Initial investigation and management of Acute Pyelonephritis in the Emergency Department

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Abstract

Statement of the Problem:

Acute pyelonephritis(APN) is a common Emergency Department(ED) presentation. Although diagnosis is primarily clinical, renal tract imaging is recommended in selected patients, particularly those with features associated with complicated infection. Investigation and management recommendations vary according to clinical severity, comorbidities and patient characteristics.

Objective:

To assess the clinical presentation, investigation and management of adults presenting to the ED with APN, and evaluate adherence to local Trust and National Institute for Health and Care Excellence(NICE) guidelines.

Methodology:
A retrospective audit was conducted of all adults attending the Mater and Royal Victoria Hospital EDs between January-April 2026, with a diagnosis of APN. Data were collected on presenting symptoms, NEWS2 score, urinalysis, microbiology, antimicrobial prescribing and renal tract imaging. Patients were screened for high-risk features, including diabetes, male sex and immunosuppression. The association between urinalysis findings and CT-confirmed APN was assessed. Incidence of bacteraemia and positive imaging findings was also recorded.

Findings:
54 patients were diagnosed with APN; 90% were female, with a mean age of 40 years. Average NEWS2 score was 2. Presentation was non-specific, with 34% reporting no urinary symptoms. Abdominal pain was most common(94%), followed by urinary frequency(66%), dysuria(60%), pyrexia(52%), vomiting(32%), rigors(18%) and haematuria(16%).

Urinalysis was performed in 53 patients. Blood(78.4%) and leukocytes(60.8%) were the most frequent positive findings. No statistically significant association with CT-confirmed APN was identified for blood($p=0.47$), leukocytes ($p=0.32$) or nitrites($p=0.13$). Midstream urine for culture and sensitivity(MCS) was not obtained in 7 patients. All patients received antimicrobial therapy in accordance with either Trust guidance or previous MCS results.

Renal tract imaging was performed in 27 patients, with positive findings in 12. Of patients who did not undergo imaging, 46% had at least one high-risk feature warranting imaging.

Conclusions:
Gaps were identified in urine culture and imaging practices, with almost half of patients who did not undergo imaging having high-risk features for which imaging was indicated. Targeted departmental education may improve guideline adherence and consistency of care. A

second cycle of data collection is currently underway to assess the impact of these interventions.

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Biography

Dr Léa Adamson is a Clinical Fellow in Emergency Medicine at St Thomas' Hospital, London, She completed her undergraduate training at Imperial College, London, and Foundation Training in Belfast, Northern Ireland. She has special interest in Emergency and Acute medicine. She is a member of the Royal College of Emergency Medicine and has completed her MRCP Part 1.

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