Scope
This guideline is aimed at all Health care professionals involved in the care of infants within the Neonatal Service.

Legal Liability (standard UHL statement)
Guidelines issued and approved by the Trust are considered to represent best practice. Staff may only exceptionally depart from any relevant Trust guidelines providing always that such a departure is confined to the specific needs of individual circumstances. In healthcare delivery such departure shall only be undertaken where, in the judgement of the responsible health professional, it is fully appropriate and justifiable – such decisions to be fully recorded in the patient’s notes.

Key Points
- Many babies are found to have renal anomalies on antenatal ultrasound scans.
- These babies are followed up in a multidisciplinary clinic with involvement from paediatricians, neonatologists and paediatric urologist
- Small numbers of babies may need review in conjunction with a specialist paediatric nephrologist
- Investigations should be requested according to the flow chart below.

Background
Congenital abnormalities of the kidney and urinary tract are fairly common. Most abnormalities seen on antenatal ultrasound resolve spontaneously. There is a lack of good quality evidence as to how these babies should be followed up. Postnatal investigations are designed to identify babies that have significant renal pathology. These guidelines are in line with the East Midlands Renal Network guidelines.
In Leicester, there is a multidisciplinary renal follow up clinic for babies born with suspected congenital abnormalities of the kidney and urinary tract.

This clinic is run by the following team who are available for advice:
Dr. Jonathan Cusack         Consultant Neonatologist
Mr. Ashok Rajimwale         Consultant Paediatric Surgeon and Urologist
Dr. Angela Hall             Associate Specialist with an interest in Nephrology
Dr. Sudarsana De            Consultant Paediatric Nephrologist, Nottingham
Aim
This guideline provides an outline of the investigations that need to be arranged prior to follow up in the joint renal clinic

Management of Antenatal Renal Anomalies

A. Cystic or dysplastic kidneys
(includes ‘multicystic dysplastic kidneys – MCDK’)

Babies that have unilateral cystic kidney disease need:
• Routine renal USS (include clinical details and maternal hospital number to allow for appropriate triage)
• Referral letter to the joint renal clinic

Babies with significant bilateral cystic kidney disease need further discussion with the Consultant Neonatologist on service.
B. Antenatal renal pelvic dilatation and hydronephrosis

These babies can be split into three groups based on the antenatal scan findings at 18-20 weeks gestation – **High, Moderate and Low Risk**

**High risk**: Babies found to have any of the following, fall into a high risk group
- Bilateral Hydronephrosis >10mm
- Antenatal concerns about posterior urethral valves
- Unilateral hydropnephrosis with a renal pelvis >10 mm when there is concern that there is a single functioning kidney.

**Antenatal Counselling**: should be performed by the Neonatologist and Urologist in Leicester. Further input from the Associate Specialist in Leicester or the Nottingham renal team may be required for high risk babies and should be discussed in the fetal medicine clinic on an individual basis.

**Postnatal management**: Babies with high risk disease should be discussed with the service neonatologist to decide whether inpatient or urgent outpatient imaging is required. Babies with concerns about significant bilateral disease may need monitoring of renal function: this should be discussed with a neonatal consultant. Further input from the specialist renal team may be useful.

- If outpatient investigation is felt to be appropriate, please indicate the antenatal findings on the radiology request form and mention that this is a high risk request.
- A referral to the joint renal clinic should be made
- Parents should be notified about the symptoms and signs of UTI
- Antibiotic prophylaxis may be indicated if there is high risk disease (e.g. posterior urethral valves). This should be discussed with the neonatal service consultant
- Parent information leaflets are available at [http://www.infokid.org.uk/](http://www.infokid.org.uk/)
**Moderate risk:** Babies found to have any of the following, fall into a moderate risk group

- Severe unilateral hydronephrosis ≥20 mm with pelvicalyceal dilatation
- Bilateral hydronephrosis ≥7mm but less than 10mm
- Complex duplex i.e. significant hydronephrosis or non-obstructing ureteroceles
- Hydronephrosis ≥7mm and < 10mm in a single functioning kidney

**Low risk:** Babies found to have any of the following fall into a low risk group

- Simple duplex kidney
- Unilateral hydronephrosis <20mm with normal contralateral kidney
- Unilateral MCDK with normal contralateral kidney
- Unilateral renal agenesis with normal contralateral kidney
- Unilateral renal dysplasia / hypoplasia with normal contralateral kidney
- Other renal abnormality e.g. horseshoe kidney with no hydronephrosis, normal contralateral kidney and normal liquor volume

**For moderate and low risk babies:**

**Antenatal Counselling:** should be performed by the the fetal medicine team, neonatologist and urologist in Leicester.

**Postnatal management:**

- Babies should be examined for signs of renal disease. Check that the baby is passing urine normally.
- If a baby is unwell, senior review should be sought.
- Routine blood tests for renal function are rarely useful and should not be routinely done
- Babies should not be commenced on trimethoprim prophylaxis routinely
- Outpatient ultrasound should be requested. Please include maternal details and the details of the antenatal findings to allow for appropriate triage
- A referral to the joint renal clinic should be made
- Parents should be notified about the symptoms and signs of UTI
- Parent information leaflets are available at [http://www.infokid.org.uk/](http://www.infokid.org.uk/)
Suggested Out Patient Investigations:

Antenatal Hydronephrosis

- MCUG should be considered following post natal ultrasound to look for vesicoureteric reflux
- If significant reflux is seen, trimethoprim prophylaxis is commenced and the ultrasound repeated to look for progression of dilatation
- Trimethoprim prophylaxis is often continued until out of nappies and free of UTIs

If there is progressive hydronephrosis or the antenatal scans suggest upper tract obstruction, a MAG 3 test should be ordered

Multicystic Dysplastic Kidney

- Serial ultrasound investigations usually show regression of the cysts
- A DMSA scan will usually show no functioning renal tissue on the affected side. This test is also useful to look for renal scars in cases of recurrent UTI
- MCDK usually regresses by 4 or 5 years of age. It is important to check blood pressure and a urine dipstick at follow up visits
- Failure to regress and secondary hypertension would be indications for surgical intervention
Audit Criteria
Investigations for (A) cystic or dysplastic kidneys and (B) antenatal pelvic dilatation/hydronephrosis arranged as per information above (100%).

References

East Midlands Renal Network Guidelines

Parent Information Leaflets available at http://www.infokid.org.uk/

Toiyvainen-Salo S, Garel L, Grignon A et al. Fetal hydronephrosis: is there hope for consensus? Ped Radiol 2004; 34 (7) 519-529


Sidhu G. Outcome of isolated hydronephrosis, a systematic review and meta-analysis. Paediatr Nephrol.2006: 21 (2) 218-24


Guideline Development

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>18/11/2009</td>
<td>Neonatal Guidelines Meeting (original guideline ratified under title ‘Management of Antenatal Renal Anomalies’)</td>
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<tr>
<td>2/7/2013</td>
<td>Neonatal Guidelines Meeting</td>
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<tr>
<td>17/9/2013</td>
<td>Neonatal Governance Meeting (ratified after modifications)</td>
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<tr>
<td>15/7/2014</td>
<td>Minor editorial amendments (REM)</td>
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<tr>
<td>Dec 2016</td>
<td>Neonatal Guidelines Meeting (significant amendments by author JMC) - alignment with East Midlands Renal Network guideline</td>
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<tr>
<td>Jan 2017</td>
<td>Neonatal Governance Meeting</td>
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<tr>
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<td>Minor editorial changes</td>
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