# Antenatally diagnosed hydronephrosis / fetal renal pelvic dilatation (RPD)

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## Background

Hydronephrosis (dilatation of the renal pelvis with or without dilation of the renal calyces) may be diagnosed by antenatal ultrasound from 12-14 weeks onwards, however most renal anomalies are detected at the detailed anomaly scan which is usually done at 20 weeks. Fetal RPD is present in 0.5-1% of pregnancies.[1]

Potential Diagnoses include:[2]

- Transient Hydronephrosis (48%)
- Normal Child / Physiological (15%)
- Pelvico-Ureteric Junction (PUJ) Obstruction (11%)
- Vesico-Ureteric Reflux (VUR) (9%)
- Megaureter (4%)
- Multi-cystic Dysplastic Kidney (MCDK) (2%)
- Ureterocoele (2%)
- Posterior Urethral Valves (PUV) (1%)

Definitive diagnosis requires specific postnatal investigations.

The most common and useful assessment before birth is ultrasound measurement of the renal pelvic diameter (maximum AP diameter (APD) of the renal pelvis in the transverse plane); <4mm is considered normal from the second trimester.[3]

There is no cut-off APD specifically suggesting renal pathology. A meta-analysis from 2006 demostrates that the risk of renal / urinary tract pathology increases with the severity of hydronephrosis.[4]

- **Mild** hydronephrosis
  4-7 mm in the second trimester and/or 6-9 mm in the third trimester
  — *12% risk of significant pathology*
- **Moderate** hydronephrosis
  7 to 10 mm in the second trimester and/or 9 to 15 mm in the third trimester
  — *45% risk of significant pathology*
- **Severe** hydronephrosis >10 mm in the second trimester and/or >15 mm in the third trimester
  — *88% risk of significant pathology*

**Other non-renal anomalies can be associated with antenatal hydronephrosis, and should be sought/dealt with appropriately; this guideline only seeks to deal with isolated ANH and its management.**

**Prenatal Management**

If ANH is diagnosed at the anomaly scan a repeat antenatal scan at around 28 weeks is indicated to look specifically at;

- laterality
- severity of dilatation and echogenicity of the kidneys
- hydronephrosis or hydro-ureteronephrosis
- bladder volume and bladder emptying
- sex of the child
- amniotic fluid volume.[5]

Antenatal counselling is helpful to many parents and has been shown to increase the uptake of post-natal imaging.[6] If the parents wish to meet a paediatric surgeon to discuss the ANH and its management then a referral should be made to the joint Obstetric / Paediatric Surgical Antenatal Clinic via the Obstetric department.

There is little indication for antenatal/fetal intervention in ANH: the only exception may be in bladder obstruction and bilateral upper tract dilatation in a male fetus in whom posterior urethral valves are suspected. Even in this situation, the evidence for prenatal vesico-amniotic shunting is limited – at best it is only palliative and results in live births with long term and potentially fatal renal and bladder disease.

**Postnatal Management and Follow-up**

Initial assessment should be made by a paediatric doctor. Bilateral abnormality requires more urgent attention than unilateral.

Examination should focus on palpation for an abdominal mass (e.g. PUJ Obstruction or MCDK), deficient abdominal wall musculature (e.g. Prune-Belly Syndrome), or palpable bladder (e.g.PUV).

Initial postnatal renal ultrasound scan should usually be delayed beyond the first 48 hours of life to avoid false-negative studies during the physiological oliguric phase.

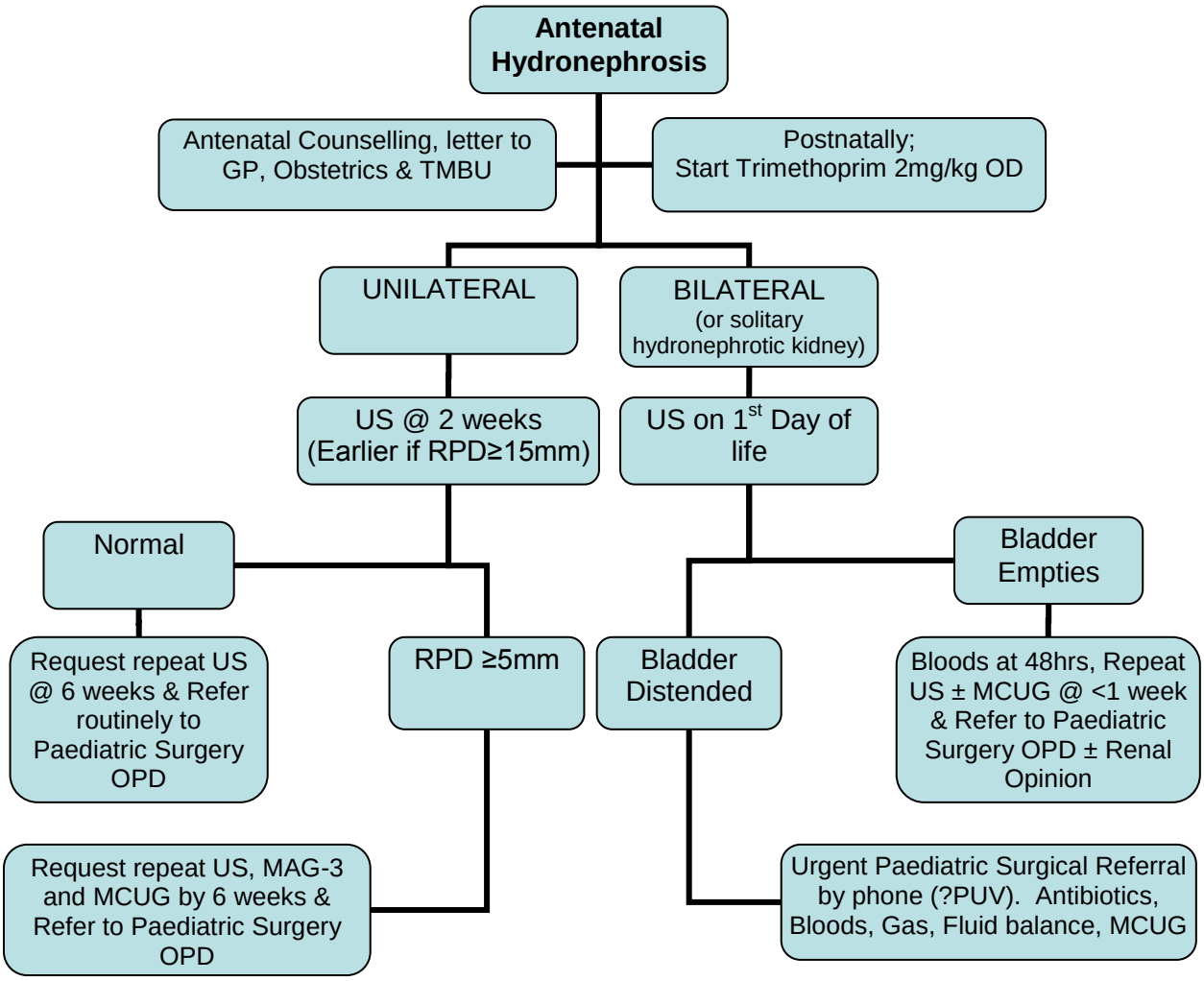
Bloods, ultrasound and referral to the paediatric surgical registrar on-call must occur expediently, and certainly within the first 24 hours if the hydronephrosis is bilateral (particularly in a boy), or if unilateral hydronephrosis is present in a solitary kidney. Most of these babies will be investigated further and in boys PUV must be excluded with a micturating cystourethrogram (MCUG).

Scans done at <48hrs do have a higher rate of false negative results therefore these should be repeated at 6 weeks.

Abnormalities detected on the postnatal ultrasound should be referred to the department of Paediatric Surgery at the Royal Alexandra Children's Hospital by letter or fax.

The use of uroprophylactic antibiotics in postnatal ANH is not based on strong evidence but we would recommend Trimethoprim 2mg/kg once daily until a significant renal pathology has been excluded.

## MANAGEMENT PATHWAY

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