Primary Options for Acute Care

AUCKLAND REGIONAL / Te rohe o Tāmaki Makaurau HealthPathways

Comparison of Ultrasound versus CT-KUB for investigation of possible renal colic under POAC

	USS	CT KUB	Comments
Time	Takes longer	Shorter - 5 mins in scanner	Extra time if need to re-present for 2nd investigation if USS misses stone.
Obesity	Not suitable	Suitable	
Cost	Less $217	More $537	But may need to proceed to CT after USS due to poorer sensitivity
Support from Urologists and Radiologists	Some support in certain circumstances	All support	CTKUB is best practice
Wait times if "conversion to CTKUB" required in public system	May be long	N/A – already done under POAC	
Sensitivity	24 – 84%	97 – 99%	More stones missed with USS, necessitating FU CTKUB; USS may miss dilatation in the presence of obstructing stone
Specificity	53 – 94%	95%	
Radiation dose	0 mSv	1 – 5.5 mSv, mostly lower range (1-2). Proportional to patient build: obese get higher radiation dose	From typical annual background radiation = 3 mSv 15 flights from Melbourne to London (via Singapore) = 1 mSv
Additional cancer risk due to irradiation	0%	0.015 – 0.05% (3-10 mSv)	From typical annual background radiation 0.012%
Identification of alternative diagnoses	Superior to unenhanced CTKUB for	Superior for differentials outside of	

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	characterizing (not identifying) cysts in the kidney or pelvis	renal tract eg appendicitis, diverticulitis	
Stone presence, sizing and position	Inferior: stones may be missed due to being obscured by bowel gas	Superior, especially in the ureter	

A widely used figure is a 5% excess risk of death from cancer with a 1000 mSv dose.[15,16]

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2996147/

Comparsion of Radiation Doses From Medical Imaging Tests and Background Radiation[a]

TABLE. **Comparsion of Radiation Doses From Medical Imaging Tests and Background Radiation[a]**

Examination	Radiation dose (mSv)[b]	Time to accumulate comparable natural background dose
Computed tomography		
Sinuses	0.6	2 mo
Head	2.0	8 mo
Chest	7.0	2 y
Chest (pulmonary embolism)	10.0	3 y
Abdomen and pelvis	10.0	3 y
Multiphase abdomen and pelvis	31.0	10 y
Radiography		
Extremity	0.001	<1 d
Chest	0.1	10 d
Lumbar spine	0.7	3 mo
Abdomen	1.2	5 mo
Other		
Mammography	0.7	3 mo
Bone densitometry (DEXA)	0.001	<1 d
Nuclear medicine		
Lung ventilation/perfusion	2.0	8 mo
Bone scan	4.2	1 y, 4 mo
Cardiac perfusion (sestamibi)	12.5	4 y
Fluoroscopy		
Barium swallow	1.5	6 mo
Coronary angiography	5-15	20 mo to 5 y

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