

Hydronephrosis

FAST FACTS

1–5%

of screening ultrasounds of expectant mothers show the renal dilation abnormality

30–40%

of cases of prenatal hydronephrosis have pathologic cause upon postnatal evaluation, with more severe hydronephrosis having a higher risk of pathology

25–33%

of prenatal patients with a history of hydronephrosis have pathology from a variety of reasons which may merit surgery, with more severe hydronephrosis having higher intervention rates

WHEN TO REFER

Refer as follows to Cincinnati Children's Urology:

- Patients with severe/high grade hydronephrosis detected in utero, to collaborate on testing and follow-up
- Refer patients with pain on the same side as hydronephrosis to evaluate need for corrective surgery

If you have clinical questions about patients with hydronephrosis, email PedsUrology@cchmc.org.

Hydronephrosis describes any degree dilation of the renal collecting system detected on imaging studies. Hydronephrosis can be classified as mild, moderate or severe based upon imaging characteristics. Hydronephrosis may have many causes and does not always equal urinary obstruction.

ASSESSMENT

The patient's hydronephrosis will have been detected through imaging studies performed to assess a variety of clinical complaints in children, or as part of a pregnancy screening ultrasound of an expectant mother with incidental *in utero* hydronephrosis before coming to you. Diagnostic testing will have been done to identify and gauge the severity of the hydronephrosis as mild, moderate or severe.

Determine whether hydronephrosis was diagnosed *in utero* or postnatally, and whether it was diagnosed due to symptoms or asymptomatic.

For *in utero* hydronephrosis, ask probing questions about first detection during gestation, associated dilation of bladder and/or ureter and presence of normal amniotic fluid levels. Perform standard physical exam. In patients **without** history of *in utero* hydronephrosis, perform standard history and physical exam (HPE), focused on history of flank/abdominal pain, hematuria, nausea, personal/family history of urolithiasis and prior UTIs.

Use cystography to determine if vesicoureteral reflux is a cause/contributor. Use diuretic renal scans to help determine differential renal function and drainage of the upper urinary tract. Urine flow is most frequently obstructed (non-calculous) at level of ureteropelvic junction (UPJ) but also happens at level of ureterovesical junction (UVJ).

HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- Severe/high grade hydronephrosis detected in utero
- Pain on same side as hydronephrosis
- Infectious complications not manageable through conservative or medical therapy
- Loss of renal function

MANAGEMENT/TREATMENT

Use radiographic surveillance at variable intervals to observe asymptomatic hydronephrosis, depending on severity. Observe low grade hydronephrosis through ultrasound alone. High grade hydronephrosis may require more frequent and intensive follow-up to insure renal function or dilation is not leading to silent loss of renal function.

Order cystography for newborn males with bilateral hydronephrosis to exclude posterior urethral valves.

UTI risk varies and may be influenced by gender, circumcision status, personal history of hydronephrosis, severity of hydronephrosis, and whether the patient has associated dilation of the ureter (hydroureteronephrosis/megaureter). Antibiotic prophylaxis may reduce the risk of UTI in patients with high risk factors.

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

Hydronephrosis

Inclusion Criteria

Hydronephrosis has been indicated on a radiographic study (1) performed to assess other clinical complaint or (2) as part of a pregnancy screening ultrasound in an expectant mother

After confirmation of hydronephrosis on post-natal imaging, patient presents

HPE

In utero hydronephrosis

No history of in utero hydronephrosis

HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- Severe/high grade hydronephrosis detected *in utero*
- Pain on same side as hydronephrosis
- Infectious complications not manageable through conservative or medical therapy
- Loss of renal function

Red Flags Present?

Yes

No

Refer to Cincinnati Children's Urology

Order cystography to determine if vesicoureteral reflux is present as cause/contributor

Order renal scans to determine renal function and drainage of upper urinary tract

Vesicoureteral reflux cause/contributor

Urine flow obstructed

Yes

No

Yes

No

Repeat cystography not needed

Refer to Cincinnati Children's Urology

Repeat scan only if hydronephrosis worsens