

PAEDIATRIC RENAL TRACT ULTRASOUND

Paediatric Renal Tract Ultrasound

Objective To ensure that all staff follow correct procedure for ultrasonography of the renal tract in the paediatric patient.

Responsibility All sonographers, trainee sonographers, registrars and radiologists performing paediatric ultrasound examinations.

Frequency For all paediatric renal tract ultrasound examinations as requested by a clinician and subsequently prioritized by a radiologist.

Typical indications are listed below.

1	UTI - see SSH UTI clinical guideline http://www.adhb.govt.nz/starshipclinicalguidelines/urinary%20tract%20infection.htm#Investigations
2	Follow-up of an abnormal antenatal scan
3	To rule out a structural abnormality/variant (association with extra-renal congenital abnormality).
4	To demonstrate/follow-up hydronephrosis and hydroureter.
5	Renal trauma (follow-up).
6	Screening for renal cystic disease.
7	Screening patients at risk of Wilm's tumour (e.g. hemihypertrophy), Beckwith–Weidemann syndrome, nephroblastomatosis.
8	As clinically indicated e.g. hematuria, flank mass
9	As part of an abdominal study
10	Follow-up and planning pre/post renal tract surgery e.g. bladder augmentation, reimplantation
11	Follow-up of benign and malignant renal masses.
12	For the assessment of vascularity in syndromic conditions (e.g. Alagille), thrombosis (especially neonate with history of UAC), hypertension
13	Post renal transplant (See separate guideline)

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Procedure

The following table describes the process to be followed for ultrasonography of the renal tract in the paediatric patient.

Step	Action
1	Look at prior images/ultrasound +/- report before starting.
2	Use appropriate frequency/footprint probe depending on the age and size of the patient.
3	Sector probe is best; however high frequency linear probe is good for assessing renal cortex.
4	Begin the study with assessment of the bladder in both longitudinal and transverse planes. Image to show base and fundus of bladder in longitudinal sections
5	Assess bladder wall and contour.
6	Documentation of ureteric jets within the bladder with colour flow Doppler.
7	Assess adnexal region, Pouch of Douglas, document uterus in girl and ovaries if identifiable.
8	Document dilated distal ureter(s) if present with measurement of diameter.
9	Pre-void bladder volume followed by post-void bladder volume after letting the patient go to the toilet.
10	Assess each kidney in longitudinal and transverse planes to show: <ul style="list-style-type: none"> • Renal length • Renal contour • Parenchymal echotexture/echogenicity • Collecting system • Adrenal Region • Perinephric region
11	Document: <ul style="list-style-type: none"> • Images in longitudinal plane to show lateral, mid and medial sections of the kidney. • Additional views to show anatomy/pathology as required. • Maximal longitudinal axis measurement. • Images in transverse plane to show upper, mid and lower poles of the kidney. • Mid pole view to show renal hilum • Mid pole view with colour to show vasculature/pelvis. • Coned upper and lower pole longitudinal images to look for scarring • Volume measurement if 10% variation between kidneys or if renal size is too small or too large for patient age. (Must document child's weight for volumes).

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	<ul style="list-style-type: none">• In the Neonate renal tract examination document the IVC and renal vessels with colour to demonstrate flow and rule out thrombus.
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