibiotics, trimethoprim and nitrofurantoin (57% and 24%, respectively). The authors concluded that prescribing in general follows national guidance for situations when the risk of resistance is considered to be low.

Antibiotic re-prescription for the same UTI episode was uncommon (recorded in 4.1% of UTI episodes). However, more than one in five episodes of antibiotic re-prescription were treated with the same antibiotic as was initially prescribed. The authors described it illogical to re-prescribe the same antibiotic when treatment failure is considered clinically.

[Gharbi et al’s](https://www.bmj.com/content/364/bmj.l525) retrospective study of patients aged 65 and over found that of participants prescribed antibiotics for a UTI episode, 74% received either trimethoprim (55%) or nitrofurantoin (19%).

[Pouwels et al](https://www.bmj.com/content/364/bmj.l440) carried out a study to look at whether the durations of antibiotic prescriptions followed guidelines for specific infections. They extracted data from The Health Improvement Network (a primary care electronic database that contains anonymised data on patients, practices, and consultations) for the period 2013-15. The data were compared to treatment durations for first line antibiotics recommended by Public Health England for that period. For acute cystitis in non-pregnant women, 55% of antibiotic prescriptions were for longer than the 3-day recommended duration.

[Ahmed et al](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5755802/) carried out a retrospective study to examine trends in empirical antibiotic prescribing using records extracted from the Clinical Practice Research Datalink. They extracted records for almost one million patients aged 65 years old or older, registered with 393 GP practices in England between 2004 and 2014. Their findings showed that prescribing of broad-spectrum antibiotics decreased over the study period. There were increases in the proportion of older men (from 45% to 74%) and women (from 55% to 82%) with UTI, prescribed a UTI specific antibiotic (nitrofurantoin or trimethoprim). There were also increases in the proportion of older men prescribed antibiotics for 7-days (from 42% to 69%) and women prescribed antibiotics for 3-days (from 15% to 26%).

### Alternative treatments

A stakeholder suggested that effective alternatives to antibiotics are available for management of UTIs, such as glycosaminoglycan (GAG) layer replacement therapy.

#### Selected recommendations

No suitable recommendations have been found for this suggested area.

#### Current UK practice

No national data or published large studies on current practice have been identified.

Resource impact

Please see section 2.5 in this report.

Issues for consideration

**For discussion:**

* What is the priority for improvement in relation to treatment?
* What is the key action that will lead to improvement?
* Is there a specific age / sex group where treatment needs improving?
* Can we develop a specific, measurable statement?

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Catheter associated UTI

Protocols for standardisation of catheter insertion and tailored individual programmes based on clinical need were suggested to reduce the risk of catheter associated UTIs. One suggestion to achieve this was to ensure that patient records include the reason for catheterisation, consideration of alternatives, timelines for insertion and review and referral information. An alternative suggestion was to ensure every patient has a transferable urinary catheter record / care plan or passport.

For people with a catheter associated UTI, it was suggested that the catheter should be removed or changed if it has been in place for more than 7 days.

#### Existing quality statements

NICE’s quality standard on Infection prevention and control (QS61)

Statement 4: People who need a urinary catheter have their risk of infection minimised by the completion of specified procedures necessary for the safe insertion and maintenance of the catheter and its removal as soon as it is no longer needed.

Definition of ‘specified procedures’ includes: Catheterisation should be used only after considering alternative methods of management. The person's clinical need for catheterisation should be reviewed regularly and the urinary catheter removed as soon as possible. The need for catheterisation, as well as details about insertion, changes and care should be documented.

#### Selected recommendations

NICE’s guideline on Urinary tract infection (catheter-associated): antimicrobial prescribing (NG113)

1.1.3 Consider removing or, if this cannot be done, changing the catheter as soon as possible in people with a catheter-associated UTI if it has been in place for more than 7 days. Do not allow catheter removal or change to delay antibiotic treatment.

#### Current UK practice

No national data or published large studies on current practice have been identified.

Resource impact

Please see section 2.5 earlier in this report.

Issues for consideration

**For discussion:**

* Is a statement needed given statement 4 in QS61?

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Recurrent UTI

### UTI and the menopause

Several stakeholders focussed suggestions for priorities on the menopause. Improved recognition of the menopause as being a contributory factor to recurrent UTI is needed and vaginal oestrogen therapy for peri and post-menopausal women with recurrent UTI was suggested. Urogenital atrophy, a chronic condition due to oestrogen deficiency and associated with UTIs was also identified with pelvic floor training suggested to reduce signs and symptoms.

#### Selected recommendations

NICE’s guideline on Urinary tract infection (recurrent): antimicrobial prescribing (NG112)

1.1.5 Consider the lowest effective dose of vaginal oestrogen (for example, estriol cream) for postmenopausal women with recurrent UTI if behavioural and personal hygiene measures alone are not effective or not appropriate. Discuss the following with the woman to ensure shared decision-making:

* the severity and frequency of previous symptoms
* the risk of developing complications from recurrent UTIs
* the possible benefits of treatment, including for other related symptoms, such as vaginal dryness
* the possible adverse effects such as breast tenderness and vaginal bleeding (which should be reported because it may require investigation)
* the uncertainty of endometrial safety with long-term or repeated use
* preferences of the woman for treatment with vaginal oestrogen.

Review treatment within 12 months, or earlier if agreed with the woman. In October 2018, this was an off-label use of vaginal oestrogen products. See NICE's information on prescribing medicines.

#### Current UK practice

No national data or published large studies on current practice have been identified.

### Management and treatment

Suggested priority areas divide into two broad categories: use of prophylactic antibiotics and non-pharmaceutical interventions. Prevention could be achieved through low dose prophylactic antibiotics and non-pharmaceutical interventions. Others suggested the focus should be reviewing and / or stopping long term antibiotics prescribed for UTI prophylaxis. There were variations in the suggested populations (older people and all people) and timescales (3-6 months, at least every 6 months). Another suggestion was to restrict antibiotic prophylaxis for patients with indwelling urinary catheters to those with a history of catheter associated UTI or who had a traumatic catheterisation.

Some stakeholders suggested the use of non-antibiotic alternatives for treatment of recurrent UTI. These included methenamine, methenamine hippurate and D-mannose.

#### Selected recommendations

SIGN’s guideline on management of lower urinary tract infection in adult women (SIGN 160)

See section 4.2 above for recs on self-care.

5.1.2 Pharmacological treatment: antimicrobials (women with recurrent lower UTI)

* Consider prophylactic antimicrobials for women experiencing recurrent UTI after discussion of self-care approaches and the risks and benefits of antimicrobial treatment involved.
* Long-term prophylactic antimicrobials for prevention of recurrent UTI should be used with caution in women aged 65 years and over, and careful consideration given to the risks and benefits involved.
* To minimise the development of resistance antimicrobial prophylaxis should be used as a fixed course of three to six months in women with recurrent UTI.

NICE’s guideline on urinary tract infection (recurrent): antimicrobial prescribing (NG112)

1.1.7 For women with recurrent UTI who are not pregnant, consider a trial of antibiotic prophylaxis only if behavioural and personal hygiene measures, and vaginal oestrogen (in postmenopausal women) are not effective or not appropriate.

1.1.8 For women with recurrent UTI who are not pregnant, ensure that any current UTI has been adequately treated then consider single-dose antibiotic prophylaxis for use when exposed to an identifiable trigger (see the recommendations on choice of antibiotic prophylaxis). 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
* the woman's preferences for antibiotic use.

1.1.9 When single-dose antibiotic prophylaxis is given, give advice about:

* how to use the antibiotic
* possible adverse effects of antibiotics, particularly diarrhoea and nausea
* returning for review within 6 months
* seeking medical help if there are symptoms of an acute UTI.

1.1.11 When a trial of daily antibiotic prophylaxis is given, 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 review within 6 months
* seeking medical help if there are symptoms of an acute UTI.

1.1.16 Review antibiotic prophylaxis for recurrent UTI at least every 6 months, with the review to include:

* assessing the success of prophylaxis
* discussion of continuing, stopping or changing prophylaxis (taking into account the person's preferences for antibiotic use and the risk of antimicrobial resistance)
* a reminder about behavioural and personal hygiene measures and self-care treatments (see the recommendations on self-care).
* If antibiotic prophylaxis is stopped, ensure that people have rapid access to treatment if they have an acute UTI.

1.2.1 Be aware that:

* Some women with recurrent UTI may wish to try D‑mannose if they are not pregnant (the evidence for D‑mannose was based on a study in which it was taken as 200 ml of 1% solution once daily in the evening). D‑mannose is a sugar that is available to buy as powder or tablets; it is not a medicine.

NICE’s guideline on urinary tract infection (catheter-associated): antimicrobial prescribing (NG113)

1.4 Do not routinely offer antibiotic prophylaxis to prevent catheter-associated UTIs in people with a short-term or a long-term (indwelling or intermittent) catheter.

NICE’s guideline on healthcare-associated infections (CG139)

1.2.5.13 When changing catheters in patients with a long-term indwelling urinary catheter:

* do not offer antibiotic prophylaxis routinely
* consider antibiotic prophylaxis for patients who:
  + have a history of symptomatic urinary tract infection after catheter change or
  + experience trauma during catheterisation.

#### Current UK practice

No national data or published large studies on current practice have been identified.

### Referral

Referring men with upper urinary tract infections for urological investigation was suggested as these infections can indicate the presence of lower urinary tract abnormalities. Another comment suggested there is a need to identify who the specialists are.

NICE’s guideline on Urinary tract infection (recurrent): antimicrobial prescribing (NG112)

#### Selected recommendations

1.1.4 Refer or seek specialist advice on further investigation and management for:

* men aged 16 years and over
* people with recurrent upper UTI
* people with recurrent lower UTI when the underlying cause is unknown
* pregnant women
* children and young people under 16 years in line with the NICE guideline on urinary tract infection in under 16s
* people with suspected cancer in line with the NICE guideline on suspected cancer: recognition and referral.

NICE’s guideline on Pyelonephritis (acute): antimicrobial prescribing (NG111)

1.1.9 Refer people aged 16 years and over with acute pyelonephritis to hospital if they have any symptoms or signs suggesting a more serious illness or condition (for example, sepsis).

1.1.10 Consider referring or seeking specialist advice for people aged 16 years and over with acute pyelonephritis if they:

* are significantly dehydrated or unable to take oral fluids and medicines or
* are pregnant or
* have a higher risk of developing complications (for example, people with known or suspected structural or functional abnormality of the genitourinary tract or underlying disease [such as diabetes or immunosuppression]).

#### Current UK practice

No national data or published large studies on current practice have been identified.

Resource impact

Please see section 2.5 earlier in this report.

Issues for consideration

**For discussion:**

* What is the priority for improvement?
* What is the key action that will lead to improvement?
* Could we focus on a specific audience or setting?
* Can we develop a specific, measurable statement?

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Additional areas

### Summary of suggestions

The improvement areas below were suggested as part of the stakeholder engagement exercise. However, they were felt to be either unsuitable for development as quality statements, outside the remit of this particular quality standard referral or need further discussion by the committee to establish potential for statement development.

There will be an opportunity for the committee to discuss these areas at the end of the Advisory Committee meeting.

Table 2 Summary of information available for additional areas

| Suggested area for improvement | Within remit of NICE QS | In scope | Guideline recs | Relevant  existing QS |
| --- | --- | --- | --- | --- |
| Coding / recording of UTIs in primary care | Yes | Yes | No | No |

### Coding / recording of UTIs in primary care

It was suggested that people prescribed an antimicrobial have the clinical indication documented in their clinical record. A pilot audit in Wales suggests coding of UTIs is low. This area has not been progressed. Recording and coding is a method by which quality improvement can be evidenced rather than an action that represents high quality care or support. Suggested methods of data collection may be referred to in the data sources for quality measures

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# Appendix 1: Additional SCM comments received (not included in sections 3 & 4 of this report)

| **Suggested key area for quality improvement** | **Why is this a key area for quality improvement?** | **Supporting information** |
| --- | --- | --- |
| 1. Patients with UTI requiring IV antibiotics should have blood cultures sent prior to starting the antibiotics | Culture results are critical to antimicrobial stewardship and allow directed therapy to be used in treatment (IV and oral).  Blood culture positivity falls by almost half when antibiotics are given prior to the collection of the sample.  Targeting antibiotics to a known pathogen has Individual patient benefits (ability to pick the most suitable and least harmful antibiotic option possible) and population level benefits (as it reduces the use of broad spectrum antimicrobial use) in terms of antimicrobial stewardship to reduce rates of antimicrobial resistance. | Blood culture positivity was 50.6% (78/154) among patients with sepsis who did not receive antibiotics and only 27.7% (112/405) in those who were already receiving antibiotics (p <0.001)  [Impact of antibiotic administration on blood culture positivity at the beginning of sepsis: a prospective clinical cohort study – ScienceDirect](https://www.sciencedirect.com/science/article/pii/S1198743X1830449X#:~:text=The%20overall%20positivity%20of%20all,p%20%3C0.001)%20(Fig.) |
| 2. Consider prostatitis as a cause for recurrent UTI in men (same organism). | Prostatitis requires specific antibiotics due to penetration issues and a longer course than routine lower UTIs.  It is not uncommon to see repeated urine results with the same organism in men, which is not adequately responding to antibiotics (e.g. it recurs on cessation) either due to duration and/or agent chosen. Anecdotally patients with this background can then present to the Urology department with sepsis/acute deterioration. |  |
| 3. MSU/CSU should be sent prior to antibiotics being started for all hospitalised patients being treated for UTI | Culture results are critical to antimicrobial stewardship and allow directed therapy to be used in treatment (IV and oral).  Individual patient benefits (ability to pick the most suitable and least harmful antibiotic option possible) and population level benefits (as it reduces the use of broad spectrum antimicrobial use) in terms of antimicrobial stewardship to reduce rates of antimicrobial resistance. | NICE UTI treatment guidelines ask for Urine samples to be sent prior for men, pregnant women and leave it open for other women.  A sample should be sent for urine culture in all women with suspected lower UTI who:  Are pregnant.  Are older than 65 years.  Have symptoms that are persistent or do not resolve with antibiotic treatment.  Have recurrent UTI (2 episodes in 6 months or 3 in 12 months).  Have a urinary catheter in situ or have recently been catheterised.  If the catheter has been changed the sample should be collected from the newly placed catheter — using aseptic technique drain a few mL of residual urine from the tubing then collect a fresh sample from catheter sampling port.  Ensure the microbiology request form states that this is a suspected catheter-associated infection and details of any antibiotic prescribed.  Have risk factors for resistance or complicated UTI such as abnormalities of genitourinary tract, renal impairment, residence in a long term care facility, hospitalisation for more than 7 days in the last 6 months, recent travel to a country with increased resistance or previous resistant UTI.  Have atypical symptoms.  Have visible or non-visible (on urine dipstick) haematuria.  A urine sample for culture should be sent (f possible before starting antibiotics) in women who are catheterized as there is an increased likelihood of antimicrobial resistance [[EAU, 2018](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/references/); [NICE, 2018c](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/references/); [EAU, 2018](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/references/) ].  [Assessment | Diagnosis | Urinary tract infection (lower) - women | CKS | NICE](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/diagnosis/assessment/#:~:text=Urine%20dipstick%20should%20not%20be,2018%3B%20NICE%2C%202018c%5D.) |
| 4. Dipsticks should not be used to diagnose UTI in the over 65s | It is unreliable due to prevalence of asymptomatic bacteriuria; overtreatment of individuals and UTI at a population level occurs due to misdiagnosis. Unnecessary antibiotics can cause individual patient harm and an increasing population burden of antimicrobial resistance  Current QSAC on UTI in patients over 65 states they should have a full assessment, but does not clearly state that dipsticks should not be used for diagnosis as clearly as the relevant NICE/EAU/PHE guidance. | Urine dipstick should not be used to diagnose UTI in women over the age of 65 years, in those with a urinary catheter, for recurrent UTI or where there is a chance of bacterial resistance – a urine culture should be sent [[PHE, 2017](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/references/); [EAU, 2018](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/references/); [NICE, 2018c](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/references/)].  UTI: Antibiotics CQUIN for 2022/23 from NHSE/NHSI |

# Appendix 2: Suggestions from registered stakeholders

#### Diagnosing UTIs: Dipstick testing and assessment

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
| --- | --- | --- | --- | --- |
|  | ADVANZ Pharma | Pyelonephritis (acute): antimicrobial prescribing | Failure to respond to initial antibiotic treatment, may suggest other medical problems.  Misdiagnosis of infection leads to unnecessary antibiotic use and potentially delays correct diagnoses. Interventions to improve diagnosis often focus on infections separately  Broader interventions are required to improve treatment efficiency | Please refer to article for further information:  <https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/misdiagnosis-of-urinary-tract-infection-linked-to-misdiagnosis-of-pneumonia-a-multihospital-cohort-study/77F093EA78E75FCF05AD29D6C02F7984> |
|  | British Association of Urological Surgeons | Treatment of UTI should be based primarily on symptoms rather than dipstick results | Many patients may suffer symptoms in keeping with a UTI even in the presence of a negative dipstick. There are numerous possible causes for this including dilution due to additional fluid intake, inadequacies in collection, poor sensitivity of testing, etc.  Almost all women with typical urinary complaints and a negative culture still have an infection with E. coli. when appropriately tested. It is becoming clearer all the time that there are often significant inadequacies in the way urine is tested. | <https://pubmed.ncbi.nlm.nih.gov/15972728/>  <https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(17)30209-4/fulltext> |
|  | British Geriatrics Society | Not using dipstick to diagnose UTI in Older Frail people | Still being used all the time and is inaccurate and trials proved it is not of benefit | As no 1 |
|  | Cardiff University | Clarification and clear advice on the use & interpretation of urinary dipsticks in diagnosis of UTI | Urinary dipsticks frequently used to diagnose UTI but not recommended for some groups of patients (e.g. women >65, catheterised patients) and less clear if should be used for some e.g. men, those with recurrent/resistant infections, pregnant women, suspected pyelonephritis | NICE CKS UTI (lower) in adult women  NICE CKS UTI (lower) in men  NICE CKS pyelonephritis |
|  | Healthy.io | Diagnosis of suspected uncomplicated lower urinary tract infection in women aged under 65 years should require urinalysis (using a urine dipstick) alongside the presence of two or more symptoms. | SIGN Guideline 160 (2020) emphasises the relationship between antibiotic prescribing in suspected UTI and the development of antimicrobial resistance. The Guideline also highlights variation in approaches to diagnosis and management, and the impact that variation can have on both patient experience and antimicrobial stewardship.  Accordingly, SIGN recommends that the following clinical recommendation is prioritised for implementation:  “Diagnose a UTI in the presence of two or more urinary symptoms (dysuria, frequency, urgency, visible haematuria or nocturia) and a positive dipstick test result for nitrite.”  NICE should also adopt this recommendation as a priority for implementation, recognising the evidence set forward by SIGN regarding the potential for limiting antimicrobial resistance.  Implementation of this recommendation risks generating additional pressure for primary care providers and inconvenience for patients in requiring a diagnostic test, but this can be mitigated by promoting NHS England’s recommendations to enable greater access to point-of-care testing in community pharmacies or home-based tests. | SIGN Guideline 160 (2020) provides detailed and comprehensive analysis of evidence to support the recommendation that diagnosis of UTI in women under 65 requires the presence of two more urinary symptoms alongside a positive dipstick result: <https://www.sign.ac.uk/media/1766/sign-160-uti-0-1_web-version.pdf>  Similar guidance has also been adopted in the Netherlands (2020): <https://richtlijnen.nhg.org/standaarden/urineweginfecties>  Analysis by Healthy.io indicates that UTIs account for 13.7% of all antibiotics prescribed in the community and, in the last year (Nov 2020 – Oct 2021), over 5.5 million prescriptions were dispensed for trimethoprim and nitrofurantoin in England - the two main antibiotics used to treat UTI - at a cost of £38.5 million: <https://openprescribing.net/analyse/#org=CCG&numIds=0501080W0AA,0501130R0AA&denom=nothing&selectedTab=summary>  NHS England has highlighted that the potential for point-of-care testing for UTI presents an opportunity to support appropriate prescribing (2020): <https://www.england.nhs.uk/wp-content/uploads/2020/11/diagnostics-recovery-and-renewal-independent-review-of-diagnostic-services-for-nhs-england-2.pdf>  NHS England has recommended the expansion of access to point-of-care testing in community pharmacy (2020): <https://www.england.nhs.uk/wp-content/uploads/2022/01/B0722-Point-of-Care-Testing-in-Community-Pharmacies-Guide_January-2022.pdf>  Healthy.io’s partnership with Boots was evaluated in 2020 and concluded that “The service helped to support the appropriate use of antibiotics and reduced demand on other NHS resources such as GP surgeries and urgent care settings.”: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8210311/>  A similar service developed in partnership with the NHS in Nottinghamshire and Derbyshire and was independently evaluated in 2020: <https://emahsn.org.uk/images/Digital_UTI_Pathway_Evaluation_-_Final_v270720.pdf> |
|  | SCM 1 | Assessment of symptoms and presentation for risk of sepsis | Sepsis can result for UTI's and it is essential that patients are assessed for any possible symptoms of sepsis with no delay.  Assessment of a UTI should not be based purely on urine dip results or MSU result. Clinical assessment of symptoms is needed to gather a full history to exclude differential diagnosis. missed diagnosis and risk of sepsis. | [https://www.sepsis.org/sepsisand/urinary-tract-infections/#:~:text=The%20term%20urosepsis%20describes%20sepsis,requires%20rapid%20diagnosis%20and%20treatment](https://www.sepsis.org/sepsisand/urinary-tract-infections/#:~:text=The term urosepsis describes sepsis,requires rapid diagnosis and treatment). |
|  | SCM 1 | Appropriate diagnosis or pyelonephritis | Pyelonephritis needs to be recognised and treated differently to a uti as the infection has spread to the kidneys. It is important for clinicians to recognise symptoms of pyelonephritis for effective and fast treatment due to the dangers associated with pyleonephritis. | * [Pyelonephritis (acute): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng111) (2018) NICE guideline NG111 * <https://cks.nice.org.uk/topics/pyelonephritis-acute/> * <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/927195/UTI_diagnostic_flowchart_NICE-October_2020-FINAL.pdf> |
|  | SCM1 | To dip test a urine sample or not | There is a variance in practice which results in a variance in patient care, diagnosis, treatment and prescribing.  There is evidence and guidance to advise when a urine sample should be dipped or not. There is a risk that this is not always adhered to with urine samples being dip tested when it is not required or of any benefit. | The below guidance outlines when a urine sample should be dip tested or not  Public Health England (2020) [Diagnosis of urinary tract infections: Quick reference tool for primary care for consultation and local adaptation](https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis) |
|  | SCM2 | Clear, precise recommendation about criteria for diagnosis of UTI | Important diagnosis of UTI is as precise as possible in order to prescribe antibiotics only to people with a high likelihood of UTI and as a consequence reduce antimicrobial resistance and minimise adverse effects.  *Diagnose UTI in adult women on presence of 2 or more urinary symptoms plus positive dipstick test for nitrite [in the absence of a vaginal discharge].*  See supporting information | This is a recommendation in SIGN 160 (September 2020) Guideline ‘Management of suspected bacterial UTI in adult women’.  Supported by European Association of Urology guideline 20/3/20. [This guideline highlighted the need to add a statement on the absence of vaginal discharge] |
|  | SCM2 | Assessment of adults > 65 with suspected UTI. | -Women aged > 65 years especially those in long-term care facilities, may not display the usual symptoms and signs of UTI that are seen in younger women.\*  • Functional deterioration and/or changes to performance of activities of daily living may be indicators of infection in frail older people\*.  -important to assess fully so as not to miss attribute atypical symptoms /deterioration to UTI. Potential to miss malignancy particularly if haematuria present  Mortality from sepsis and urosepsis higher in elderly\*.  The accuracy of dipstick testing in adults aged 65 years and over can vary. It is therefore important that factors other than the results of dipstick testing are taken into consideration when diagnosing urinary tract infections in older people to ensure appropriate management and avoid unnecessary use of antibiotics.  The incidence of asymptomatic bacteriuria (ASB) rises with age, especially for those in long- term residential facilities, where it can be as high as 70%  Asymptomatic bacteriuria can lead to overdiagnosis of UTI and unnecessary antibiotic prescribing.  The frequency of antibiotic prescribing is higher in older adults, especially those in long-term care facilities, and older adults are more likely to harbour resistant bacteria | See existing QS90 (2015)  *Recommendation: Adults > 65 have a full clinical assessment before a diagnosis of UTI is made.*  \*Factors that make diagnosis and treatment of UTI particularly important in the elderly are set out in SIGN 160 (September 2020) |
|  | SCM5 | Key area for quality improvement 1  In people with urinary symptoms ask about vaginal discharge and irritation | Small practice audit & experience suggests this is not uniformly asked/recorded  Risk of incorrect diagnosis and treatment  People who are uncomfortable passing urine ( dysuria) may not volunteer that they have a rash ‘down below’ that could be causing the discomfort, or that they are at risk of sexually transmitted infection (STI).  Missed STI can lead to pelvic inflammation and fertility problems  Inappropriate antibiotic use risks antimicrobial resistance | SIGN 160 (Women under 65yrs)  PHE (2020) Diagnosis of urinary tract infections: Quick reference tool for primary care  European Association of Urology (2022)  Recommendations for the diagnostic evaluation of uncomplicated cystitis Strength rating Strong:  *Diagnose uncomplicated cystitis in women who have no other risk factors for complicated urinary tract infections based on: • a focused history of lower urinary tract symptoms (dysuria, frequency and urgency); • the absence of vaginal discharge or irritation*. |
|  | SCM5 | Key area for quality improvement 3  A person presenting with urinary symptoms is assessed for risk of serious illness – sepsis or pyelonephritis | People can leave samples at practice reception. It requires good systems to ensure that the person’s past history of UTI and symptoms and signs are checked. This supports correct antibiotic choice and course length.  People with urinary symptoms should be assessed to establish whether this is likely to be an upper or lower UTI and whether they have symptoms/signs of serious illness/sepsis. This may not necessarily be face to face currently but can be established by asking about home recorded temperature, presence/absence of flu-like symptoms/ malaise/systemic upset | PHE Diagnosis of urinary tract infections:  Quick reference tool for primary care  PHE/RCGP/TARGET UTI audits state, “  *Sepsis considered (e.g. notes contain mention of temperature, heart rate, respiratory rate or BP).*  *Pyelonephritis considered (e.g. notes mention absence of fever, chills, flank pain/tenderness)* |
|  | SCM5 | Key area for quality improvement 5  UTI in people with catheters   * *Diagnosis excludes use of urine dipstick in people in … all catheter associated UTI (CAUTI)* * *Clinical signs and symptoms compatible with CA-UTI should be used to diagnose infection*   *in catheterised patients with urine culture and sensitivity testing employed to confirm the*  *diagnosis and pathogen*. | Focus is on not dip-testing people with urinary catheters. (Evidence regarding use of dip-sticks for people over 65yrs is less certain and the evidence relates to people in institutions/frailty)  Wales UTI QAIF pilot 2019– there was some use of dipsticks to diagnose UTI in people with catheters and this required MDT collaboration to stop. The work also identified people who were lost to follow-up/trial without catheter.  More up to date current practice data may be available.  Most urinary people with urinary catheters , urine will be colonised at 1 month and therefore dip positive, but this does not equate to symptomatic urinary infection.  Ensuring that people are advised of this improves their empowerment. | EAU  CQUIN  Wales UTI QAIF – catheter  NICE NG 113  SIGN 160 |
|  | SCM6 | Key area for quality improvement 2  Methods of diagnosing UTIs/ need for the use of patients’ questionnaire especially voiding questionnaire | * Urinalysis by dipstick testing for leucocyte esterase and nitrite and/or midstream urine culture is the first investigation of the patient presenting with LUTS. Negative results are usually assumed to exclude infection, these urinalysis methods are not sensitive and are incapable of excluding UTI. * Currently the best performing method is microscopy of a fresh unspun, unstained, clean-catch specimen of urine in a counting chamber to enumerate the white cells. * Voiding symptoms play an important part in the complex associated with pyuria, pain features but is only evident for the higher levels of pyuria; it would seem that voiding symptoms are more discriminating. * Patients’ voiding questionnaire is important to understand patients’ UTI symptoms * Dipstick analyses are surrogate tests, referenced not to microscopic pyuria but to a gold standard urine culture threshold for UTI, which guidelines accept as being between 103 cfu ml−1 and 106 cfu ml−1 of the pure growth of a single urinary pathogen. This test has attracted criticism too. * The literature shows that the methods of sample collection for urine culture have never been validated in appropriate clinical trials. Justification for the use of such methods is based on plausible assumptions without supporting evidence. It is now recognised that routine urinalyses, including dipstick and culture, are insensitive, thus missing genuine infection in many symptomatic patients. * Routine laboratory cultures in the United Kingdom focus on isolating E. coli and use selective media to do so. The causative agents of LUTS might be much more diverse than and different from those of acute UTIs. | Lower urinary tract symptoms that predict microscopic pyuria  <https://doi.org/10.1007/s00192-017-3472-7>  Discrediting microscopic pyuria and leucocyte esterase as diagnostic surrogates for infection in patients with lower urinary tract symptoms: results from a clinical and laboratory evaluation.  doi: 10.1111/j.1464-410X.2012.11694.x.  The inadequacy of urinary dipstick and microscopy as surrogate markers of urinary tract infection in urological outpatients with lower urinary tract symptoms without acute frequency and dysuria.  doi: 10.1016/j.juro.2010.01.008.  The urine dipstick test useful to rule out infections. A meta-analysis of the accuracy  <https://doi.org/10.1186/1471-2490-4-4>  A revalidation and critique of assumptions about urinary sample collection methods, specimen quality and contamination  <https://doi.org/10.1007/s00192-020-04272-x>  The inadequacy of urinary dipstick and microscopy as surrogate markers of urinary tract infection in urological outpatients with lower urinary tract symptoms without acute frequency and dysuria.  <https://doi.org/10.1016/j.juro.2010.01.008>  Spectrum of bacterial colonization associated with urothelial cells from patients with chronic lower urinary tract symptoms.  doi: 10.1128/JCM.03314-12  Urine is not sterile: use of enhanced urine culture techniques to detect resident bacterial flora in the adult female bladder  <https://doi.org/10.1128/jcm.02876-13>  Absolute and relative accuracy of rapid urine tests for urinary tract infection in children: a meta-analysis.  DOI: 10.1016/S1473-3099(10)70031-1 |
|  | The Royal College of Pathologists | Key area for quality improvement 1  Diagnosing urinary tract infection in adults aged 65 years and over  . | NICE (2015) acknowledges that accuracy of dipstick testing for the diagnosis of UTI in adults age over 65 can vary, hence a full clinical assessment is required not just a urinary dipstick. | Currently an existing NICE Quality standard for urinary tract infection |
|  | The Royal College of Pathologists | Key area for quality improvement 2  Diagnosis of urinary tract infections in adults with urinary catheters. | NICE (2015) acknowledges that dipstick testing is not an accurate way to determine if a patient with a urinary catheter in situ has a UTI. Hence dipsticks should not be used.  This is an important standard as dipsticks are still used incorrectly for the diagnosis of UTI in catheterised adults. | Currently an existing NICE Quality standard for urinary tract infection |
|  | UKHSA | Key area for quality improvement 1  UTI diagnosis and management over phone and digital technology needs to be considered for all age groups.  Note 1: possibly too early now but we do need to consider UTI diagnosis and management in the pharmacy setting. | We know that the use of phone consultation and digital technology has increased over the COVID-19 pandemic and will continue to play a significant part in the consultation process in primary care. Guidance specific to triage and assessment over the phone or using an application or e-consultation is important, especially if used for vulnerable older adults or others at risk for complicated UTI. | Data collected was collected in March 2021 via e-survey from women aged 16-74 in England who had a UTI in the previous year. Of those who contacted a healthcare provider but did not visit a pharmacy (n=682), 67% spoke to them by phone, 16% spoke to them in person, and 8% via e-consult (publication pending). |
|  | Whittington Health | Diagnosis of UTI | Much evidence has been published in the last few years regarding the diagnostic tools for UTI including dipsticks and urine culture. These tests can miss infection and hence without a reliable test there should be guidance on how to manage patients on clinical symptoms or onward referral to a specialist centre. | Khasriya R, Sathiananthamoorthy S, Ismail S, Kelsey M, Wilson M, Rohn JL, et al. Spectrum of bacterial colonization associated with urothelial cells from patients with chronic lower urinary tract symptoms. J Clin Microbiol. 2013;51(7):2054-62.  Wolfe AJ, Toh E, Shibata N, Rong R, Kenton K, Fitzgerald M, et al. Evidence of uncultivated bacteria in the adult female bladder. J Clin Microbiol. 2012;50(4):1376-83.  Hilt EE, McKinley K, Pearce MM, Rosenfeld AB, Zilliox MJ, Mueller ER, et al. Urine is not sterile: use of enhanced urine culture techniques to detect resident bacterial flora in the adult female bladder. J Clin Microbiol. 2014;52(3):871-6. |

#### Diagnosing UTIs: Urine samples, cultures and lab testing

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
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| 1. 1c | British Association of Urological Surgeons | Improved sensitivity for diagnostic tests in UTI | Numerous studies from as far back as the 1980s have demonstrated inadequacies in conventional midstream urine culture from the point of collection to issue with the Kass criterion established in the 1960s leading to incorrect or inadequate diagnosis. Kass defined as the presence of 105 or more colony forming units (CFU) per ml of urine but bacterial counts of 102 or more organism per ml (particularly when accompanied by pyuria) still give signs and symptoms clinically consistent with UTI. The Infectious Disease Society of America (IDSA) for example recommends 103 organisms per ml to diagnose cystitis and 104 per ml for pyelonephritis which gives better sensitivity, adoption of the same threshold in the UK would go some way towards improving sensitivity. Other more sensitive techniques are also described and consideration should be given to their use in appropriate cases. | <https://pubmed.ncbi.nlm.nih.gov/26962083/>  <https://pubmed.ncbi.nlm.nih.gov/30541935/> |
| 1. 1c | British Infection Association | Targeted use of urine culture in primary care | There is large variation in the use of urine culture in primary care. High usage is often due to submission of specimens that are not clinically indicated, often through misinterpretation of urinary dipstick results. This practice is :   * Expensive * Leads to unnecessary prescribing of antibiotics * Reduces the value of indicated specimens | The pathology GIRFT report (<https://www.gettingitrightfirsttime.co.uk/clinical-work-stream/pathology/>) shows that use of primary care urine varies significantly. Median 105 specimens per 1000 list size; best quartile 88 specimens per 1000 list size.  GIRFT deep dives have shown that localities that have improved use of urine diagnostics generally had :   * Strong outreach programme between microbiology and users, particularly focussing on interpretation of dipstick results in non-infection scenarios (eg. Chronic disease monitoring) * Clear specimen acceptance criteria   Promoted initiatives such as “To Dip or Not To Dip” in nursing homes |
| 1. 1c | Cardiff University | Diagnosis of UTI vs asymptomatic bacteriuria in adults aged over 65 | Guidance is to not use dipsticks in >65 but to send a sample for culture.  How to distinguish UTI vs asymptomatic bacteriuria + alternative cause of symptoms | NICE CKS UTI (lower) in adult women  NICE CKS UTI (lower) in men |
| 1. 1c | NHS England and NHS Improvement | Obtain a midstream urine sample from pregnant women and men before antibiotics are taken and send for culture and susceptibility testing.  Numerator= Number of men and pregnant women with symptoms of UTI with a documented sample sent for culture and sensitivity  Denominator= Number of men and pregnant women with symptoms of UTI prescribed an antibiotic | [Mar Pujades-Rodriguez et al 2019. Lower Urinary Tract Infections: Management, Outcomes and Risk Factors for Antibiotic Re-prescription in Primary Care](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(19)30120-8/fulltext)  This analysis of cohort of all patients with lower UTI diagnosis between 2011 and 2015 in the 390 primary care practices contributing data to ResearchOne in England, showed % pregnant women with MC+S was 22.3% within 10 days  And % men aged 18-64yrs with MC+S was 30.6% within 10 days  This shows significant room for improvement. | * Urinary tract infection (lower): antimicrobial prescribing NICE guideline [NG109] * Public Health England (2020) [Diagnosis of urinary tract infections: Quick reference tool for primary care for consultation and local adaptation](https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis): * [Commissioning for Quality and Innovation (CQUIN): 2022/23 Guidance](https://www.england.nhs.uk/nhs-standard-contract/cquin/2022-23-cquin/) CCG2: Appropriate antibiotic prescribing for UTI in adults aged 16+ * This NHS England CQUIN scheme involves audit against 5 care processes aligned to NICE guidance and includes a requirement to send a urine sample for culture and sensitivity in men. |
| 1. 1c | NHS England and NHS Improvement | In adults aged 16 years and over with acute pyelonephritis, obtain a midstream urine sample before antibiotics are taken and send for culture and susceptibility testing. When results of urine culture available:  • review the choice of antibiotic, and  • change antibiotic according to susceptibility results if bacteria are resistant, using a narrow spectrum antibiotic when possible  Numerator= Adults aged 16 years and over prescribed antibiotics to treat acute pyelonephritis with a documented review of antibiotic choice following urine culture and sensitivity reporting  Denominator= Adults aged 16 years and over prescribed antibiotics to treat acute pyelonephritis |  | * [Pyelonephritis (acute): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng111) (2018) NICE guideline NG111 * Public Health England (2020) [Diagnosis of urinary tract infections: Quick reference tool for primary care for consultation and local adaptation](https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis): * Public Health England (2015) [Start Smart - Then Focus Antimicrobial Stewardship Toolkit for English Hospitals](https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus) * The availability of appropriate cultures and sensitivities will facilitate the prompt de-escalation of broad spectrum agents or the tailoring of therapy in cases of treatment failure. * [Commissioning for Quality and Innovation (CQUIN): 2022/23 Guidance](https://www.england.nhs.uk/nhs-standard-contract/cquin/2022-23-cquin/) CCG2: Appropriate antibiotic prescribing for UTI in adults aged 16+   This NHS England CQUIN scheme involves audit against 5 care processes aligned to NICE guidance and includes a requirement to send a urine sample for culture and sensitivity in adults aged 16 years prescribed antibiotics to treat acute pyelonephritis. |
| 1. 1c | NHS England and NHS Improvement | Urinary Tract Infection (UTI) sample collection | The quality of a sample is critical to the success of any diagnostic test and how it is collected initially is part of this. Discussions with clinical experts suggest there is variation in the collection of samples to avoid contamination, with limited information available for patients around collection.  Typical challenges include:  •inappropriate containers used e.g. not boric acid.  •limited instructions given to assist patients to take samples at home or at the GP surgery.  •Delays in returning samples to the GP surgery.  •Specific patient needs e.g. difficulty of securing samples from patients with incontinence (difficult to extract from incontinence pads) (some potential options but these do not seem to have been successful). Improvement opportunities: education around urine collection, appropriate collection devices, support for special collection scenarios | NHS, 2019, How should I collect and store a pee (urine) sample, How should I collect and store a pee (urine) sample?  Healthline, Clean Catch Urine Sample and Culture, <https://www.healthline.com/health/urine-culture-clean-catch> |
| 1. 1c | NHS England and NHS Improvement | UTI Transportation of sample to lab | Transportation of sample to lab  •Rapid transportation aids diagnosis samples should arrive and be processed within 4h unless boric acid is used.  •Where delays to arrival or processing are unavoidable keep refrigerated for up to 48h restrict bacterial growth.  •Use a boric acid preservative to prevent bacterial overgrowth for 48-96 hours. Toxicity of boric acid to some organisms has been reported (delayed effect) and this can be due underfilling of containers | PHE, 2019, UK Standards for Microbiology Investigations. Investigation of urine. |
| 1. 1c | NHS England and NHS Improvement | Pre Lab Diagnosis | The recent GIRFT report highlighted that there is high variation in rejection rates for urine samples and equally large variation in unwarranted requests. This suggests potential for improvement in pre-lab diagnosis. | PHE, 2018, Diagnosis of urinary tract infections - Quick reference tool for primary care for consultation and local adaptation, version 3  <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/927195/UTI_diagnostic_flowchart_NICE-October_2020-FINAL.pdf>  (This document is currently under review)  <https://future.nhs.uk/connect.ti/GIRFTNational/view?objectId=112161637> |
| 1. 1c | NHS England and NHS Improvement | UTI Lab Testing | UK Standards for Microbiology Investigations, Investigation of urine document links to Guidance for Primary Care  Lab investigations to diagnose UTI consist of:  Microscopy to detect the presence of white blood cells, red blood cells, casts, squamous epithelial cells and other cellular components. It is used alongside culture and clinical symptoms to diagnose UTI and demonstration of significant pyuria (>104 WBC/mL) correlates well with the presence of bacteria and symptoms.  Non-culture methods (eg flow cytometry or particle recognition) to demonstrate red and white blood cells, epithelial cells, casts, crystals, bacteria and yeasts, sperm, mucus. Often used to reduce the amount of samples cultured.  Quantitative culture (manual or automated culture on selective or colorimetric agar) on agar plates - either with a quantitative loop, or with multipoint incoluation of many samples per plates. Alternative some technologies use multipoint inoculation of microtitre tray wells.  NHSE/I UTI diagnostic workshop to be held on 20 July 2022, with a focus on understanding gaps between current practice and guidance, and how these can be addressed (improvement and/or innovation) | PHE, 2019, UK Standards for Microbiology Investigations. Investigation of urine. |
| 1. 1c | SCM 1 | Acceptance of samples | Patients and staff need awareness on the importance of a sterile container for collection and the need for accurate labelling, and the implications if this is not adhered to.  It will reduce a delay in testing and repeat / discarding of samples.  Consistent patient education in this area will aid adherence.  Urine samples risk being dropped off by patients which are not in a approved container and are not clearly labelled.  This can result in samples being rejected, samples being accepted but risk being contaminated if not in the correct container and risk of  Samples being rejected by the practice, rejected by the laboratory or at worst a mix up of patient samples if not labelled clearly | On looking I found this document. However I have never come across this document before and even though it is a NHS England document it refers to containers which aren't used across the country  <https://www.england.nhs.uk/wp-content/uploads/2020/08/Taking_a_urine_sample.pdf>  <https://www.nhs.uk/common-health-questions/infections/how-should-i-collect-and-store-a-urine-sample/>  <https://www.ibms.org/resources/documents/patient-sample-and-request-form-identification-criteria/>  <https://www.kidney.org/news/kidneyCare/spring10/UrineSamples> |
| 1. 1c | SCM3 | Key area for quality improvement 4Urine culture for adults with a urinary tract infection that does not respond to initial antibiotic treatment | As per current UTI QS document online.  Some urinary tract infections are resistant to initial antibiotic treatment and a urine culture is needed (or a repeat where an initial urine culture was taken) to determine which antibiotic will work against the specific strain of bacteria causing the urinary tract infection. A urine culture is needed to guide a change in antibiotic treatment in people who do not respond to initial treatment with antibiotics. | <https://www.nice.org.uk/guidance/qs90/chapter/Quality-statement-4-Urine-culture-for-adults-with-a-urinary-tract-infection-that-does-not-respond-to-initial-antibiotic-treatment> |
| 1. 1c | SCM4 | The Kass criteria for urine analysis | Patients are being mis-diagnosed and unable to access treatment.  There is evidence that this is failing sufferers. Among other issues is the problem that urine is idenfied by Kass as being sterile. Recent research demonstrates that urine has a microbiome. The threshold at which an infection is diagnosed is also too high | Please see the study below <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6628711/> |

#### Treatment: Self-care /delayed prescribing

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
| --- | --- | --- | --- | --- |
| 1. 2a | Cardiff University | Avoiding antibiotics in asymptomatic bacteriuria (elderly) | The harms and lack of clinical benefit of antibiotic use for older patients outweigh any benefits <https://bjgp.org/content/early/2022/05/05/BJGP.2022.0059>  Despite this, older patients are given antibiotics based on poorly predictive dipstick testing, with little clinical evidence to support a diagnosis of UTI.  <https://aricjournal.biomedcentral.com/articles/10.1186/s13756-019-0519-1> | NICE guidance UTI (lower): antimicrobial prescribing |
| 1. 2a | Company Chemists Association | **Key area for quality improvement 1:**  Local antimicrobial stewardship | Antimicrobial resistance (AMR) is widely recognised as one of the biggest threats to public health, with rising levels of drug resistant-UTIs. Expanding the role of antimicrobial stewardship in local and primary healthcare settings is an important part of minimising harm.  Millions use their local pharmacy in England every year. As one of the most accessible providers of healthcare, pharmacy-led stewardship presents a feasible and effective intervention for many patients Community pharmacy**-**driven intervention can offer effective antimicrobial stewardship. Community pharmacy staff have the opportunity to influence patients’ use of antibiotics by advising patients on effective self-care treatments, appropriateness of antibiotics, antibiotic adherence and the consequences of using antibiotics incorrectly.  An international example of best practice is Canada, with patients reporting high levels of satisfaction when receiving community pharmacy care for UTIs. Importantly the time frame for accessing treatment from community pharmacy than general practice was significantly shorter – reducing the likelihood of delayed treatment and condition escalation. | **See**: T. Thornley, C. Kirkdale, E. Beech, P. Howard and P. Wilson, “Evaluation of a community pharmacy-led test-and-treat service for women with uncomplicated lower urinary tract infection in England,” *JAC-Antimicrobial Resistance,* vol. 2, no. 1, 2020. |
| 1. 2a | Company Chemists Association | **Key area for quality improvement 2:**  Reporting on medicines received by patients | Inappropriate use of antibiotics – both under and overuse – can be detrimental. Public reporting and disclosure of antibiotic prescribing are vital for harm reduction.  Audits and patient feedback are also important to curbing inappropriate supply. In 2019, community pharmacies in England were invited to participate in an antimicrobial stewardship (AMS) intervention. The intervention included: a short staff webinar; Antibiotic Checklists to be completed by patients and pharmacists; TARGET Treating Your Infection leaflets; posters; counter mats; shelf-danglers; and stickers for prescription bags. Patients completing checklists were invited to feed back. |  |
| 1. 2a | Company Chemists Association | **Key area for quality improvement 3:**  Impact on Symptom Escalation | The prevention of secondary infections and complicated UTIs may be better controlled through pharmacy-led intervention. Raising awareness of red flag symptoms, safety netting advice and further counselling within pharmacy settings allows for better management of UTIs.  Pharmacy teams offer safe non-antimicrobial strategies where early, non-complicated infection is suspected. |  |
| 1. 2a | SCM1 | Patient expectations on treatment / issuing of antibiotics | Care and treatment needs to be based on clinical findings and evidence based practice, and not patient expectations and/or request.  Patients risk having increased expectations to be able to drop a urine sample off without it being requested and expect issuing of antibiotics. This may increase patient demand and promote inaccurate, ineffective and a unsafe practice culture | <https://target-webinars.com/webinars/managing-patient-expectations/>  [Urinary tract infection (recurrent): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng112) (2018) NICE guideline NG112 |
| 1. 2a | SCM2 | Avoid unnecessary treatment of asymptomatic bacteriuria. | Reducing unnecessary antimicrobial treatment will reduce antimicrobial resistance and minimise adverse effects.  *Healthcare professionals do not prescribe antibiotics to treat asymptomatic bacteriuria in adults with catheters and non-pregnant women++.*  *Do not treat asymptomatic bacteriuria in non-pregnant women of any age\*\*.*  See supporting information | ++ Note this is a recommendation (Statement 5) in existing QS90 (2015)  \*\*This is a recommendation in SIGN 160 (Sept 2020) Guideline ‘Management of suspected bacterial UTI in adult women’  Supported by Cochrane review (2015).This comparing treatment of asymptomatic bacteriuria in men and non-pregnant women with antimicrobials or placebo reported an increased risk of adverse events associated with antimicrobial treatment (RR 3.77, 95% CI 1.4 to 10.15).76 Only three of the nine studies included in this review recruited patients under the age of 65 years. |
| 1. 2a | SCM3 | Key area for quality improvement 1  Advice on UTI as a self-limiting condition | UTI are often a self limiting condition and with the appropriate advice patients can self treat.  Helping to educate patients will manage their expectations.  It will also contribute towards reduction in overuse of antibiotics across the population.  People with minor ailments and other self‑limiting conditions may not know that they are likely to get better without treatment and they may expect to be prescribed an antimicrobial. | Non-antibiotic treatment of acute urinary tract infection in primary care: a qualitative study <https://bjgp.org/content/72/717/e252> .  <https://elearning.rcgp.org.uk/mod/book/view.php?id=12652> |
| 1. 2a | SCM3 | Key area for quality improvement 2Back-up (delayed) prescribing | Same as above helps patients to learn and manage future expectations  Allows clinicians to discuss risks/ adverse effects of antibiotics with patients and raises awareness in patients about side effects of antibiotics.  May need to have an exclusion such as <>65 years.  As some evidence that if >65 & UTI delay in antibiotics can lead to sepsis <https://www.bmj.com/content/364/bmj.l922>  It encourages self-management as a first step, but allows a person to access antimicrobials without another appointment if their condition gets worse. |  |
| 1. 2a | SCM3 | Key area for quality improvement 5Data collection and feedback | Monitoring and reviewing prescribing data enables individuals and teams responsible for antimicrobial stewardship to check adherence to local formularies, provide feedback, recognise good practice and to challenge inappropriate prescribing. It also allows peer review, and identifying training needs and areas for quality improvement.  We need the change in prescriber behaviour to reduce the over prescribing of antibiotics for UTI | <https://elearning.rcgp.org.uk/mod/book/view.php?id=12650>  resources available to help prescribers  learning courses, highlights simple key actions to help improve your antibiotic prescribing whilst improving the patient experience and their self-care, therefore freeing up your time. |
| 1. 2a | SCM6 | Key area for quality improvement 4  Cranberry intake to reduce UTI | Cranberries use has no benefits in most populations groups.  The reported outcomes are based on urine cultures rather than patients’’ reported outcomes, expensive and the mechanism of action only address E.coli. | Effect of Cranberry Capsules on Bacteriuria Plus Pyuria Among Older Women in Nursing Homes: A Randomized Clinical Trial <https://doi.org/10.1001/jama.2016.16141>  Cranberries for preventing urinary tract infections  <https://doi.org/10.1002/14651858.CD001321.pub5> |
| 1. 2a | The Royal College of Pathologists | Key area for quality improvement 4  Treatment of asymptomatic patients with indwelling urinary catheters and non-pregnant women. | NICE (2015) acknowledges that antibiotic treatment of asymptomatic catheterised adults and non-pregnant women can lead to antimicrobial resistance, as well as being ineffective. | Currently an existing NICE Quality standard for urinary tract infection |

#### Treatment: Choice of antibiotic and course duration

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
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| 1. 2b | ADVANZ Pharma | Management of suspected bacterial lower urinary tract infection in adult women | Scottish Intercollegiate Guidelines Network SIGN 160 have excluded UTIs in pregnant women from there guidelines in 2020.  <https://www.sign.ac.uk/our-guidelines/management-of-suspected-bacterial-lower-urinary-tract-infection-in-adult-women/>  Urinary tract infections (UTIs) are major drivers of antibiotic prescribing in primary care. Inappropriate antibiotic prescribing for UTIs likely drives antibiotic resistance.  Treatment failure was found to prevalent amongst pregnant women. | Please refer to the following study for further information:  Lower Urinary Tract Infections: Management, Outcomes and Risk Factors for Antibiotic Re-prescription in Primary Care  [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(19)30120-8/fulltext#%20](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(19)30120-8/fulltext%23%20) |
| 1. 2b | ADVANZ Pharma | Urinary tract infection (lower): antimicrobial prescribing | A cohort study has reported that an absence of antibiotics prescribing or delayed treatment were associated with a significant increase in bloodstream infection and all cause mortality compared with immediate antibiotics.  Early initiation of recommended first line antibiotics for UTI in the older population is advocated. | Please refer to the review article for further information:  <https://www.bmj.com/content/364/bmj.l525> |
| 1. 2b | British Association of Urological Surgeons | Advice on optimal duration of antibiotic course for patients with recurrent UTI | Patients are often treated with short 3-day course of antibiotics for UTI. However, this is only appropriate for simple UTI, not recurrent UTI. Bacterial persistence is recognised both through basic science and clinical investigations as requiring longer courses of antibiotics. Short courses maybe driving greater resistance in that group. | <https://www.bmj.com/content/371/bmj.m4502>  <https://pubmed.ncbi.nlm.nih.gov/22278835/>  <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6394536/> |
| 1. 2b | British Geriatrics Society | Prescribing for UTI for older frail people especially from Care Homes | Antibiotic resistance and Growth of MRGNO currently seen in hospitals | [Decision aid for diagnosis and management of suspected urinary tract infection (UTI) in women aged 65 years and over (sapg.scot)](https://www.sapg.scot/media/5844/decision-aid-for-diagnosis-and-management-of-suspected-uti-in-people-over-65-years.pdf) – excellent and the current Scottish Reduction in Anti-microbial Prescribing (SCRAP2) Acute Urinary Tract infection Audit tool to look at results.  Decision aid for diagnosis and management of suspected urinary tract infection (UTI) in people aged 65 years and over |
| 1. 2b | Cardiff University | Appropriate antibiotic course duration for adult women | This UK paper estimates around 50% of treatment for lower UTI in women is still more than 3 days despite guidelines [https://www.bmj.com/content/364/bmj.l440](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.bmj.com%2Fcontent%2F364%2Fbmj.l440&data=05%7C01%7CHughesKA6%40cardiff.ac.uk%7C8e57bcc6ad1d46a2fe7b08da47b305a8%7Cbdb74b3095684856bdbf06759778fcbc%7C1%7C0%7C637901131452880894%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=22OfP8JlRKtO0JIf4kH2dU3PYi7ShX5NhTIEy%2BQVBKE%3D&reserved=0) | NICE guidance UTI (lower): antimicrobial prescribing |
| 1. 2b | NHS England and NHS Improvement | A 7-day antibiotic treatment course for suspected lower UTI in men over 16 years and in pregnant women over 12 years  Numerator= Number of men and pregnant women a 7-day antibiotic treatment course for suspected lower UTI  Denominator= Number of men and pregnant women prescribed an antibiotic for suspected lower UTI | Ahmed H et al 2018 [Incidence and antibiotic prescribing for clinically diagnosed urinary tract infection in older adults in UK primary care, 2004-2014 - PMC (nih.gov)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5755802/) Multi-level logistic regression showed an increase in the proportion of older men prescribed seven-day antibiotic therapy between 2004 and 2014, from 42% to 69%. | * [Urinary tract infection (lower): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng109) (2018) NICE guideline NG109 * [Commissioning for Quality and Innovation (CQUIN): 2022/23 Guidance](https://www.england.nhs.uk/nhs-standard-contract/cquin/2022-23-cquin/) CCG2: Appropriate antibiotic prescribing for UTI in adults aged 16+   This NHS England CQUIN scheme involves audit against 5 care processes aligned to NICE guidance including NG109. |
| 1. 2b | SCM2 | Advice about the importance of using short (3 day) course of antimicrobial for treatment of uncomplicated lower UTI in adult women | Reduction in duration of exposure to people with UTI antimicrobial treatment beneficial in terms of adverse effects and may have an impact on antimicrobial resistance.  *Use a short (3 day) course of antimicrobial for treatment of uncomplicated LUTI in women aged <65.*  See supporting information | This is a recommendation in SIGN 160 (Sept 2020) Guideline ‘Management of suspected bacterial UTI in adult women’  Supported by a Cochrane review in 2005. 3 day antimicrobial as likely to achieve short and long term cure for UTI as longer treatment, with less adverse events. |
| 1. 2b | SCM3 | Key area for quality improvement 3  Aligning antibiotics with European or International guidelines | National surveillance data on antimicrobial susceptibility of uropathogens were available in 13 of 15 countries. Resistance epidemiology could not explain the observed differences between guidelines, and comparison of resistance rates was hampered by variations in methods. This study revealed major differences in treatment guidelines for UTIs within Europe, indicating that there are opportunities for improvement.  Antibiotic reisstance is a worldwide issue and we should try to align to world wide concerns. | <https://pubmed.ncbi.nlm.nih.gov/31229671/> Comparison of antibiotic treatment guidelines for urinary tract infections in 15 European countries: Results of an online survey |
| 1. 2b | SCM5 | Key area for quality improvement 2  Appropriate antibiotic choice & duration  (i)Do not use nitrofurantoin, oral fosfomycin, and pivmecillinam to treat  pyelonephritis.  *Also*  (b) Do not use trimethoprim if it has been given in the previous 3 months, unless MSU shows sensitivity.  c. course length – 3 days treatment is not suitable for men, in pregnancy, complicated UTI | There are concerns that the strong message to use nitrofurantoin 3 days first line to treat UTI can lead to inadequate treatment for certain people.   1. AWMSG Best practice reminder *“Avoid Nitrofurantoin in the Treatment of Pyelonephritis”* Includes current practice information <https://awttc.nhs.wales/medicines-optimisation-and-safety/medicines-optimisation-guidance-resources-and-data/prescribing-guidance/best-practice-reminder-avoid-nitrofurantoin-in-the-treatment-of-pyelonephritis/>   [DOI – author]   1. Nitrofurantoin (at usual dose) does not reach adequate levels in renal tissue, risking worsening illness 2. If trimethoprim used in the last 3 months there is a higher risk of resistant organisms   [NICE NG 109] risking worsening illness, pyelonephritis, admission  Inadequate treatment as above | [Pyelonephritis (acute): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng111) (2018) NICE guideline NG111  [Urinary tract infection (lower): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng109) (2018) NICE guideline NG109  EAU *Do not use nitrofurantoin, oral fosfomycin, and pivmecillinam to treat uncomplicated pyelonephritis*. |
| 1. 2b | SCM6 | Key area for quality improvement 3  Duration of antibiotics treatment during the acute episode of UTI | Three days of antibiotic therapy is similar to 5‐10 days in achieving symptomatic cure during uncomplicated UTI treatment, while the longer treatment is more effective in obtaining bacteriological cure.   * Treatment for 5‐10 days could be considered for treatment of women in whom eradication of bacteriuria is important. * The advantage of longer therapy might be the survival of bacteria in subepithelial loci of the lower urinary tract after a shorter course of antibiotic treatment. | Duration of antibacterial treatment for uncomplicated urinary tract infection in women  <https://doi.org/10.1002/14651858.cd004682.pub2>    Current therapy of acute uncomplicated cystitis  <https://doi.org/10.1111/j.1442-2042.2010.02500.x> |
| 1. 2b | SCM6 | Key area for quality improvement 5  UTI as a self-limiting disease | A UTI is a debilitating condition causing the onset of painful urination (dysuria), increased urinary frequency, the inability to start urinating (hesitancy) and the sensation of a sudden need to urinate (urgency) , all of which are classified as lower urinary tract symptoms (LUTS).  It is not a self-limiting disease and it needs treatment. | Mechanisms of pain from urinary tract infection.  <https://doi.org/10.1111/iju.12309> |

#### Treatment: Alternative treatments

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
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|  | Aspire Pharma Limited | The guideline does not include non-antibiotic treatments. | The NICE quality standard for antimicrobial stewardship (QS121) highlights the catastrophic threat posed by antimicrobial resistance and the direct contribution that over prescribing antimicrobial medicines have on resistance, yet QS90 focusses almost solely on anti-microbial treatment.  NG15 Antimicrobial stewardship systems and processes for effective antimicrobial medicine use states that prescribers should be encouraged and supported to prescribe antimicrobials when this is clinically appropriate (1.1.16), and also to discuss non-pharmacological interventions (1.1.34).  Effective alternatives to antibiotics are available for management of UTIs, such as glycosaminoglycan (GAG) layer replacement therapy, and these should be considered in light of the drive towards reduction in antimicrobial prescribing. | NICE quality standard for antimicrobial stewardship <https://www.nice.org.uk/guidance/qs121>  NICE guideline (NG15) Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use  <https://www.nice.org.uk/guidance/ng15/resources/antimicrobial-stewardship-systems-and-processes-for-effective-antimicrobial-medicine-use-pdf-1837273110469> |

#### Catheter associated UTI (prevention and management)

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
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| 1. 3a | ADVANZ Pharma | Urinary tract infection (catheter-associated): antimicrobial prescribing | A systematic review of literature has reported that there is that there is no standardisation or even consensus among practitioners and hospitals/institutions regarding the protocols carried out of urinary catheter's insertion and maintenance.  Standardisation of Catheter insertion and tailored individual programmes based on clinical need is required.  Multiple interventions and measures such as reducing the number of catheters in place, removing catheters at their earliest, clinically appropriate time, reducing the number of unnecessary catheters inserted, decrease antibiotic administration unless clinically needed, raising more awareness and provide training of nursing personnel on the latest guidelines, can effectively lower the incidence of CA-UTIs | Please refer to the systematic review for further information:  <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8366179/> |
| 1. 3a | ADVANZ Pharma | Urinary tract infection (recurrent): antimicrobial prescribing | A review article of current guidelines found that after a review of international guidelines none were specifically tailored to the management of recurrent cUTI in those with an anatomical or functional abnormality of the urinary tract, in-dwelling catheters, or immunocompromising comorbidities and risk factors (age, pregnancy, spinal cord injury, diabetes mellitus)  Future guidelines could consider particular patient groups and recommend an assessment and treatment approach to help a wide clinical audience. To aid assessment and initial treatment for primary care and other non-urological clinicians, key features in the history and examination should be outlined (e.g., infection chronology and complications, LUTS and incontinence, paediatric and obstetric history, red flags for malignancy and relevant comorbidities). | Please refer to the following review article for further information:  [https://bjuijournals.onlinelibrary.wiley.com/doi/10.1111/bju.15756](https://bjuijournals.onlinelibrary.wiley.com/doi/10.1111/bju.15756%20) |
| 1. 3a | C.R. Bard Inc. | Key area for quality improvement 1  **For inclusion in patient records** | **Details of catheter review:** a key cause of CAUTI is inaccurate timelines of catheterisation. Recording when a catheter is inserted is key in establishing the duration of patient catheterisation. Recording a proposed timeline for review of particular catheter use should also be recorded in order to avoid the inappropriate use of extended catheterisation and the consequent risk of CAUTI. | These review details should include options such as: a review of the need for a catheter, a date for removal or trial without a catheter (TWOC), a referral for district nursing review or TWOC, a referral for urological review or TWOC, a referral to community continence services, the use of a patient held plan (catheter passport).  See U Decide Audit Tool used by The Infection Prevention Society as an example of best practice [..\OneDrive - Healthcomms Consulting\U-decide audit tool Infection Prevention Society Tool.pdf](file:///C:\Users\MatthewSpencer\OneDrive%20-%20Healthcomms%20Consulting\U-decide%20audit%20tool%20Infection%20Prevention%20Society%20Tool.pdf) |
| 1. 3a | C.R. Bard Inc. | Key area for quality improvement 2  **For Inclusion in patient records** | **Reason for catheter insertion**: Establishing and recording why a catheter has been used is key in curbing excess catheterisation and should include reasons like urinary retention, bladder outlet obstruction, neurological, sacral / perineal wound in an incontinent patient, end of life comfort, instillation of medication and patient choice. Recording whether a urethral or suprapubic catheter is being used is also key in ensuring the best possible patient treatment | See U Decide Audit Tool used by The Infection Prevention Society as an example of best practice [..\OneDrive - Healthcomms Consulting\U-decide audit tool Infection Prevention Society Tool.pdf](file:///C:\Users\MatthewSpencer\OneDrive%20-%20Healthcomms%20Consulting\U-decide%20audit%20tool%20Infection%20Prevention%20Society%20Tool.pdf) |
| 1. 3a | C.R. Bard Inc. | Key area for quality improvement 3  **For inclusion in patient records** | **The origin of a referral:** Monitoring the origin of a patient referral is a crucial aspect in establishing common patient pathways and includes which hospital unit a referral was made from, or whether it originated from a GP, a rapid response team or another district or community service. Recording a patient’s current location is also a crucial aspect in providing continuous care between clinical and community settings and includes whether a patient is being treated at home, in hospital, in a nursing home or in other forms of residential care. | See U Decide Audit Tool used by The Infection Prevention Society as an example of best practice [..\OneDrive - Healthcomms Consulting\U-decide audit tool Infection Prevention Society Tool.pdf](file:///C:\Users\MatthewSpencer\OneDrive%20-%20Healthcomms%20Consulting\U-decide%20audit%20tool%20Infection%20Prevention%20Society%20Tool.pdf) |
| 1. 3a | C.R. Bard Inc. | Key area for quality improvement 4  **For inclusion in patient records** | **Consideration of alternatives to catheterisation**: What considerations of alternative options to catheterisation should be included in patient records to guard against inappropriate or excessive catheterisation. These strategies should include the use of an intermittent catheter, a catheter valve, penile sheath, incontinence pad and suprapubic catheter | See The Infection Prevention Society’s Community Urinary Catheter Prevalence Study Protocol and Survey Form as an example of best practice [..\OneDrive - Healthcomms Consulting\IPS CCaMa Study Protocol.pdf](file:///C:\Users\MatthewSpencer\OneDrive%20-%20Healthcomms%20Consulting\IPS%20CCaMa%20Study%20Protocol.pdf) |
| 1. 3a | NHS England and NHS Improvement | Every patient will have a transferable urinary catheter record / care plan or passport. A passport or care plan discussed with a patient prior to insertion to support prevention of CAUTI. | Prevention of CAUTI requires:   * Avoidance of a Urinary Catheter * Best practice techniques in insertion and care * Prompt removal * Patient and carer education   Some areas of England have catheter passports or care plans in place, some will link between care providers / settings. Provision is fragmented and inconsistent. Content whilst similar is different. Resulting in some patients being discharged or moved between care settings with no plan or documented review.  A standard national set of documentation / passport that moves between care settings would support a multi-disciplinary approach, promote effective communication and support implementation of best practice catheter care guidelines. [NHS England » Urinary catheter tools](https://www.england.nhs.uk/patient-safety/urinary-catheter-tools/) | The risk of a CAUTI increases 3-7% with every day a indwelling catheter remains in place (Lo E et al. Infection Control Hospital Epidemiology 2014;35:464-79) UTI is the more comment HAI – 19% of all HAI is UTI and 43-56% of this is CAUTI (NICE CAUTI prescribing guidelines 2018). |
| 1. 3b | NHS England and NHS Improvement | Consider removing or, if this cannot be done, changing the catheter as soon as possible in people with a catheter associated UTI if it has been in place for more than 7 days. Do not allow catheter removal or change to delay antibiotic treatment.  Numerator= Number of adults prescribed antibiotics to treat a catheter associated UTI who have a urinary catheter change documented in the clinical record (if catheter has been in situ for 7 days or more)  Denominator= Number of adults prescribed antibiotics to treat a catheter associated UTI where the urinary catheter has been in situ for 7 days or more |  | * [Urinary tract infection (catheter-associated): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng113) (2018) NICE guideline NG113 * Public Health England (2020) [Diagnosis of urinary tract infections: Quick reference tool for primary care for consultation and local adaptation](https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis): * [Commissioning for Quality and Innovation (CQUIN): 2022/23 Guidance](https://www.england.nhs.uk/nhs-standard-contract/cquin/2022-23-cquin/) CCG2: Appropriate antibiotic prescribing for UTI in adults aged 16+   This NHS England CQUIN scheme involves audit against 5 care processes aligned to NICE guidance and includes a requirement to document review of urinary catheter use in the clinical record in adults prescribed antibiotics to treat a catheter associated UTI. |

#### Recurrent UTI: UTI and the menopause

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
| --- | --- | --- | --- | --- |
| 4a | British Association of Urological Surgeons | Improved recognition of menopause as being a contributory factor to recurrent UTI which is amenable to estrogen treatment | Recurrent UTIs are very common in postmenopausal women. The use of vaginal estrogen therapy is both safe and efficacious in lowering UTI risk and is based on the results of four meta-analyses which show that topical oestrogen admission (either as a cream or pessary) shows a trend towards recurrent UTI prevention. The 2022 European Association of Urology guidelines for recurrent uncomplicated UTIs in women recommends that clinicians offer vaginal estrogen therapy to peri- and post-menopausal women with recurrent UTIs to reduce their risk | <https://uroweb.org/guidelines/urological-infections/chapter/introduction> |
| 4a | Pelvic Obstetric & Gynaecological Physiotherapy | Uro-genital atrophy and associated increase in UTI-Pelvic floor muscle training |  | Pelvic floor muscle training to be considered a valid option for treating uro-genital atrophy  Mercier J, Morin M, Zaki D, Reichetzer B, Lemieux MC, Khalifé S, Dumoulin C. Pelvic floor muscle training as a treatment for genitourinary syndrome of menopause: A single-arm feasibility study. Maturitas. 2019;125:57-62. <https://pubmed.ncbi.nlm.nih.gov/31133219/>  <https://www.imsociety.org/2021/03/15/pelvic-floor-muscle-training-as-a-treatment-for-genitourinary-syndrome-of-menopause/>  As the signs and symptoms are much more broad than vaginal dryness can this be broadened?  Basu, M., 2020. Assessment of the urogynaecology patient in primary care and when to refer. *Post Reproductive Health*, 26(2), pp.57-62.  Briggs, P. and Hapangama, D., 2021. Urogenital atrophy: The ‘unknown factors’ challenging current practice. *Post Reproductive Health*, 27(2), pp.109-120.  df |
| 4a | Pelvic Obstetric & Gynaecological Physiotherapy | Uro-genital atrophy-British Menopause society consensus statement | <https://thebms.org.uk/wp-content/uploads/_pda/2021/07/09-BMS-ConsensusStatement-Urogenital-atrophy-JUNE2021-01B.pdf?t=60dd9d660724f> | 1 Nappi RE, Palacios S, Panay N, Particco M, Krychman ML. Vulvar and vaginal atrophy in four European countries: evidence from the European REVIVE Survey. Climacteric: The Journal Of The International Menopause Society. 2016;19(2):188-97  2 Tan O, Bradshaw K, Carr BR. Management of vulvovaginal atrophy-related sexual dysfunction in postmenopausal women: an up-to-date review. 2012:109.  3 Shifren JL. Genitourinary Syndrome of Menopause. 2018. p. 508-16.  4 Briggs P, Hapangama DK. Urogenital atrophy: The ‘unknown factors’ challenging current practice. Post Reprod Health. 2021 Mar 5:2053369121997673. doi: 10.1177/2053369121997673. Epub ahead of print. PMID: 33673759.  5 Nappi RE, Kingsberg SA, Maamari RV, Simon JA. The CLOSER (CLarifying Vaginal Atrophy’s Impact On SEx and Relationships) survey: implications of vaginal discomfort in postmenopausal women and in male partners. J Sex Med. 2013;10(9):2232-41  6 Palacios S, Nappi RE, Bruyniks N, Particco M, Panay N, editors. The European Vulvovaginal Epidemiological Survey (EVES): prevalence, symptoms and impact of vulvovaginal atrophy of menopause 2018; Great Britain: Informa Healthcare.  7 Hodges AL, Holland AC, Dehn B, Pace DT. Diagnosis and Treatment of Genitourinary Syndrome of Menopause. Nurs Womens Health. 2018 Oct;22(5):423-30.  8 Edwards D, Panay N. Treating vulvovaginal atrophy/genitourinary syndrome of menopause: how important is vaginal lubricant and moisturizer composition? Climacteric. 2016 Apr;19(2):151-61  9 Menopause: diagnosis and management NICE guideline [NG23], November 2015  10 Suckling J, Lethaby A, Kennedy R. Local oestrogen for vaginal atrophy in postmenopausal women. Cochrane Database Syst Rev. 2006 Oct 18;(4):CD001500. Review. Update in: Cochrane Database Syst Rev. 2016;8  11 Simon JA, Maamari RV. Ultra-low-dose vaginal estrogen tablets for the treatment of postmenopausal vaginal atrophy. Climacteric: The Journal Of The International Menopause Society. 2013;16 Suppl 1:37-43.  12 Stuenkel CA, Davis SR, Gompel A, Lumsden MA, Murad MH, Pinkerton JV, et al. Treatment of Symptoms of the Menopause: An Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab. 2015 Nov;100(11):3975-4011.  13 Nappi RE, Kokot-Kierepa M. Vaginal Health: Insights, Views & Attitudes (VIVA) - results from an international survey. Climacteric. 2012 Feb;15(1):36-44. |
| 4a | Whittington Health | The use of HRT and vaginal oestrogens for peri and post menopausal women with recurrent UTI | There should be a wider discussion in the guidelines about the use of HRT for recurrent UTI. This would be helpful as a preventative strategy and will reduce the use of antibiotics. | [The Etiology and Management of Recurrent Urinary Tract Infections in Postmenopausal Women - PMC (nih.gov)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6629580/) |

#### Recurrent UTI: Management and treatment

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
| --- | --- | --- | --- | --- |
| 1. 4b | Aspire Pharma Limited | Prevention of (recurrent) UTIs should form part of the quality standard. | A placeholder quality statement has been included for treatment of recurrent urinary tract infections, however, identifying strategies for prevention is as important as treatment in this group.  Guidelines from the Scottish Intercollegiate Guidelines Network (SIGN) and the European Association of Urology (EAU) recommend the use of low dose prophylactic antibiotics for preventive treatment of recurrent UTI, however, prolonged use of antibiotics has been showed to lead to emergence of resistance bacteria in the urine [1]. Considering the antimicrobial stewardship guidelines stated above, treatment options other than antibiotics should be considered as part of this quality standard.  The SIGN guideline does discuss some non-pharmaceutical interventions, although GAG layer replacement therapy is not included.  EAU included a review of literature for endovesical instillations of hyaluronic acid (HA) and chondroitin sulphate (CS) for GAG layer replenishment and recommends their use where less invasive treatment has been unsuccessful.   |  |  | | --- | --- | | [1] | J. Barclay, R. Veeratterapillay and C. Harding, "Non-antibiotic options for recurrent urinary tract infections in women" *BMJ Practice,* vol. 359, 2017. | | SIGN 160: Management of suspected bacterial lower urinary tract infection in adult women  <https://www.sign.ac.uk/media/1766/sign-160-uti-0-1_web-version.pdf>  EAU guideline: Urological infections  <https://uroweb.org/guidelines/urological-infections/chapter/the-guideline> |
| 1. 4b | British Association of Urological Surgeons | Increased use of non-antibiotic alternatives for treatment of recurrent UTI | The ALTAR UK multi-centre randomised control study showed non-inferiority for the use of Methenamine Hippurate vs low dose antibiotics in recurrent UTI. However, Methenamine Hippurate is not available in all regions and is often designated as a ‘red drug’ only to be prescribed by a specialist.  A randomised control study and a meta-analysis have demonstrated that D-mannose appears protective for recurrent UTI (versus placebo) with possibly similar effectiveness as antibiotics. Overall, D-mannose appears well tolerated with minimal side effects. | <https://www.bmj.com/content/376/bmj-2021-0068229>  <https://pubmed.ncbi.nlm.nih.gov/23633128/>  <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7395894/> |
| 1. 4b | British Geriatrics Society | Long term antibiotics prescribed for UTI prophylaxis should be stopped. | Dangers of long term antibiotics for frail older people with no benefit.  Promote resistance and there is no evidence to support their use beyond 3-6 months. The evidence base supporting antibiotic use for prophylaxis of UTI is not strong; all studies were conducted pre-2000 and none evaluated patients beyond one year |  |
| 1. 4b | British Infection Association | Use of methenamine for adult patients without catheters with recurrent UTI | Recurrent UTI is a common problem and a driver of antibiotic use. Until recently there has been little guidance on how to manage these patients. Antibiotic prophylaxis is recommended in NICE guidance as a last resort option, but there is no evidence about long term outcomes. | The ALTAR RCT has recently reported and shown that use of methenamine is non-inferior to antibiotic prophylaxis in these patients.  <https://doi.org/10.1136/bmj-2021-0068229> |
| 1. 4b | NHS England and NHS Improvement | Review patients on long term antibiotics for recurrent UTI at least every 6 months.  Numerator= Number of patients on prophylactic antibiotics for recurrent UTI with a documented review in last 6 months  Denominator= Number of patients on prophylactic antibiotics for recurrent UTI |  | * [Urinary tract infection (recurrent): antimicrobial prescribing](https://www.nice.org.uk/guidance/ng112) (2018) NICE guideline NG112 * [Management of suspected bacterial lower urinary tract infection in adult women](https://www.sign.ac.uk/our-guidelines/management-of-suspected-bacterial-lower-urinary-tract-infection-in-adult-women/) (2020) Scottish Intercollegiate Guidelines Network SIGN 160: To minimise the development of resistance antimicrobial prophylaxis should be used as a fixed course of three to six months in women with recurrent UTI. * Public Health Wales [Urinary Tract Infection (UTI) resources and tools](https://phw.nhs.wales/services-and-teams/harp/urinary-tract-infection-uti-resources-and-tools/) |
| 1. 4b | Royal College of General Practitioners | General comment | We are happy to see the quality standards for UTI in adults being progressed. The documentation and references appear to cover relevant areas on which to base practice and standards. It would be very sensible to address some of the issues around recurrent prescribing of antibiotics (for suspected recurrent UTI / increased confusion in the elderly) and the increasing risk of antimicrobial resistance (AMR) and its impact on care. Indeed, we think the recent Lancet document indicating mortality globally from AMR (The Lancet. Antimicrobial resistance: time to repurpose the Global Fund. The Lancet. 2022;399(10322):335) would highlight the need for standards to cover the relevance of stewardship in UTI. |  |
| 1. 4b | SCM4 | Hiprex | Presently, patients are usually offered an antibiotic prophylaxis if infections become very frequent or recurrent. Hiprex would be an alternative. It is not an antibiotic and therefore does not impact on antibiotic resistance.  There is good evidence that Hiprex following the publication of the ALTAR study in March that Hiprex is a good alternative to prophylactic antibiotics in the management of patients who suffer frequent UTIs. | Please see the ALTAR Study <https://www.bmj.com/content/376/bmj-2021-0068229/rr> |
| 1. 4b | SCM5 | Further area for QI: People taking urinary prophylaxis  should be reviewed | There is evidence that people can remain on prophylaxis for many years, sometimes the same agent. This risks development of antimicrobial resistance, which may make future infections more difficult to treat. Local audit suggests that up to 50% of people may be able to stop prophylaxis during the first round of a QI project addressing this , however repeated reviews will have much less benefit. |  |
| 1. 4b | SCM6 | Key area for quality improvement 1  Methenammine hippurate as an alternative to Prophylaxis antibiotics for recurrent UTIs | * Antimicrobial resistance rates suggest that the use of continuous, low dose, antibiotic prophylaxis for UTI is a contributory factor to the development of antimicrobial resistance. * The use of methenamine hippurate as a preventive treatment against recurrent UTI is associated with a reduction in overall antibiotic use and equivalent levels of treatment satisfaction compared to daily antibiotics. * The urgent need for demonstration of effective non-antibiotic treatments is underlined by the UK antimicrobial resistance strategy. * Reduction in clinically diagnosed UTI during the use of Methenamine Hippurate. * Reduction in overall antibiotics use and equivalent level of treatment satisfaction compared to daily antibiotics. * Beneficial in patients’ with long-term catheter as it suppress pathogens and allow healthy bacteria to colonise. | Alternative to prophylactic antibiotics for the treatment of recurrent urinary tract infections in women: multicentre, open label, randomised, non-inferiority trial  BMJ 2022; 376 doi: <https://doi.org/10.1136/bmj-2021-0068229>  Methenamine hippurate for preventing urinary tract infections  <https://doi.org/10.1002/14651858.CD003265.pub3>  Continuous low-dose antibiotic prophylaxis to prevent urinary tract infection in adults who perform clean intermittent self-catheterisation: the AnTIC RCT  <https://doi.org/10.3310/hta22440> |
| 1. 4b | The Royal College of Pathologists | Key area for quality improvement 5  Antibiotic prophylaxis for patients with indwelling urinary catheters | Long-term urinary catheters inevitably become colonised with bacteria regardless of antimicrobial prophylaxis at the time of insertion so prophylaxis offers no benefit. Prophylaxis can also lead to development of antimicrobial resistance.  Treatment may need to be restricted of those with a history of catheter associated UTI or who had a traumatic catheterisation. | Please see NICE CG139 paragraph **1.2.5.13 page 21** |
| 1. 4b | The Royal College of Pathologists | Key area for quality improvement  Management/Treatment of recurrent UTI | NICEQS90 - Recurrent UTI is a common problem and there is a need to ensure a systematic and consistent management and treatment approach. It is a placeholder currently with acknowledgement from NICE that this area of care needs to be prioritised with better source guidance – 2018 guidance has subsequently been published. | NICEQS90 – placeholder statement  NICE guideline NG112 recurrent UTI prescribing |
| 1. 4b | Whittington Health | The use of methenamine Hippurate for treatment and prevention of UTI | In the light of the newly published results of the ALTAR trial), consideration should be given to the use of this drug for prophylaxis and a discussion about its wider scope of use, especially in the elderly who are more vulnerable to side effects from antibiotics and prophylaxis | [Alternative to prophylactic antibiotics for the treatment of recurrent urinary tract infections in women: multicentre, open label, randomised, non-inferiority trial | The BMJ](https://www.bmj.com/content/376/bmj-2021-0068229)  In our experience, methenamine can also be used for acute UTI in some patients. This would reduce antibiotic use. |

#### Recurrent UTI: Referral

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
| --- | --- | --- | --- | --- |
|  | The Royal College of Pathologists | Key area for quality improvement 3  Referring men with upper urinary tract infections | Upper UTI can indicate the presence lower urinary tract abnormalities. Men can be underdiagnosed with urinary tract abnormalities. | Currently an existing NICE Quality standard for urinary tract infection |
|  | SCM6 | Additional developmental areas of emergent practice  The need to identify who are the specialists?  Urology with special interest, urogynaecology, Regional centre for LUTs |  |  |

#### Additional areas, general comments and no comment responses

| ID | Stakeholder | Key area for quality improvement | Why is this a key area for quality improvement? | **Supporting information** |
| --- | --- | --- | --- | --- |
| 1. 5a | SCM5 | Key area for quality improvement 4  People prescribed an antimicrobial have the clinical indication … documented in their clinical record [NICE QS121, UK plan1 ] | Wales QAIF UTI pilot suggests that coding of UTI is low.  Adequate coding of UTIs in primary care supports the identification of people with recurrent UTIs. This may alter duration of antibiotic prescribed, enable discussion of self-care & preventative measures, the need for referral,& opportunity for treatments (such as prophylaxis or topical oestrogen) .  This also supports audit and identification of appropriate antibiotic for the clinical indication | CQUIN  Wales UTI QAIF/GP contract  <https://phw.nhs.wales/services-and-teams/harp/urinary-tract-infection-uti-resources-and-tools/uti-downloads/wales-qi-uti-indication-2/> |
| 1. 5b | UKHSA | General feedback:  The very last line of the quality statement specific to the definition of ASB does not make senses  [NICE comment: This refers to statement 5 definition of asymptomatic bacteriuria] |  |  |
|  | Royal College of Nursing | No comment  We do not have any comments on this consultation. Thank you for the opportunity to contribute. |  |  |
|  | Royal Pharmaceutical Society | No comment  This piece of work is at a topic of engagement stage and we understand that there will be a later consultation stage too and this would be our intention to respond to. |  |  |

1. [UK Standards for Microbiology Investigations: Investigation of Urine](https://www.gov.uk/government/publications/smi-b-41-investigation-of-urine). Public Health England (2019). [↑](#footnote-ref-1)
2. [EAU Guidelines on urological infections](https://uroweb.org/guidelines/urological-infections/chapter/introduction). European Association of Urology (2022). [↑](#footnote-ref-2)
3. [UK Standards for Microbiology Investigations: Investigation of Urine](https://www.gov.uk/government/publications/smi-b-41-investigation-of-urine). Public Health England (2019). [↑](#footnote-ref-3)
4. [Management of suspected bacterial lower urinary tract infection in adult women](https://www.sign.ac.uk/our-guidelines/management-of-suspected-bacterial-lower-urinary-tract-infection-in-adult-women/). SIGN (2020) [↑](#footnote-ref-4)
5. [EAU Guidelines on urological infections](https://uroweb.org/guidelines/urological-infections/chapter/introduction). European Association of Urology (2022). [↑](#footnote-ref-5)
6. [NICE CKS: Urinary tract infection (lower) – women](https://cks.nice.org.uk/topics/urinary-tract-infection-lower-women/). NICE (2021) [↑](#footnote-ref-6)