**Justification of contrast enhanced CT urography for investigation of haematuria in adult patients under 40 years old**

**Descriptor:**

An audit to assess whether CT urograms using IV contrast, performed to investigate haematuria in patients under 40 years old, were justified with reference to iRefer guidelines.

**Background:**

Haematuria - either macroscopic (visible) or microscopic (non-visible) - has causes ranging from transient (infection, trauma or calculus) to more sinister (urinary tract malignancy). Computed Tomography (CT) urography carries a high dose of ionising radiation, consisting of unenhanced, portal venous and excretory phase imaging. This necessitates 2-3 separate exposures. Patients under 40 are more at risk from radiation induced cancers, while urological cancer is very rare in these younger patients.

Royal College of Radiologists (RCR) iRefer guidelines (U18 and U19) advise that initial investigations for patients younger than 40 years old who present with haematuria (where urinary tract calculi, infection or trauma are not suspected, as these are covered by separate guidelines) should be a renal ultrasound +/- cystoscopy. If either of these is abnormal, or haematuria persists with normal initial investigations, then CT urography is advised.

## The Cycle

**The standard:**

RCR iRefer guidelines U18 and U19 cover investigation of macroscopic and microscopic haematuria. The focus is on adult patients under 40 years old at the time of the CT.

1. CT urography for microscopic haematuria should be preceded by abnormal US or persistent haematuria.

2. CT urography for macroscopic haematuria should be preceded by abnormal US, abnormal cystoscopy or persistent haematuria.

**Target:**

100% CT urograms in adult patients under 40 for haematuria should be justified.

## Assess local practice

**Indicators:**

1. a) Were renal tract ultrasound and cystoscopy carried out prior to CT urogram?

1. b) If so, was either abnormal?

1. c) If both were normal, was the patient reviewed and the haematuria deemed persistent?

**Data items to be collected:**

Find CT urograms in adult patients <40 years old with clinical details of haematuria. Exclude those where clinical details mention or imply stone disease, infection or trauma.

Data to collect:

Patient age at time of scan

Dates and Results of renal ultrasound and cystoscopy (normal/abnormal)

Persistence of haematuria/clinical review prior to CT Urogram

CT findings

**Suggested number:**

Retrospective analysis of 40 consecutive patients

**Suggestions for change if target not met:**

1. Improved access to Ultrasound in liaison with Urology/Haematuria clinic.

2. Timely review of results of initial investigations before consideration of CT (eg in virtual clinic).

3. Rejection at vetting stage of CT urography for haematuria if no previous ultrasound scan or cystoscopy, or not discussed with consultant radiologist.

**Resources:**

Collecting data (4-5 hours)

Access to Picture Archiving and Communication System (PACS) and Radiology Information System (RIS)

Database for recording results

Access to cystoscopy records

**References:**

1. RCR iRefer guidelines U18 & U19

<https://www.irefer.org.uk/guidelines>

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3. Computed Tomography — An Increasing Source of Radiation Exposure. David J. Brenner DJ, Hall EJ; N Engl J Med 2007 Nov; 357:2277-2284
4. ONC Cancer registration statistics, England: first release, 2016. <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/cancerregistrationstatisticsengland/final2016>
5. NICE guidelines NG12 Suspected cancer: recognition and referral

<https://www.nice.org.uk/guidance/ng12/chapter/1-Recommendations-organised-by-site-of-cancer#urological-cancers>

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