

# Antenatal Hydronephrosis

## What is it?

When there is more urine than normal seen within the collecting or drainage systems of the urinary tract. The term derives from Greek, meaning literally “water (hydro) on kidneys (nephrosis)”. This is also described as ‘dilatation’.

## Background

Under normal circumstances, the drainage of urine from the kidney, down the ureter and into the bladder is so efficient, that little of it accumulates anywhere except the bladder. When a little accumulates, it can be seen on ultrasound as slightly dilated collecting system or ureter. Minor dilatation is often normal – that is there is no pathology or problem associated with it.

When the accumulation of fluid (urine) exceeds normal limits, the term ‘hydronephrosis’ is used, suggesting there may be an underlying cause, but not giving information as to what that cause is.

Possible underlying causes include:

### *Obstructive*

Blockages prevent urine draining efficiently, fluid (urine) builds up behind the blockage. This is most commonly seen as progressive or worsening dilatation and can cause concern regarding pressure build-up within the kidney substance.

### *Reflux*

This is where there is ‘backwash’ of urine back up from the bladder to ureter or kidney

### *Other*

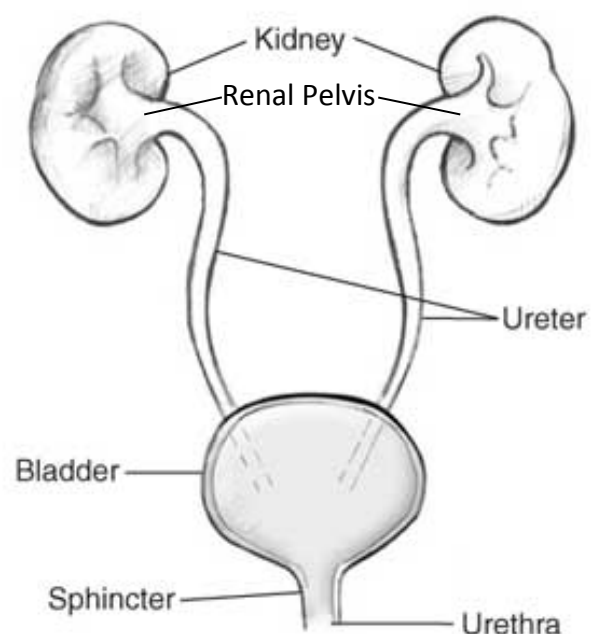
Sometimes, neither blockages nor reflux are found. There may be a high-output state with more urine being made than the transport mechanisms can handle.

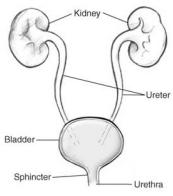
Sometimes the underlying problem has resolved but the system remains stretched and ‘floppy’.

## How is it diagnosed?

By definition, “antenatal hydronephrosis” is that found before birth. It is most commonly detected on ultrasounds done late in pregnancy, when the foetal urine output is at its highest. It can also be seen earlier in pregnancy, especially at the 20 week anomaly scan.

The most reliable and universally-used measure of normal versus abnormal, is a measurement of the width of the collecting system from front to back, just as it leaves the kidney (renal pelvis diameter at hilum). The limits at which this measurement is considered normal or abnormal changes with gestation). At 20 weeks, appearance is considered abnormal if the measurement is above 5mm. At 32 weeks, the limit of “normal” extends up to 7mm.





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## What tests are performed?

During pregnancy, surveillance or progress ultrasounds are the most useful tests. These are not invasive and do not involve any radiation. Whether the dilatation increases, decreases or remains stable as the foetus grows and urine output increases can help indicate what the underlying problem (if any) might be. What needs to be done following birth, and how quickly, depends greatly on these progressive scans.

Following birth, other tests become feasible and useful. These usually commence with another ultrasound of the baby; either early (within the first week of life, if the baby is at high-risk of underlying problems) or later (at about 1 month of age, if the baby is considered to be at low risk of significant underlying problems).

Depending on the appearance of this ultrasound, other tests directed at assessing for blockage and function (nuclear scans) or reflux (xray contrast studies) will be considered by the treating medical team. These tests are usually done in consultation with paediatric urology and/or nephrology specialists.

## What are the outcomes?

About half the causes of hydronephrosis detected antenatally resolve spontaneously (go away by themselves). Of those that don't, approximately half have no identifiable underlying cause that needs active management. These may remain stable or slowly improve with time.

For babies found to have significant obstructive conditions (blockage), surgical treatment may be needed early or later to reduce damage to kidney function from pressure effects or infection. These cases should all be managed in consultation with specialty paediatric urology units.

## What are the treatment options?

Treatment options depending on the underlying cause and are outlined in the respective information sheets.

## What are the complications?

If there is underlying obstruction (blockage), urine can build up behind this area, progressively increasing pressure on the kidney substance (parenchyma). Over time, this can permanently damage kidney function. Relief of the blockage can prevent further damage, but often does not regain lost function.

A urinary system that is not draining efficiently is prone to infection and any infection of the kidney substance can also lead to permanent damage, resulting in reduced kidney function and increased risk of high blood pressure.

## What is the follow-up?

If a foetus is found to have severe hydronephrosis (especially if there are other reasons for concern such as a single kidney or dilated ureters) antenatal review by a paediatric urologist can help construct an individualised postnatal follow-up plan. Monash Maternity's Foetal Diagnostic Clinic provides such a service.

If a foetus has mild or moderate hydronephrosis, they can be referred to a specialty paediatric urology unit after birth, following the first postnatal ultrasound.

Medical practitioners who would like more guidance on this topic can refer to the PROMPT policy and procedure documents on "postnatal management of antenatal hydronephrosis" on Southern Health intranet