

## CT KUB in Adolescents: Weighing Diagnostic Utility Against Radiation Risk – A Case-Based Reflection

**Dr. Tahmid Ahmed**

Mid and South Essex Foundation Trust, England

### Abstract

**Background:** Renal colic is uncommon in individuals under 18, though its incidence has increased over the past two decades (Cao et al., 2023). It remains a key differential for acute flank pain in this age group. According to NICE Clinical Knowledge Summary (CKS), ultrasound should be the first-line imaging modality for suspected renal or ureteric stones in children, ideally within 24 hours. Low-dose, non-contrast CT is recommended only if the diagnosis remains uncertain. These guidelines reflect concerns about ionising radiation exposure in children, despite CT's superior diagnostic performance.

**Case:** A 15-year-old male presented to the emergency department in the evening with right flank and abdominal pain. Blood tests were unremarkable; urine dipstick showed trace leukocytes. Due to the unavailability of ultrasound out-of-hours, the on-call radiologist vetted a CT KUB to evaluate for renal stones and exclude alternative diagnoses, such as appendicitis. The scan revealed no abnormalities, and the patient was discharged with analgesia.

**Discussion:** Although CT KUB provides high sensitivity and specificity for stone detection, its use in paediatric and adolescent patients should be carefully justified due to the cumulative radiation exposure and associated lifetime malignancy risk. This case illustrates a common scenario in which NICE guidance was not followed due to service limitations. Despite concerns about ultrasound's diagnostic accuracy, evidence supports its adequacy for detecting renal stones in children (Alahmadi et al., 2020; Ather et al., 2004; Javed et al., 2018; Memon et al., 2021). Radiologists should be cautious about vetting CT scans solely to exclude other pathology unless clinically warranted.

**Conclusion:** Clinicians should adhere to NICE guidelines, reserving CT KUB for situations where ultrasound is inconclusive or unavailable despite reasonable efforts. Out-of-hours access to ultrasound should be prioritised to prevent unnecessary radiation exposure. Duty radiologists must remain vigilant in upholding ALARA (As Low As Reasonably Achievable) principles when vetting imaging requests in young patients.