**General principles:** PCD = renal pelvis AP diameter of ≥ 7 mm at 30 weeks GA. Early detection can help in reducing renal damage due to obstruction and infection. Many of these antenatally detected cases spontaneously resolve. This guideline aims to give a pragmatic management approach. **NO ROUTINE ANTIBIOTIC PROPHYLAXIS IS RECOMMENDED. Where indicated, use TRIMETHOPRIM 2mg/kg PO, once at night.**† **Prophylactic antibiotic cover for MCUG:** Trimethoprim 4mg/kg BD for 3 days with MCUG on the 2nd day; Cases of cortical thinning and calyceal dilatation need to be discussed with the local SPIN renal consultant (Joint neonatal renal clinic = JNR)

>5mm at 20 weeks → Rescan at 30-32 weeks → ≥ 7mm AP diameter and / or calyceal dilatation and / or hydroureter at 30-32 weeks

**If BILATERAL dilatation, normal bladder or U/L dilatation with single kidney**

If abnormal bladder/kidneys/high creatinine:- possible LUTO**, see separate guideline

AP dia ≥7 either side and/or hydroureter

Start antibiotic prophylaxis

MCUG† at 4-6 weeks

No VUR† & AP dia<15

STOP antibiotics

Renal USS at 6 months

AP dia <15

Refer to local SPIN/JNR*

Repeat USS at 1 year

If AP dia <10, discharge

If AP dia 10 to <15, repeat USS at 2 years, discharge if stays normal

**Continuation of prophylaxis will depend on clinical condition, grade of reflux, pathology, cortical thinning, any UTIs, etc.

** Lower Urinary Tract Obstruction (LUTO)

Follow up management

AT BIRTH

If BILATERAL dilatation, normal bladder or U/L dilatation with single kidney

Information regarding UTI

Renal USS at 3-7 days; Chase USS results

Arrange Neonatal Follow up

AP dia <10 mm and No hydroureter

AP dia >10-14mm

No hydroureter

Renal USS at 6 months

AP dia ≤15 mm

Antibiotic prophylaxis

MCUG† at 4-6 weeks

Any AP dia with hydroureter

Start antibiotic prophylaxis

VUR present and/or AP dia ≥ 15 mm

Refer to local SPIN/JNR*

AP dia 10-14mm

Hydroureter with no VUR on MCUG, do MAG3 to rule out VUJO

Any AP dia with hydroureter

Start antibiotic prophylaxis

VUR present and/or AP dia ≥ 15 mm

Stop antibiotics, repeat USS at 1 year and 3 years and discharge

If ≥ 15mm refer to B

ABCD

≥ 15mm

Refer to local SPIN/JNR*

AP dia >15

Refer to local SPIN/JNR*

AP dia <15

Refer to local SPIN/JNR*

AP dia <10, discharge

If AP dia 10 to <15, repeat USS at 2 years, discharge if stays normal

Stop antibiotics, repeat USS at 1 year and 3 years and discharge

If AP dia 10 to <15, repeat USS at 2 years, discharge if stays normal

MAG3 abnormal

MAG3 normal

Stop antibiotics, repeat USS at 1 year and 3 years and discharge

MAG3 abnormal

Stop antibiotics, repeat USS at 1 year and 3 years and discharge

MAG3 normal

Refer to local SPIN/JNR*

Repeat USS at 1 year

If AP dia <10, discharge

If AP dia 10 to <15, repeat USS at 2 years, discharge if stays normal

Stop antibiotics, repeat USS at 1 year and 3 years and discharge

If AP dia 10 to <15, repeat USS at 2 years, discharge if stays normal

** Hydroureter with no VUR on MCUG, do MAG3 to rule out VUJO

Emily Shand, Nitin Goel and Raj Krishnan, April 2019; to be reviewed in April 2022
Lower Urinary Tract Obstruction (LUTO) / Suspected Bladder Outlet Obstruction

- Antenatal hydronephrosis, thick walled bladder, decreased or normal liquor volume, abnormal kidneys

**NOTE** – not all obstructed bladders are trabeculated & thickened and PUV can present with thickened bladder without other antenatal findings

At baby check, palpate for the bladder and kidneys, examine the spine and genitalia. Examine for ectopic ureterocele, urogenital sinus, cloaca or urethral hypoplasia. Watching the urinary stream is **not useful**; the flow may appear normal if the bladder can generate pressures to overcome the obstruction. **Start Trimethoprim 2mg/kg nocte and admit to the NICU**

Check BP, U+E, and creatinine.
Inform the paediatric surgeons as most will require catheterisation by their team
If partial LUTO (as mentioned in fetal scans), surgeons may consider "wait and see" and delay catheterisation.

**USS at 48 hours followed by an MCUG***

* **Suggested antibiotic cover for MCUG**
  Trimethoprim 4mg/kg BD for 3 days with MCUG on the second day

If LUTO present, replace catheter

Surgical & Nephrology management

LUTO not found

**STOP** antibiotic prophylaxis
Discuss with Paediatric SPIN/Nephro re: further management and follow up

Emily Shand, Nitin Goel and Raj Krishnan, April 2019; to be reviewed in April 2022
Antenatal diagnosis of MCDK*

Routine DMSA scan or prophylactic antibiotics are not indicated

Renal USS in 1-2 weeks.
If hydronephrosis of contralateral kidney noted antenatally, arrange USS at 3-7 days

NO hydroureter on renal USS

Arrange neonatal follow up
Renal USS at 6 months and 24 months
Check BP at each visit

Hydroureteronephrosis of the contra-lateral kidney

Check renal function
Arrange neonatal follow up
Organize investigations and further management as per the antenatal PCD guideline

Contralateral renal hypertrophy with no hydroureteronephrosis and involution of MCDK has commenced

Lack of contra-lateral renal hypertrophy and/or if there is no involution of MCDK kidney

At 2 years

Check renal function and refer to / discuss with local SPIN / Paediatric Nephrology

Discharge

*If any doubt about the diagnosis undertake a DMSA after 3 months of age.
At any time if the MCDK is large enough to cause pressure symptoms i.e. affecting feeding or failure to thrive, then consider referral to the surgeons. Most MCDK involute over time by 5-10 years age.

Emily Shand, Nitin Goel and Raj Krishnan, April 2019, to be reviewed in April 2022
Management of Duplex kidney and Other conditions

Antenatal diagnosis of Duplex

Look for other findings; routine prophylactic antibiotics are not indicated, unless:
- Any renal pelvicalyceal dilatation / Hydroureter is present – see antenatal PCD guidance
- Large Ureterocele* - Contact Urologist urgently

Arrange renal USS at 3-7 days
Chase the results and decide

Only Duplex, no hydroureter, no PCD, no ureterocele

Discharge

If hydroureter or hydronephrosis refer to the relevant guidelines

Small asymptomatic ureterocele

Repeat scan in 6-12 weeks
Refer to local SPIN/ JNR

Duplex kidneys occur in up to 1% population and most do not require any treatment.

Horseshoe kidneys: Arrange postnatal renal USS. If uncomplicated, discharge with advice re: UTIs, possibility of renal stones. Look for any associated anomalies.

Pelvic Kidney: Arrange postnatal renal USS. If uncomplicated, discharge.

Unilateral renal agenesis: Arrange postnatal renal USS. If single kidney is normal, then no further follow up; however if any anomalies then follow relevant guideline.

*Large ureterocele, causing obstruction

Check BP, U&Es,
Contact the urologist urgently,
Consider catheterization

Emily Shand, Nitin Goel and Raj Krishnan, April 2019, to be reviewed in April 2022
Audit Tool

• All Wales WREN project in planning
  https://www.wrenpaediatrics.com/
  – to review the compliance to the guidelines
  – to review cases of UTI presenting to
    CAU/paediatric units in first 6 months of life
  – to detect any missed cases
  – to detect any complications
  – to received any other comments

• Review the guidelines after 6 months use
Suggested References


• Nguyen, H et al. Multidisciplinary consensus on the classification of prenatal and postnatal urinary tract dilation (UTD classification system). *Journal of Pediatric Urology* 2014;10:982-999

• Andres-Jenson, L et al. The outcome of antenatal ultrasound diagnosed anomalies of the kidney and urinary tract in a large Danish birth cohort. *Arch Dis Child* 2016;101:819-824