Investigating for Urinary Tract Infection in Patients Undergoing Hip and Knee Replacement Surgery

Document Control:

For Use In:	Trauma and Orthopaedics		
	All staff involved in Orthopaedic Pre-assessment and Same Day Admission Unit		
Search Keywords	Urinary tract infection, screening, hip replacement, knee replacement		
Document Author:	Specialist Nurse Practitioners Consultant Orthopaedic Surgeon		
Document Owner:	Trauma and Orthopaedics		
Approved By:	Clinical Guidelines Assessment Panel (CGAP) If approved by committee or Governance Lead Chair's Action; ☑		
Ratified By:	Clinical Safety and Effectiveness Sub Board		
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Version History:

Version	Date	Author	Reason/Change
V4.0	05/2023	Specialist Nurse Practitioners, Consultant Orthopaedic Surgeon	Antibiotics instruction section for female with complicated infection amended. GP letters amended Definition of complicated UTI Adapted new trust protocol template, updated references, updated appendices
V5.0			
V6.0			

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
None	Not applicable

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The following were consulted during the development of this document:

- Devan Vaghela, Consultant Microbiologist
- Caroline Hallam, Specialist Pharmacist
- Sarah Wood, Consultant Urologist

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a protocol applicable to the Norfolk and Norwich University Hospital; please refer to the Trust's procedural documents for further guidance.

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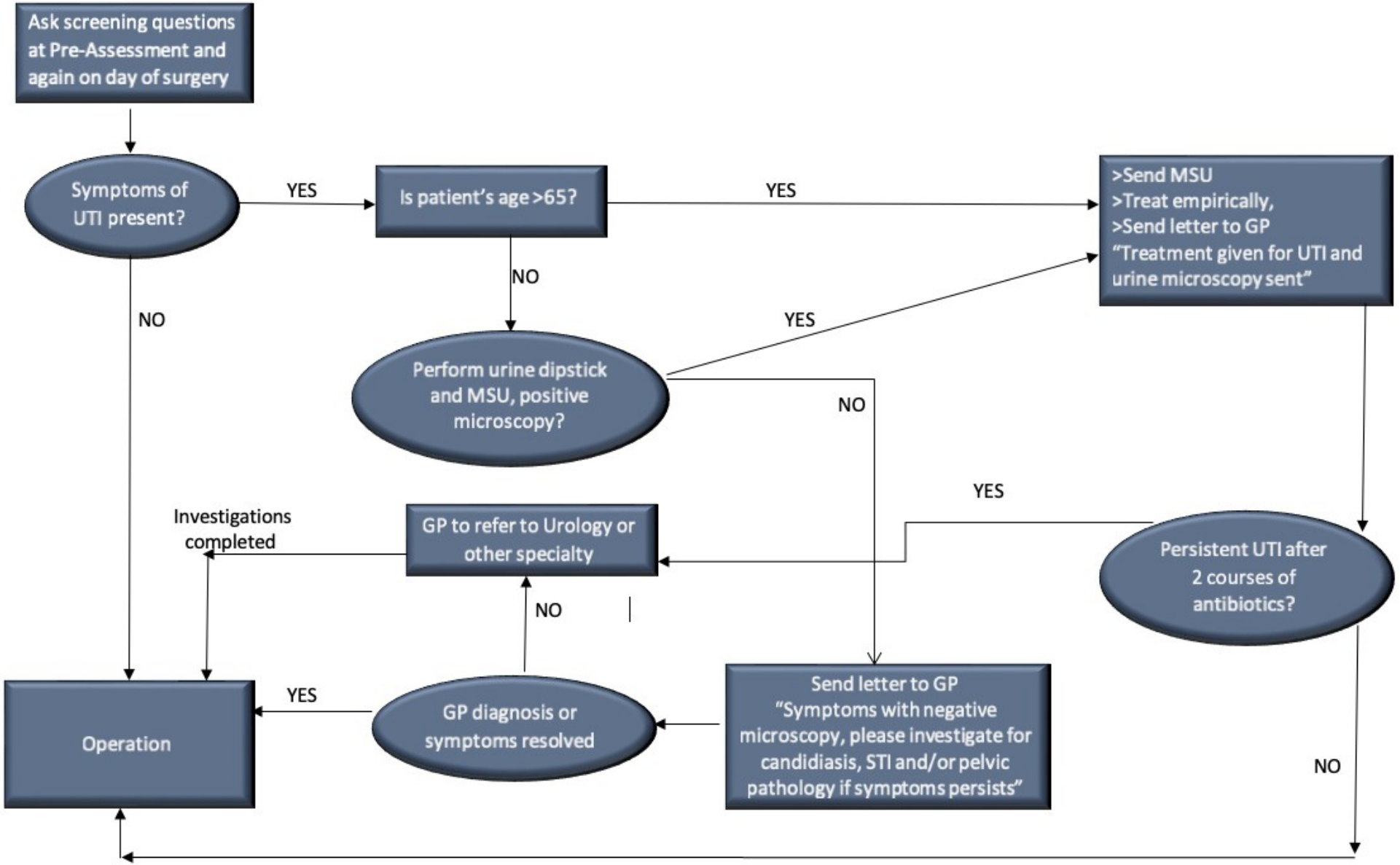
Quick Reference Guide



2. Processes to be followed

Pre-operative Assessment Nurse asking UTI Screening Questions at Pre-assessment and on Day of Surgery:

- Do you suffer from burning or stinging when you pass urine?
- Do you have to pass urine more frequently than usual?
- Do you have a fever or temperature?
- Have you had a urinary tract infection in the last month?

If dysuria and frequency are present, the probability of UTI is >90% and empirical antibiotic treatment is indicated (SIGN, 2020).

In over 65s the diagnosis may be less clear. Treatment may be indicated if there is a positive response to 2 or more screening questions. If the diagnosis is uncertain, treatment can be guided by further investigations (FBC, U&Es & CRP), routine observations, result of MSU or medical review of the patient.

2.1. Action

Patients with positive responses are investigated or treated depending on age:

1) **Under 65 years old:** investigated with urinalysis by dipstick testing and microbiological analysis (MSU). Symptomatic patients with a positive dipstick test for leucocytes and nitrites are treated with either a 3-day course of antibiotics in females with simple infection or 7-day course in males or in females with complicated infection. This should be prescribed in the pre-admission clinic.

The first line antibiotics of choice are Nitrofurantoin 50mg QDS or Trimethoprim 200mg BD. It is important that ***Trimethoprim is not prescribed to patients taking Methotrexate.*** *Patients prescribed Nitrofurantoin should have U&Es checked & is contraindicated in patients with a CrCl of <30mL/min. Nitrofurantoin has been linked to lung fibrosis, please proceed with caution and counsel accordingly in patients with underlying respiratory conditions****. (Please see urology antibiotic policy below for further guidance).***

An appropriate course of antibiotics is likely to be an effective treatment for a urinary tract infection in many adult patients undergoing joint replacement surgery (Milo et al., 2005).

Communication should be sent to the patient's GP informing them that the patient has a symptomatic UTI with a positive test, treatment has been prescribed and an MSU sent. The dipstick result and name of the antibiotic given must be written on the microscopy request form, so that the results can be interpreted efficiently, and the correct information sent to the GP.

A second course of antibiotics (guided by the MSU result) should be prescribed by the GP if the patient remains symptomatic. Surgery can proceed once the patient is free of symptoms.
Patients with persistent symptomatic UTIs after 2 courses of antibiotics should be reviewed by their GP, and if necessary, referred to the One-Stop Urology Clinic for further investigation. Surgery should be postponed until such investigations & any necessary treatment(s) are completed. In the event of a patient having a chronic UTI despite appropriate treatment & investigations, the surgery can potentially go ahead after discussion of risks with the patient and appropriate antibiotic cover planned with microbiology advice.

Patients with UTI symptoms but negative tests may have a Candida infection, sexually transmitted infections or pelvic pathology. Communication should be sent to the patient's GP requesting assessment, treatment and referral to Urology, Gynaecology or GU medicine as appropriate.

2) **Over 65 years old:** positive symptoms are treated with either a 3-day course of oral antibiotics in females with simple infection or 7 days in males or in females with complicated infection. This should be prescribed in clinic and MSU should be sent for analysis.

The first line antibiotics of choice are Nitrofurantoin 50mg QDS or Trimethoprim 200mg BD. It is important that ***Trimethoprim is not prescribed to patients taking Methotrexate.*** *Patients prescribed Nitrofurantoin should have U&Es checked & is contraindicated in patients with a CrCl of <30mL/min. Nitrofurantoin has been linked to lung fibrosis, please proceed with caution and counsel accordingly in patients with underlying respiratory conditions.* ***(Please see urology antibiotic policy below for further guidance).***

An appropriate course of antibiotics is likely to be an effective treatment for a urinary tract infection in the majority of adult patients undergoing joint replacement surgery.

Communication should be sent to the patient's GP informing them that the patient has a symptomatic UTI, treatment has been prescribed and an MSU sent. The name of the antibiotic given must be written on the microscopy request form, so that the results can be interpreted efficiently, and the correct information sent to the GP.

A second course of antibiotic (guided by the MSU result) should be prescribed by the GP if the patient remains symptomatic. Surgery can proceed once the patient is free of symptoms.

Patients with persistent symptomatic UTIs after 2 courses of antibiotics should be reviewed by their GP, and if necessary, referred to the One-Stop Urology Clinic for further investigation. Surgery should be postponed until such investigations & any necessary treatment(s) are completed. In the event of a patient having a chronic UTI despite appropriate treatment & investigations, the surgery can potentially go ahead after discussion of risks with the patient and appropriate antibiotic cover planned with microbiology advice.

Patients with UTI symptoms but negative tests may have a Candida infection, sexually transmitted infections or pelvic pathology. Communication should be sent to the patient's GP requesting assessment, treatment and referral to Urology, Gynaecology or GU medicine as appropriate.

2.2. Urology Antibiotic Policy

Infection	Specimens	First Line	True penicillin allergy	Duration of Treatment	Comments
Female UTI (oral treatment – non pregnant and uncatheterised patients)	**≥65 years** MSU as per clinical symptoms **<65 years only** Urine dipstick, send MSU if dipstick positive for nitrites +/- leukocytes	**ORAL OPTIONS** **As per sensitivities or empiric:** **1st Choice** Nitrofurantoin 50mg QDS PO (contra-indicated if CrCL<30mL/min – see comment box) **OR** Trimethoprim 200mg BD PO (see comment box) **2nd Choice** Nitrofurantoin 50mg QDS PO (contra-indicated if CrCL<30mL/min – see comment box) **OR** Pivmecillinam (a penicillin) 400mg STAT then 200mg TDS **OR** Fosfomycin 3g STAT PO	**ORAL OPTIONS** As per 1st or 2nd choice **except** pivmecillinam	3 days uncomplicated (except fosfomycin which is STAT) 7 days complicated (except fosfomycin which is STAT)	**NB: Nitrofurantoin is contra-indicated in patients with a CrCl <30mL/min & may only be used in CrCl 30-44mL/min for uncomplicated UTI for 3-7 days (nb. efficacy may be reduced in impaired renal function)** *Caution: Trimethoprim should NOT be used in patients taking Methotrexate, patients treated unsuccessfully with Trimethoprim or patients known to have UTI resistant to trimethoprim*

Infection	Specimens	First Line	True penicillin allergy	Duration of Treatment	Comments
Male UTI (oral treatment, uncatheterised patients)	**≥65 years** MSU as per clinical symptoms **<65 years only** Urine dipstick, send MSU if dipstick positive for nitrites +/- leukocytes	**ORAL OPTIONS** **As per sensitivities or empiric:** **1st Choice** Trimethoprim 200mg BD PO (see comment box) **OR** Nitrofurantoin 50mg QDS PO (contra-indicated if CrCL<30mL/min – see comment box) **2nd Choice** Consider alternative diagnoses and follow recommendations for pyelonephritis or prostatitis	**ORAL OPTIONS** As per 1st choice	7 days	**NB: Nitrofurantoin is contra-indicated in patients with a CrCl <30mL/min & may only be used in CrCl 30-44mL/min for uncomplicated UTI for 3-7 days (nb. efficacy may be reduced in impaired renal function)** *Caution: Trimethoprim should NOT be used in patients taking Methotrexate, patients treated unsuccessfully with Trimethoprim or patients known to have UTI resistant to trimethoprim*

3. References

Bouvet, C., Lübbeke, A., Bandi, C., Pagani, L., Stern, R., Hoffmeyer, P. and Uçkay, I. (2014), 'Is there any benefit in pre-operative urinary analysis before elective total joint replacement?', *The Bone & Joint Journal*, 96-B(3), pp. 390–394.

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4. Audit of the process

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual/ group /committee)	Responsible Governance Committee / dept	Frequency of monitoring
Policy Content Knowledge	Ensure staff reads the policy (see Appendix - Sign off list)	Protocol Authors	Trauma and Orthopaedics	Annually
No patient seen at pre-assessment with a symptomatic UTI should be left untreated.	Cancellation on the day of surgery is reported to monthly orthopaedic governance meeting by surgical team.	Protocol Authors	Trauma and Orthopaedics	Monthly
No symptomatic patient with a persistent UTI despite 2 courses of antibiotics and appropriate investigations is cancelled for that reason.	Cancellation on the day of surgery is reported to monthly orthopaedic governance meeting by surgical team.	Protocol Authors	Trauma and Orthopaedics	Monthly

The audit results are to be discussed at relevant governance meetings to review the results and recommendations for further action. Then sent to Clinical Safety and Effectiveness Sub Board who will ensure that the actions and recommendations are suitable and sufficient.

5. Appendices

5.1. Appendix 1 - GP letter for 'under 65s, symptomatic with urine dipstick positive'

Orthopaedic Pre-Operative Assessment
Arthur South Day Unit
Norfolk and Norwich University Hospital
Colney Lane, Norwich NR4 7UY
direct dial: 01603 286499
website: www.nnuh.nhs.uk

dd/mm/yyyy

Dear Dr.

RE: Mrs / Mr XX DOB: dd/mm/yyyy Address: Norfolk
Hospital No: 1111111 NHS No: 0000000000
Consultant:

I am writing to request your kind assistance with this patient who attended the Orthopaedic Pre-Assessment Clinic on: *dd/mm/yyyy*. The patient's symptoms and dipstick result suggest a urinary tract infection. We have provided the patient with a 3-day (female) / 7-day male or in female with complicated infection *(delete as appropriate)* course of*: (state antibiotic name and dose).* We have also sent an MSU sample for microscopy to guide further management if symptoms persist. MSU result will be available in ICE Desktop Clinical System.

If symptoms resolve, I would be grateful if you would let us know or ask the patient to let us know. If this is the case, we do not require any further tests prior to joint replacement surgery. We can then confirm the planned admission date with the patient.

If symptoms persist, please arrange for dipstick testing and microscopy and treat for a persistent urinary tract infection with a second 5-day course of an appropriate antibiotic. If the UTI symptoms persist despite two courses of antibiotics, please consider referring the patient to Urology for further investigation and treatment. Once urological investigations and treatment are complete, we can then carry out the patient's Orthopaedic operation, if necessary, even in the presence of an "incurable" UTI.

Many thanks for your help with this matter.

Please do not hesitate to contact us if we can help in any way.

Yours sincerely,

Orthopaedic Preassessment Nurse

Pre-Op Date:	**Name:** **D.O.B:** *dd/mm/yyyy* **Hosp No:** **NHS No:** **Sex:** **Surgery:**
TCI Date: *dd/mm/yyyy*	
Consultant:	

Problem Identified		
Date/Time *dd/mm/yyyy* *hh:mm*		**Signature**
Actions Taken		
Outcome		

5.2. Appendix 2 - GP letter for 'over 65s, symptomatic with urine MSU result pending'

Orthopaedic Pre-Operative Assessment
Arthur South Day Unit
Norfolk and Norwich University Hospital
Colney Lane, Norwich NR4 7UY
direct dial: 01603 286499
website: www.nnuh.nhs.uk

Dd/mm/yyyy

Dear Dr.

RE: Mrs AA DOB: 22/02/1941 Address: Norfolk Hospital No: 1111111
NHS No: 0000000000
Consultant:

I am writing to request your kind assistance with this patient. This patient attended the Orthopaedic Pre-Assessment Clinic on *dd/mm/yyyy*. They had symptoms suggesting a probable urinary tract infection.

We have provided the patient with a 3-day (female) / 7-day male or in female with complicated infection *(delete as appropriate)* course of*: (state antibiotic name and dose).* We have also sent a MSU sample for microscopy to guide further management if symptoms persist. MSU result will be available in ICE Desktop Clinical System.

If symptoms resolve, I would be grateful if you would let us know or ask the patient to let us know. If this is the case, we do not now require any further tests prior to joint replacement surgery. We can then confirm the planned admission date with the patient.

If symptoms persist, please arrange for dipstick testing and microscopy and treat for a persistent urinary tract infection with a second 5-day course of an appropriate antibiotic. If the UTI symptoms persist despite two courses of antibiotics, please consider referring the patient to Urology for further investigation and treatment. Once urological investigations and treatment are complete, we can then carry out the patient's Orthopaedic operation, if necessary, even in the presence of an "incurable" UTI.

Many thanks for your help with this matter.

Please do not hesitate to contact us if we can help in any way.

Yours sincerely,

Orthopaedic Preassessment Nurse

Investigating for Urinary Tract Infection in Patients Undergoing Hip and Knee Replacement Surgery

Pre-Op Date:	**Name:** **D.O.B:** *dd/mm/yyyy* **Hosp No:** **NHS No:** **Sex:** **Surgery:**
TCI Date: *dd/mm/yyyy*	
Consultant:	

Problem Identified		
Date/Time *dd/mm/yyyy* *hh:mm*		**Signature**
Actions Taken		
Outcome		

5.3. Appendix 3 - GP letter for 'over 65s, symptomatic with MSU result positive'

Orthopaedic Pre-Operative Assessment
Arthur South Day Unit
Norfolk and Norwich University Hospital
Colney Lane, Norwich NR4 7UY
direct dial: 01603 286499
website: www.nnuh.nhs.uk

Dd/mm/yyyy

Dear Dr.

RE: Mrs AA DOB: 22/02/1941 Address: Norfolk Hospital No: 1111111
NHS No: 0000000000
Consultant:

I am writing to request your kind assistance with this patient who attended the Orthopaedic Pre-Assessment Clinic on *dd/mm/yyyy* . Their MSU result shows a urinary tract infection, as per the attached result.

If the patient has completed a course of antibiotics and symptoms have resolved, we do not recommend any further tests prior to joint replacement surgery. I would be very grateful if you were able to let us know or ask the patient to let us know if this is the case. We can then confirm the planned admission date.

If this is not the case, please treat the patient's infection with a 3-day (female) / 7-day (male) or in females with complicated infection *(delete as appropriate)* course of an appropriate antibiotic.

If symptoms persist, please arrange for dipstick testing and microscopy and treat for a persistent urinary tract infection with a second 5 / 7-day course of an appropriate antibiotic. If symptoms persist despite two courses of antibiotics, please consider referring the patient to Urology for further investigation and treatment. Once urological investigations and treatment are complete, we can carry out the patient's Orthopaedic operation, if necessary, even in the presence of an incurable urinary tract infection.

Please do not hesitate to contact us if we can help in any way.

Yours sincerely,

Orthopaedic Preassessment Nurse

Pre-Op Date:	**Name:** **D.O.B:** *dd/mm/yyyy* **Hosp No:** **NHS No:** **Sex:** **Surgery:**
TCI Date: *dd/mm/yyyy*	
Consultant:	

Problem Identified		
Date/Time *dd/mm/yyyy* *hh:mm*		**Signature**
Actions Taken		
Outcome		

5.4. Appendix 4 - GP letter for 'under 65s, symptomatic with MSU +/- dipstick negative'

Orthopaedic Pre-Operative Assessment
Arthur South Day Unit
Norfolk and Norwich University Hospital
Colney Lane, Norwich NR4 7UY
direct dial: 01603 286499
website: www.nnuh.nhs.uk

Dd/mm/yyyy

Dear Dr.

RE: Mrs AA DOB: 22/02/1941 Address: Norfolk Hospital No: 1111111
NHS No: 0000000000
Consultant:

I am writing to request your kind assistance with this patient. This patient attended the Orthopaedic Pre-Assessment Clinic on *dd/mm/yyyy*. They had symptoms suggesting a possible urinary tract infection but MSU +/- dipstick tests were negative.

The patient may develop an obvious urinary tract infection and our recommendation would be that this is treated with a 3-day (female) / 7-day (male) or in females with complicated infection *(delete as appropriate)* course of an appropriate antibiotic.
If this is not the case and symptoms persist, I would be very grateful if you were able to assess the patient for possible other causes such as Candida infection, sexually transmitted infection, or pelvic pathology.

Please consider referring the patient as necessary to Urology, GU medicine or Gynaecology for further investigation and treatment if you feel this is appropriate. Once investigations and treatment are complete, we are then able to carry out the patient's Orthopaedic operation.

If symptoms resolve spontaneously, I would be very grateful if you would let us know or ask the patient to let us know. If this is the case, we do not now require any further tests prior to joint replacement surgery. We can then confirm the planned admission date with the patient directly.

Many thanks for your help with this matter.

Please do not hesitate to contact us if we can help in any way.

Yours sincerely,

Orthopaedic Preassessment Nurse

Pre-Op Date:	**Name:** **D.O.B:** *dd/mm/yyyy* **Hosp No:** **NHS No:** **Sex:** **Surgery:**
TCI Date: *dd/mm/yyyy*	
Consultant:	

Problem Identified		
Date/Time *dd/mm/yyyy* *hh:mm*		**Signature**
Actions Taken		
Outcome		

5.5. Appendix 5 - Sign off list

Investigating for Urinary Tract Infection in Patients Undergoing Hip and Knee Replacement Surgery
Trust Doc ID: 10464

Name	Date when you have read the policy	Signature

6. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Surgical, Critical & Emergency Care Division	**Department**	Trauma and Orthopaedics
Name of person completing form	Gerand Pe	**Date**	10/07/2023

Equality Area	**Potential Negative Impact**	**Impact Positive Impact**	**Which groups are affected**	**Full Impact Assessment Required YES/NO**
Race	None	x	N/A	No
Pregnancy & Maternity	None	x	N/A	No
Disability	None	x	N/A	No
and beliefs	None	x	N/A	No
Sex	None	x	N/A	No
Gender reassignment	None	x	N/A	No
Sexual Orientation	None	x	N/A	No
Age	None	x	N/A	No
Marriage & Civil Partnership	None	x	N/A	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?	No potential for inequality as whilst guidance covers male & female patients, it is equally valid to those identifying otherwise & not dependent on other protected characteristics.			

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.