

# Investigation of Urinary Tract Infection (UTI) in Children

Auckland Radiology Group has a strong team of specialized paediatric radiologists, skilled in investigation of childhood illnesses. Dawn Burkimsher, David Perry, Glen Thomson, Sally Vogel and Paul White all hold senior consultant positions at Starship or Kidz First Children's Hospitals in addition to their roles at ARG. Each of them is available to assist with paediatric problems.

The following guidelines are based upon those adopted at Starship Childrens Hospital and refer to children having their first uncomplicated UTI.

**All children under 5 years of age with a first proven UTI deserve investigation, regardless of sex. The aims of investigation are to exclude obstruction, detect significant congenital abnormalities, and detect vesicoureteric reflux (VUR) and its sequelae. Abnormalities are found in 40% of children who have UTI.**

- **Children aged less than 3 months:**

An **acute renal ultrasound scan** is recommended in this age-group - obstructive lesions are found more commonly in young infants. A **micturating cystourethrogram (MCU)** should be performed when treatment is completed. **Prophylactic antibiotics** are indicated until MCU result is known.

- **Children aged 3-12 months:**

**Non urgent renal ultrasound scan** - consider urgent ultrasound if non-responsive to antibiotics. **Consider MCU** if ultrasound scan abnormal or infection recurrent or severe. Maintain high index of suspicion for recurrent UTI. Arrange **repeat ultrasound in 1 year** to ensure adequate renal growth.

- **Children aged 1-5 years:**

**Non urgent renal ultrasound.** Consider **MCU** if infection severe, non-responsive or recurrent. **Repeat ultrasound in 1 year** to ensure adequate renal growth.



**Fig 1. Post-frusemide IVU demonstrates congenital vesicoureteric junction obstruction on the right side**

- **Second Line Investigations:**

If the initial ultrasound scan shows **dilated ureters** consider an **MCU +/- a DTPA (radionuclide) scan**.

An **IVU** will occasionally be used to delineate anatomy in obstructive uropathy.

A **DMSA radionuclide scan** is much more sensitive than ultrasound in detecting renal cortical changes, either acute infection or chronic renal scarring. DMSA scan should be considered for children with **pyelonephritis** needing hospitalization. This is best done at least 6 months after infection as many acute changes will resolve in that time. Ideally a DMSA renal scan should be performed at 3-4 years of age.

- **GP Referral for Specialist Paediatric Follow-Up:**

We recommend that the following children should be referred to an appropriate consultant specialist for follow up:

- Children with abnormal radiology
- Children with V-U Reflux of Grade 3 or more severity.
- Children with recurrent UTI.
- Children with voiding dysfunction.

**Paul White**

## **New Partners of Auckland Radiology Group**

Drs Kate O'Connor and Stephen Wood have recently become partners of the Auckland Radiology Group.



### **Kate O'Connor**

Kate has been an associate of Auckland Radiology Group for 3 years. She has a part-time appointment at Auckland City Hospital. Kate is a graduate of the University of Auckland (1996) and trained in radiology in Auckland, where she became Senior Registrar. She has wide general interests and a subspecialty interest in head and neck radiology. Kate is a Life Member of the NZ Resident Doctors Association and is an Elected Member of the Medical Council of New Zealand. She is a member of the Health Committee of the NZMC. She has professional interests in medicolegal and medical legislative environment matters, and in the education and training of doctors.



### **Stephen Wood**

Steve has also been an Associate Radiologist at Auckland Radiology Group for the past 3 years. He obtained a BSc from Otago University in 1992 before completing his medical degree in Auckland (1996). He trained in radiology in Auckland and is now a part-time radiologist at Middlemore Hospital. He works as a general radiologist and has an interest in breast imaging, currently involved in the Breast Screen Counties-Manukau programme. He has expertise in non-vascular interventional procedures, especially biopsies. Other interests include CT colonography and general MRI.