

# **Management of Urinary Tract Infections in Adults Clinical Guideline**

**V2.0**

**September 2020**

## Management of Suspected UTI in women under 65 years

**DO NOT treat asymptomatic bacteriuria in non-pregnant women or men as it does not reduce mortality or morbidity. UTI is diagnosed on signs and symptoms. Send cultures in all hospitalised patients to guide antibiotic choice**

- Signs and symptoms of UTI?**

<ul style="list-style-type: none"> <li>• Dysuria</li> <li>• Suprapubic tenderness</li> <li>• Frequency</li> <li>• Flank or back pain</li> </ul>	<ul style="list-style-type: none"> <li>• Urgency</li> <li>• Fever</li> <li>• Polyuria</li> </ul>
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YES

- First exclude vaginal and urethral causes of urinary symptoms**

  - Vaginal itch or discharge: 80% do not have UTI
  - Urethritis – Inflammation post sexual intercourse
  - Carry out sexual history to exclude STIs
  - Genitourinary syndrome of menopause

NO

Think SEPSIS – Check for signs/symptoms

YES

- Consider Pyelonephritis or suspected sepsis:**

  - Send urine for culture
  - Treat for pyelonephritis as per Microguide: Gentamicin IV

NO

- Does the patient have any of 3 key diagnostic criteria?

  - Dysuria
  - New nocturia
  - Cloudy urine

2-3 Symptoms

No Symptoms

1 Symptom – Perform Urine Dipstick test

YES

- Are there other urinary symptoms that are severe?**

  - Urgency
  - Frequency
  - Suprapubic tenderness
  - Visible haematuria

NO

Explore alternative diagnoses consider pelvic examination

- Take urine specimen for culture
  - If non-pregnant and mild symptoms – watch and wait.
  - OR
  - Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice and treat as per sensitivities.
  - If no sensitivities available – Treat s per Microguide: Nitrofurantoin 50mg QDS if eGFR  $\geq$ 45 ml/minute.

Dipstick positive (nitrites & leuco)

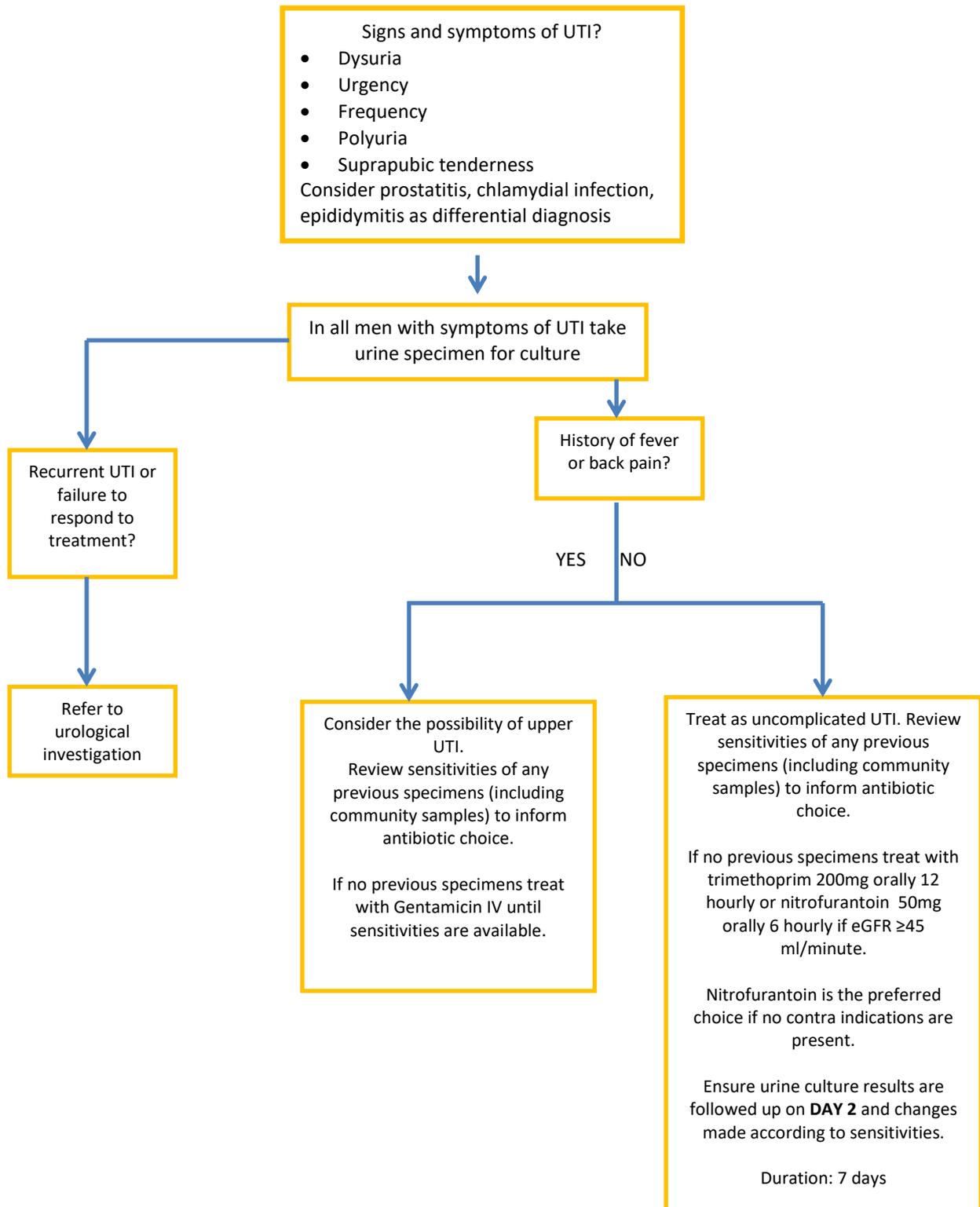
Dipstick negative nitrite, positive leukocyte

Dipstick negative or equivocal

- Send urine culture to confirm diagnosis.
  - If non-pregnant and mild symptoms – watch and wait.
  - If prescription required, treat as per Microguide: Nitrofurantoin 50mg QDS if eGFR  $\geq$ 45 ml/minute

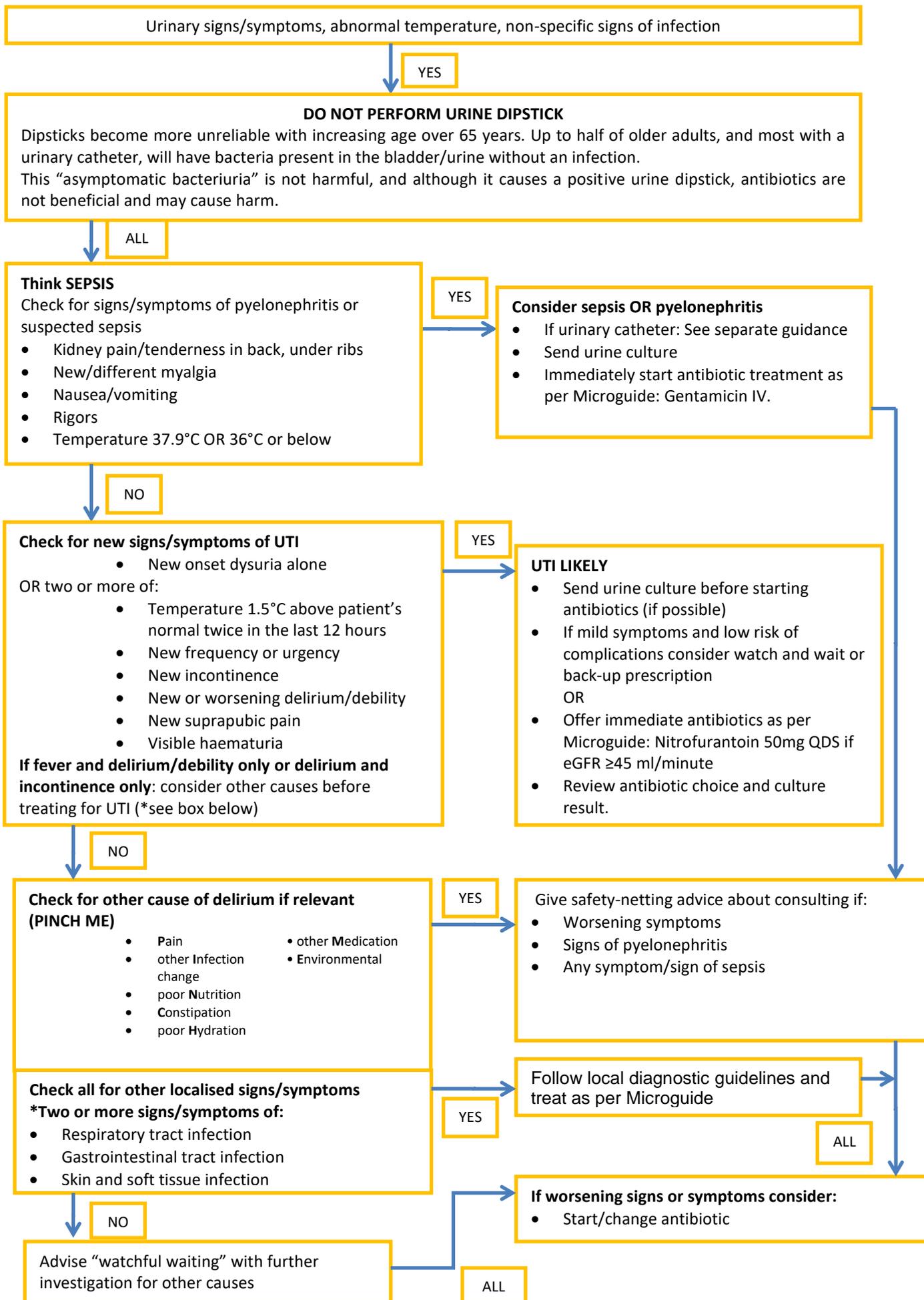
**Source: PHE – Diagnosis of UTI (Nov 18)**

## Management of Suspected UTI in men <65 years not catheterised



Source: SIGN CG88 (2012)

## Management of Suspected UTI in Older People >65 years (not catheterised)



## **Management of Bacterial UTI in patients with catheters**

Signs and symptoms compatible with catheter-associated UTI include new onset or worsening of fever, rigors, altered mental status, malaise, or lethargy with no other identified cause; flank pain; renal angle tenderness; acute haematuria; pelvic discomfort; and in those whose catheters have been removed, dysuria, urgent or frequent urination, or supra-pubic pain or tenderness.

In patients with spinal cord injury, increased spasticity, autonomic dysreflexia, or sense of unease are also compatible with catheter-associated UTI.

### **Catheterised patients presenting with fever**

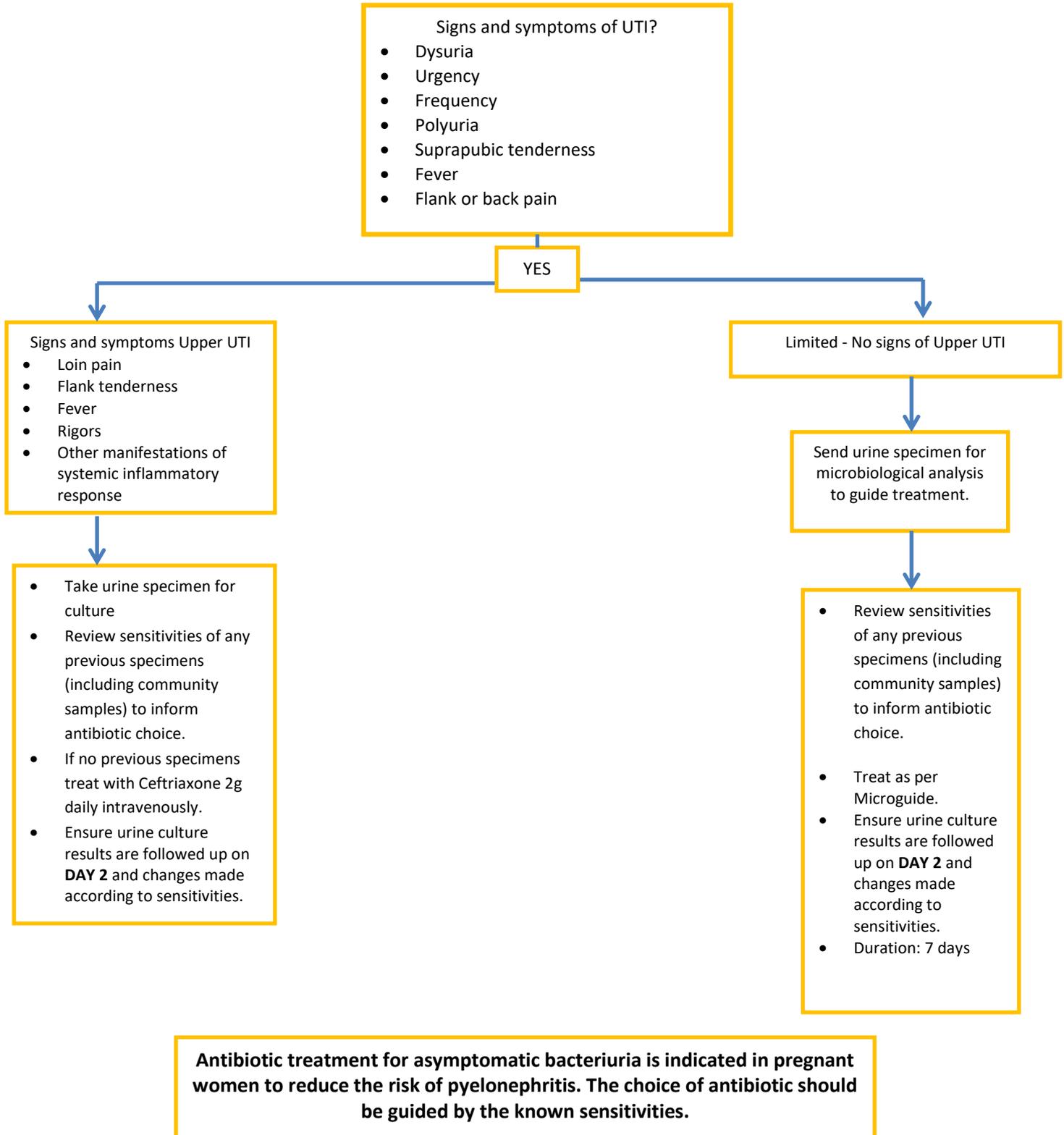
- Look for associated localising (loin or supra-pubic tenderness) or systemic features
- Exclude other potential sources of infection
- Obtain a catheter specimen of urine for culture to determine the infecting organism and susceptibility to antibiotics
- Do not use dipstick testing to diagnose UTI in patients with catheters.
- Change long term indwelling catheters before starting antibiotic treatment for symptomatic UTI
- Consider antibiotic therapy taking into account the severity of the presentation and any comorbid factors.
  - Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice. If no previous specimens Treat with nitrofurantoin 50mg orally 6 hourly if eGFR  $\geq$ 45 ml/minute or trimethoprim 200mg orally 12 hourly. Nitrofurantoin is the preferred choice if no contra indications are present. Ensure urine culture results are followed up and changes made according to sensitivities. Duration: 3 days females, 7 days males.
- Review response to treatment daily and if no improvement/deterioration contact microbiologist for advice.

**Only send urine samples for laboratory culture if the patient has clinical sepsis, not because the appearance or smell of the urine suggests that bacteriuria is present.**

**Do not treat catheterised patients with asymptomatic bacteriuria with an antibiotic.**

**Source: SIGN CG88 (2012)**

## Management of Suspected UTI in pregnant women



# 1. Aim/Purpose of this Guideline

- 1.1. To provide information to clinical staff on the correct management of adults (excluding pregnant women) with suspected bacterial urinary tract infection.
- 1.2. This version supersedes any previous versions of this document.

## **Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation**

The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We cannot rely on opt out, it must be opt in.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

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# 2. The Guidance

## 2.1. Background

Urinary tract infection (UTI) is the second most common clinical indication for empirical antimicrobial treatment in primary and secondary care. Healthcare practitioners often have to make decisions about prescription of antibiotics for urinary tract infection. The criteria for the diagnosis of urinary tract infection vary greatly in the UK, depending on the patient and the context.

Urinary tract infections are caused by the presence and multiplication of microorganisms in the urinary tract. A urinary tract infection can result in several clinical syndromes, including acute and chronic pyelonephritis (infection of the kidney and renal pelvis), cystitis (infection of the bladder), urethritis (infection of the urethra), epididymitis (infection of the epididymis) and prostatitis (infection of the prostate gland). Infection may spread to surrounding tissues (for example, perinephric abscess) or to the bloodstream. A urinary tract infection is defined by a combination of clinical features and the presence of bacteria in the urine. Asymptomatic bacteriuria is the occurrence of bacteria in the urine without causing symptoms. When symptoms occur as a result of bacteria this is referred to as symptomatic bacteriuria.

In people aged 65 years and over, asymptomatic bacteriuria is common but is not associated with increased morbidity. The diagnosis of urinary tract infection is particularly difficult in older people, who are more likely to have asymptomatic bacteriuria. The prevalence of bacteriuria may be so high that urine culture ceases to be a reliable diagnostic test.

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* or methicillin-resistant *Staphylococcus aureus* infections, infection with multi-drug-resistant gram-negative organisms including extended-spectrum beta-lactamase organisms and carbapenem-resistant Enterobacteriaceae, and the development of antibiotic-resistant urinary tract infections.

In people with an indwelling urethral catheter, antibiotics do not generally eradicate asymptomatic bacteriuria.

## 2.2. Management of Bacterial UTI in Adult women aged <65 years (not catheterised or pregnant).

2.2.1. If 2 or more of the following symptoms are present and the patient does not have vaginal discharge or irritation empirical antibiotics are appropriate following collection of a urine specimen for culture:

- Dysuria
- New nocturia
- Cloudy urine

2.2.2. If the patient has 1 of the above symptoms, obtain urine specimen for culture and perform a urine dipstick test.

2.2.3. Actions to be taken on positive dipstick result:

- **Positive nitrite, leucocytes and blood or nitrite alone** – probable UTI. If non-pregnant and mild symptoms – watch and wait OR treat with first line antibiotics. Send urine specimen for culture.
- **Negative nitrite, positive leucocyte** – UTI or other diagnosis equally likely. If non-pregnant and mild symptoms – watch and wait OR if prescription required treat if severe symptoms or consider delayed antibiotics and send urine for culture.
- **Negative nitrite, leucocytes and blood or negative nitrite and leucocyte but positive blood or protein** – UTI unlikely, consider other diagnosis and advise on management of symptoms.

2.2.4. For all patients treated for suspected UTI, a pre-treatment mid-stream specimen of urine should be sent and previous microbiology results reviewed prior to prescribing antibiotics.

2.2.5. In the absence of previous specimen result treat with trimethoprim 200mg orally 12 hourly or nitrofurantoin 50mg orally 6 hourly if eGFR  $\geq$ 45 ml/minute. Nitrofurantoin is the preferred choice if no contra indications are present. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities. Duration: 3 days

- 2.2.6. If any of the following are present obtain urine specimen for culture and consider upper UTI diagnosis.
- Loin pain
  - Flank tenderness
  - Fever
  - Rigors
  - Other manifestations of systemic inflammatory response
- 2.2.7. In the absence of previous specimen result treat with Gentamicin IV until sensitivities are available. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities.
- 2.2.8. Patients with recurrent UTIs may be more likely to have resistant organisms due to repeated exposure to antibiotics. Assessment for possible underlying urinary tract abnormalities should be considered and urology referral made if appropriate. Prophylaxis for recurrent UTI should not be routinely started. If considering prophylaxis then discussion with the Microbiologist and/or Urologist is required with regards to choice of agent and follow-up.

### 2.3. Management of Bacterial UTI in Adult men aged <65 years (not catheterised)

DO NOT perform urine dipstick to diagnose UTI

- 2.3.1. If any of the following symptoms are present, a specimen of urine should be taken for culture and differential diagnosis should include prostatitis, chlamydial infection or epididymitis.
- Dysuria
  - Frequency
  - Suprapubic tenderness
  - Urgency
  - Polyuria
- 2.3.2. **For all patients treated for suspected UTI, a pre-treatment mid-stream specimen of urine should be sent and previous microbiology results reviewed prior to prescribing antibiotics.**
- 2.3.3. If the patient does not have back pain, treat as uncomplicated UTI. Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice. If no previous specimens treat with trimethoprim 200mg orally 12 hourly or nitrofurantoin 50mg orally 6 hourly if eGFR  $\geq 45$  ml/minute. Nitrofurantoin is the preferred choice if no contra indications are present. Duration: 7 days. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities.

- 2.3.4. If the patient has recurrent UTIs or fails to respond to treatment a referral should be made for urological investigation.
- 2.3.5. If the patient has back pain as well as the above consider the possibility of upper urinary tract infection. Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice. If no previous specimens treat with Gentamicin IV until sensitivities are available. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities.

#### 2.4. Management of Bacterial UTI in adults >65 years (not catheterised)

DO NOT perform urine dipstick to diagnose UTI

2.4.1. If the patient has signs/symptoms of UTI, abnormal temperature and/or non-specific signs of infection – Think SEPSIS.

2.4.2. Check all patients for NEW signs/symptoms of UTI;

- New onset dysuria alone

OR two or more of:

- Temperature 1.5°C above patient's normal twice in the last 12 hours
- New frequency or urgency
- New incontinence
- New or worsening delirium/debility\*
- New suprapubic pain
- Visible haematuria

**2.4.3. For all patients treated for suspected UTI, a pre-treatment mid-stream specimen of urine should be sent and previous microbiology results reviewed prior to prescribing antibiotics.**

2.4.4. If mild symptoms and low risk of complications consider watch and wait or provide back-up prescription OR treat as lower UTI as per Microguide with nitrofurantoin 50mg QDS if eGFr >45ml/minute or Trimethoprim 200mg BD. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities

\* If patient presents with fever and delirium/debility only consider other causes before treating for UTI – PINCH ME

- |                          |                               |
|--------------------------|-------------------------------|
| • <b>Pain</b>            | • other <b>Medication</b>     |
| • other <b>Infection</b> | • <b>Environmental change</b> |
| • poor <b>Nutrition</b>  |                               |
| • <b>Constipation</b>    |                               |
| • poor <b>Hydration</b>  |                               |

## 2.5. Management of Bacterial UTI in patients with catheters.

DO NOT perform urine dipstick to diagnose UTI

- 2.5.1. Between 2-7% of patients with indwelling urethral catheters acquire bacteriuria each day, even with the application of best practice for insertion and care of the catheter. All patients with a long term indwelling catheter are bacteriuric, often with two or more organisms.
- 2.5.2. Signs and symptoms compatible with catheter-associated UTI include new onset or worsening of fever, rigors, altered mental status, malaise, or lethargy with no other identified cause; flank pain; renal angle tenderness; acute haematuria; pelvic discomfort; and in those whose catheters have been removed, dysuria, urgent or frequent urination, or supra-pubic pain or tenderness.
- 2.5.3. In patients with spinal cord injury, increased spasticity, autonomic dysreflexia, or sense of unease are also compatible with catheter-associated UTI.
- 2.5.4. **Only send urine samples for laboratory culture if the patient has clinical sepsis, not because the appearance or smell of the urine suggests that bacteriuria is present.**
- 2.5.5. In catheterised patients who present with fever:
  - Look for associated localising (loin or supra-pubic tenderness) or systemic features
  - Exclude other potential sources of infection
  - Obtain a catheter specimen of urine for culture to determine the infecting organism and susceptibility to antibiotics
  - Do not use dipstick testing to diagnose UTI in patients with catheters.
  - Change long term indwelling catheters before starting antibiotic treatment for symptomatic UTI
  - Consider antibiotic therapy taking into account the severity of the presentation and any comorbid factors.
- 2.5.6. **Do not treat catheterised patients with asymptomatic bacteriuria with an antibiotic.**
  - Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice. If no previous specimens treat with trimethoprim 200mg orally 12 hourly or nitrofurantoin 50mg orally 6 hourly if eGFR  $\geq$ 45 ml/minute. Nitrofurantoin is the preferred choice if no contra indications are present. Duration: 3 days females, 7 days males.
  - Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities.

- Review response to treatment daily and if no improvement/deterioration contact microbiologist for advice.

## 2.6. Management of bacterial UTI in pregnant women.

- 2.6.1. Urinary tract infections occur commonly during pregnancy. UTIs include acute cystitis, pyelonephritis and asymptomatic bacteriuria (positive urine culture in an asymptomatic woman). Approximately 1–4 % of pregnant women experience acute cystitis and the incidence of asymptomatic bacteriuria during pregnancy ranges from 2–10 %. Asymptomatic bacteriuria during pregnancy has been associated with an increased risk of pre-term delivery and low birth weight. In addition, if untreated, 20–40% of pregnant women with asymptomatic bacteriuria may develop pyelonephritis later in pregnancy. Antibiotic treatment for asymptomatic bacteriuria is therefore indicated in pregnant women to reduce the risk of pyelonephritis. The choice of antibiotic should be guided by the known sensitivities.
- 2.6.2. Pregnant women with acute cystitis commonly present with symptoms of dysuria, urgency and frequency, without evidence of systemic illness. In such cases a urine specimen must be sent for culture and treatment commenced. Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice or refer to Microguide. A seven day treatment period is required to ensure eradication. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities.
- 2.6.3. Where upper urinary tract infection is suspected a urine specimen must be sent for culture. Review sensitivities of any previous specimens (including community samples) to inform antibiotic choice. If no previous specimens treat with Ceftriaxone 2g daily intravenously. Ensure urine culture results are followed up on **DAY 2** and changes made according to sensitivities.
- 2.6.4. A follow up urine culture can be requested one to two weeks after the antibiotic course has been completed to ensure eradication.
- 2.6.5. Paracetamol can be used to relieve pain associated with acute cystitis.

### 3. Monitoring compliance and effectiveness

Element to be monitored	Diagnosis of UTIs based on signs and symptoms and not on inappropriate urine dip stick use
Lead	Antibiotic stewardship team
Tool	Audit and review tool on a word or excel spreadsheet
Frequency	Six monthly audit to be included in the antibiotic stewardship section of the annual Infection Prevention Control report
Reporting arrangements	Hospital Infection Control Committee
Acting on recommendations and Lead(s)	The Antibiotic Stewardship Committee to co-ordinate the required actions from the audit.
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned within a month. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders

### 4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ['Equality, Inclusion & Human Rights Policy'](#) or the [Equality and Diversity website](#).

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

## Appendix 1. Governance Information

<b>Document Title</b>	Management of Urinary Tract Infections in Adults Clinical Guideline V2.0		
<b>This document replaces (exact title of previous version):</b>	Clinical Guideline For The Management Of UTI In Adults V1.0		
<b>Date Issued/Approved:</b>	1 <sup>st</sup> April 2019		
<b>Date Valid From:</b>	September 2020		
<b>Date Valid To:</b>	1 <sup>st</sup> April 2022		
<b>Directorate / Department responsible (author/owner):</b>	Louise Dickinson, Deputy Director of Nursing Director Infection Prevention and Control		
<b>Contact details:</b>	01872 254993		
<b>Brief summary of contents</b>	Guidance on the appropriate assessment, treatment and management of adults presenting with suspected urinary tract infection.		
<b>Suggested Keywords:</b>	Urinary tract infection, UTI		
<b>Target Audience</b>	RCHT ✓	CFT	KCCG
<b>Executive Director responsible for Policy:</b>	Director of Nursing, Midwifery and Allied Health Professionals		
<b>Approval route for consultation and ratification:</b>	Medicines Practice Committee		
<b>General Manager confirming approval processes</b>	Kim O'Keefe, Director of Nursing, Midwifery and Allied Health Professionals		
<b>Name of Governance Lead confirming approval by specialty and care group management meetings</b>	Claire Martin, Deputy Director of Nursing		
<b>Links to key external standards</b>	<a href="https://www.england.nhs.uk/wp-content/uploads/2019/03/2-CCG-CQUIN-1920-Indicator-Specifications.pdf">https://www.england.nhs.uk/wp-content/uploads/2019/03/2-CCG-CQUIN-1920-Indicator-Specifications.pdf</a>		
<b>Related Documents:</b>	<p>Health Improvement Scotland (2012) <i>SIGN 88 Management of suspected bacterial urinary tract infection in adults.</i> <a href="http://www.sign.ac.uk/pdf/sign88.pdf">http://www.sign.ac.uk/pdf/sign88.pdf</a></p> <p>PHE UTI guidelines</p> <p><a href="https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis">https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis</a></p> <p>NICE (2015) Urinary tract infections in adults. Quality Standard. <a href="http://nice.org.uk/guidance/qs90">nice.org.uk/guidance/qs90</a></p>		

<b>Training Need Identified?</b>	No		
<b>Publication Location (refer to Policy on Policies – Approvals and Ratification):</b>	Internet & Intranet	✓	Intranet Only
<b>Document Library Folder/Sub Folder</b>	Clinical / Corporate Clinical		

### Version Control Table

<b>Date</b>	<b>Version No</b>	<b>Summary of Changes</b>	<b>Changes Made by (Name and Job Title)</b>
29.07.2016	V1.0	New guidelines	Louise Dickinson Consultant Nurse Richard Bendall Microbiologist
01.04.2019	V2.0	Guidance in line with PHE 2018 UTI management document	Ronan Sheehan and Neil Powell, Pharmacist

**All or part of this document can be released under the Freedom of Information Act 2000**

**This document is to be retained for 10 years from the date of expiry.**

**This document is only valid on the day of printing**

### **Controlled Document**

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy for the Development and Management of Knowledge, Procedural and Web Documents (The Policy on Policies). It should not be altered in any way without the express permission of the author or their Line Manager.

## Appendix 2. Equality Impact Assessment

<b>Section 1: Equality Impact Assessment Form</b>						
<b>Name of the strategy / policy /proposal / service function to be assessed</b> Management of Urinary Tract Infections in Adults Clinical Guideline V2.0						
<b>Directorate and service area:</b> Corporate Clinical			<b>Is this a new or existing Policy?</b> Existing			
<b>Name of individual/group completing EIA</b> Louise Dickinson			<b>Contact details:</b> 01872 254969			
1. Policy Aim Who is the strategy / policy / proposal / service function aimed at?		To ensure patients presenting with symptoms of Urinary Tract Infections are assessed and treated appropriately				
2. Policy Objectives		To provide guidance to medical and nursing staff on the correct management of patients with suspected Urinary Tract Infections				
3. Policy Intended Outcomes		To treat patients with suspected urinary tract infections appropriately				
4. How will you measure the outcome?		6 monthly audit				
5. Who is intended to benefit from the policy?		Patients				
6a). Who did you consult with?		Workforce	Patients	Local groups	External organisations	Other
		X				
b). Please list any groups who have been consulted about this procedure.		<b>Please record specific names of groups:</b> Microbiologists, Eldercare team				
c). What was the outcome of the consultation?		Agreed				

<b>7. The Impact</b>				
Please complete the following table. If you are unsure/don't know if there is a negative impact you need to repeat the consultation step.				
Are there concerns that the policy <b>could</b> have a positive/negative impact on:				
Protected Characteristic	Yes	No	Unsure	Rationale for Assessment / Existing Evidence
<b>Age</b>		<b>X</b>		
<b>Sex</b> (male, female non-binary, asexual etc.)		<b>X</b>		
<b>Gender reassignment</b>		<b>X</b>		
<b>Race/ethnic communities /groups</b>		<b>X</b>		
<b>Disability</b> (learning disability, physical disability, sensory impairment, mental health problems and some long term health conditions)		<b>X</b>		
<b>Religion/ other beliefs</b>		<b>X</b>		
<b>Marriage and civil partnership</b>		<b>X</b>		
<b>Pregnancy and maternity</b>		<b>X</b>		
<b>Sexual orientation</b> (bisexual, gay, heterosexual, lesbian)		<b>X</b>		
<p><b>If all characteristics are ticked 'no', and this is not a major working or service change, you can end the assessment here as long as you have a robust rationale in place.</b></p> <p>I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.</p>				
<b>Name of person confirming result of initial impact assessment:</b>			Louise Dickinson	
<p><b>If you have ticked 'yes' to any characteristic above OR this is a major working or service change, you will need to complete section 2 of the EIA form available here:</b></p> <p><a href="#">Section 2. Full Equality Analysis</a></p> <p><b>For guidance please refer to the Equality Impact Assessments Policy (available from the document library) or contact the Human Rights, Equality and Inclusion Lead <a href="mailto:debby.lewis@nhs.net">debby.lewis@nhs.net</a></b></p>				