Clinical Procedure for the Management of Pyelonephritis

Document Control:

For Use In:	Norfolk and Norwich University Hospitals (NNUH), James Paget University Hospital (JPUH) and The Queen Elizabeth Hospital King's Lynn (QEHKL)		
	All clinical areas		
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V.1	10/12/2019	Neil Burgess	To originate document
V1.1	27/07/2020	Melissa Gabriel	Monitoring compliance wording added.
V2	18/06/2024	Hany Hussein	Examination and investigations updated. Reformatting as per new trust template requirements.

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Printed copies of this document should be considered out of date.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:

- Miss Charlotte Dunford, Consultant Urologist (NNUH)
- Mr. William Finch, Consultant Urologist (NNUH)
- Mr. Petre Ilie, Consultant Urologist (QEHKL)
- Mr. David Manson-Bahr, Consultant Urologist (JPUH)

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 clinical guideline applicable to Norfolk and Norwich University Hospitals (NNUH), James Paget University Hospital (JPUH) and The Queen Elizabeth Hospital King's Lynn (QEHKL); please refer to local Trust's procedural documents for further guidance.

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1. Introduction

1.1. Rationale

Pyelonephritis, an infection of the upper urinary tract involving the kidneys, is a significant cause of morbidity and potentially life-threatening complications if left untreated. It presents with a spectrum of symptoms ranging from mild flank pain and fever to severe sepsis and renal dysfunction. Prompt recognition and appropriate management are crucial to prevent complications and ensure optimal patient outcomes.

1.2. Objective

This guidance has been created to provide healthcare providers with a systematic approach to identifying, assessment and management of pyelonephritis in accordance with current evidence based clinical practice. Standardised care practices have been developed to enhance patient safety, mitigate the risk of recurrent infections and renal sequelae with a resultant improvement in overall outcomes.

1.3. Scope

This guidance applies to all adult patients over 18 years of age presented with Pyelonephritis, infection of the upper urinary tract involving the kidneys.

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
UTI	Urinary tract infection
SIRS	Systemic inflammatory response syndrome
NCCT	Non-Contrast CT scan
MSU	Mid-stream urine
U&Es	Urea and Electrolytes

2. Responsibilities

All medical staff and allied healthcare professionals involved in the care of patients with pyelonephritis should be familiar with the relevant recommendations contained in this guidance. Staff must always ensure they have proper training and competency for effective diagnosis and management of pyelonephritis which is vital for patient recovery and to prevent complications.

3. Policy Principles

3.1. Assessment

3.1.1. History

- Acute pyelonephritis is diagnosed by taking detailed medical history and physical examination.
- There are no clinical features or routine investigations that conclusively distinguish acute pyelonephritis from lower urinary tract infection.

- The triad of flank pain (typically unilateral), fever, and nausea and vomiting occurs much more often in people with pyelonephritis than in those with lower urinary tract infection.
- Onset is typically sudden with signs and symptoms of both systemic inflammation and bladder inflammation.

3.1.2. Examination

- Common signs and symptoms of pyelonephritis include:
    - Recurrent UTI symptoms (not always)
    - Flank/renal angle pain and/or tenderness.
    - Myalgia.
    - Rigors or raised temperature of 38°C or higher (or below 36°C in people aged over 65 years).
    - Most people have fever, although it may be absent early in people with early or mild cases, frail, older people, or in the immunocompromised.
    - Nausea/vomiting.
    - Generalised abdominal pain.
    - Increased risk with pregnancy.

3.1.3. Investigations

- Urinalysis
    - Leucocytes and possible nitrites.
    - MSU for Microscopy, C&S and pregnancy testing in females.
- Bloods
    - U+E's, FBC, CRP.
    - Blood cultures if the patient is pyrexial >38°C, has signs of systemic inflammatory response syndrome (SIRS) or sepsis.
- Imaging
    - USS of the renal tract +/- X-Ray KUB within 24hrs of admission (for all patients)
    - Non-Contrast Ct-KUB (NCCT) should be performed within 24hrs of admission if there is evidence of hydronephrosis or clinical suspicions of a ureteric calculus.
    - In the later stages of pregnancy hydronephrosis on USS is to be expected. Further imaging such as a NCCT may occasionally be required in selected cases to exclude a stone, and this will require discussion between senior urology and radiology staff.

3.1.4. Management

- Admit people to the hospital if they have any symptoms or signs suggesting a more serious illness or suspected sepsis.

- Signs of sepsis include:
  - Significant tachycardia, hypotension, or breathlessness.
  - Marked signs of illness (such as impaired level of consciousness, perfuse sweating, rigors, pallor, significantly reduced mobility).
- Intravenous antibiotics according to Trust guidelines.

  http://intranet/antimicrobial_resources/htm/index.htm
- Intravenous fluids until patient improving and taking a sufficient oral intake as usually dehydrated.
- Analgesia:
  - Regular IV Paracetamol 1G.
  - As required NSAID per rectum e.g. Diclofenac 50 -100 mg
  - Supplemented with an oral opiate or parenteral if vomiting gives anti-emetic e.g. Ondansetron 4-8 mg.

In the last trimester of pregnancy avoid NSAID's to prevent premature closure of the ductus arteriosus in foetus.

3.1.5. Discharge

Prescribe a 2-week course of appropriate oral antibiotic after stabilisation of the condition with at least 24 hours of being afebrile.

3.1.6. Follow Up

appropriate outpatient follow-up appointment in 6 weeks to monitor treatment response, assess for resolution of symptoms, and prevent recurrence or complications. A structured follow-up plan ensures comprehensive care and optimizes long-term outcomes for patients with pyelonephritis.

4. Monitoring Compliance

To ensure that this document is compliant with the above standards any adverse outcomes will be entered onto Datix and reviewed by the Departmental Governance Team who will ensure that these are investigated and are discussed at relevant governance meetings to review the results and make recommendations for further action.

5. Appendices

There are no appendices for this document.

6. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Surgical	**Department**	Urology
Name of person completing form	Hany Hussein	**Date**	18/06/2024

Equality Area	Potential Negative Impact	Impact Positive Impact	Which groups are affected	Full Impact Assessment Required YES/NO
Race	None	None	NA	No
Pregnancy & Maternity	None	None	NA	No
Disability	None	None	NA	No
Religion and beliefs	None	None	NA	No
Sex	None	None	NA	No
Gender reassignment	None	None	NA	No
Sexual Orientation	None	None	NA	No
Age	None	None	NA	No
Marriage & Civil Partnership	None	None	NA	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?	No			

- **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.