AUA Summit- E-Qual

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E-Qual- Urologist Perspectives

- There is a definitive need for guidelines and improved standardization regarding imaging for renal colic.
- Understandably, urologists prefer CT
  - Gives a definitive diagnosis- is it a stone causing the symptoms?
  - Helps guide management via accurate stone sizing and stone location
  - Gives additional information- overall stone burden, stone density, appearance of renal parenchyma, degree of obstruction

- While we prefer CT, we SHOULD understand that not every patient with a suspected stone needs one!
- There are risks over cumulative radiation exposure and like it or not, there is a real focus on decreasing this risk.
- We also do not see every patient with a stone- most go home and pass their stones w/o a urologist's help- therefore getting a CT on everyone is overkill

What are the options?

- No Imaging, Ultrasonography, KUB, CT, Low dose CT, some combination
- Big push for US as initial imaging modality- it is a safe approach and does not miss dangerous alternative diagnoses- Thank you Dr. Smith-Bindman!
- But… We HATE ultrasounds!
  - Can't see the ureter and may not find the stone
  - Hydronephrosis is not always a reliable predictor
  - Doesn't give an accurate size measurement
  - How can I council my patient w/o that information!!!

Utility of hydronephrosis

- Retrospective review of patients from 3 institutions who had both US and CT on same day from 2012-2015
- 85 ureteral stones found in 144 patients
- US identified a ureteral stone in 22 (25%) and CT in 84
- Of 62 missed stones on US, ~50% were >5mm
- Hydronephrosis in 98 (68%); in 12.5% US and CT differed
- In 108 patients (75.0%) the presence or absence of hydronephrosis on US correctly predicted the presence or absence of a ureteral stone on NCCT

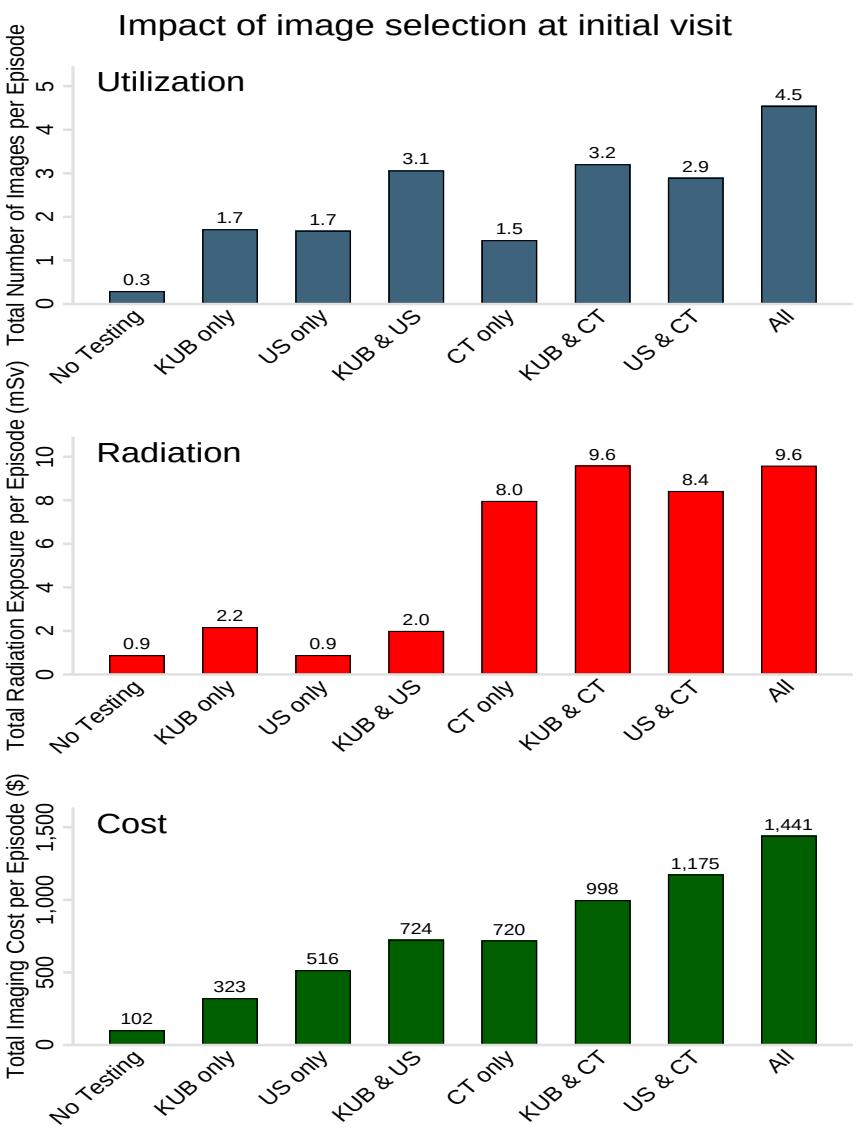
Issues with stone measurement

- Retrospective review of same group of patients comparing stone presence and size between Ct and US
- 155 had Ct and US on same day, 79 of which both identified a stone for comparison (largest stone diameter)

NCCT Measured Stone Diameter	Average Diameter on NCCT (mm)	Average Diameter on US (mm)	Frequency US overestimate	Average US size overestimate (mm)
≤ 5 mm (n=28)	3.9 (1.0)	7.2 (2.7)	82.1% (23/28)	3.3 (84.6%)
5.1-10 mm (n=38)	7.0 (1.4)	8.9 (4.0)	52.6% (20/38)	1.9 (27.1%)
> 10 mm (n=13)	13.2 (2.7)	13.6 (2.6)	38.5% (5/13)	0.4 (3.0%)

What happens in follow-up?

- Retrospective review of all ED or Walk-in –center patients from 2009-2015 with visit diagnosis of urolithiasis
- Patient episode= index visit + all subsequent encounters with a CT, US, or KUB within 90 days
- 2,163 episodes (20%) began with an US.
  - 427 (20%) included CT during the following 90 days
- 5,670 patient episodes did not have a CT at the index visit.
  - 589 (10%) had a CT later in the episode
- Average imaging cost was 183% higher if CT performed at index visit
  - $272 vs. $769
- Mean total radiation exposure was 8.1 mSv if CT obtained
  - 1.1 mSV if no CT obtained



Using US as the initial imaging modality for suspected renal colic and avoiding CT on index encounters is associated with **most patients avoiding CT** altogether, as well as **lower overall costs** of imaging and exposure to **less ionizing radiation.**

What are the urologist's concerns?

- Seeing a patient in follow-up for suspected stones w/o an image obtained or with an US alone
- How do we council the patient? Do we need to get additional imaging? If so, what type?
- Well, if they are asymptomatic- can't you just assume the stone has passed? NO!
- We worry about long term obstruction which can be silent and therefore want to make sure there are no persistent stones in the ureter

What is the answer?

- Multi-disciplinary guidelines/best practice statements to better standardize who gets what imaging
- Education for all players (urologists, emergency physicians, radiologists)- to better understand each perspective and consider all aspects of these patients care