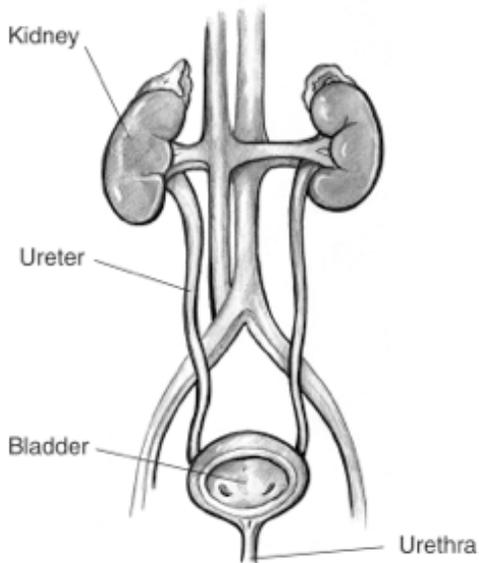


Congenital Problems in the Urinary System

The urinary system makes urine and removes it from the body. It includes the kidneys, ureters, urethra, and the bladder. The kidneys make urine. The urine then travels through small tubes called ureters to the bladder. The bladder then empties the urine.



Urinary system Image credit: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

At 10 to 12 weeks in pregnancy, your developing baby begins to make urine. The baby's urine normally leaves the bladder and goes into the amniotic sac of fluid that surrounds him or her. The amniotic fluid that surrounds your baby during pregnancy is mostly made of fetal urine.

A normal amount of amniotic fluid is a good sign of normal urinary function. When the amniotic fluid is low, this can mean a problem with the way the baby's kidneys are working.



Baby in the uterus with normal amniotic fluid levels

Prenatally Diagnosed Urological Problems

The cause of urological problems is often not known. The conditions are referred to as congenital, meaning it happens before your baby is born.

Urinary problems may occur alone or with other syndromes or birth defects.

continued



NATIONWIDE CHILDREN'S

When your child needs a hospital, everything matters.SM

- **Hydronephrosis** means a stretching in the area of the kidneys where urine collects. Hydronephrosis is not a specific diagnosis. Instead, it means that urine is overflowing the kidney. Some may refer to hydronephrosis as “swelling of the kidney.”

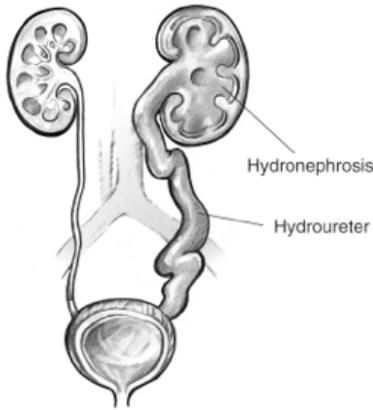


Image credit: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

Hydronephrosis may be caused by a blockage in a part of the kidney. A leaky valve in the ureters may also cause it. The leaky valve causes the urine to flow back from the bladder into the kidneys. In many children, the cause is never known. Often times when hydronephrosis is found in the prenatal period, the kidneys are normal after birth.

- **Hydroureter** is a condition in which the ureter is swollen. It can be due to the leaky valve or other conditions of the kidney.
- **Posterior Urethral Valves** is a congenital obstruction of the urinary tract. This condition occurs only in boys and affects about 1 in 8,000 babies. Posterior urethral valves (PUV) are excess flaps of tissue in the urethra. This excess tissue can block or reverse the flow of urine and can affect all of the urinary tract organs including the urethra, bladder, ureters and kidneys.
- **Multicystic dysplastic kidney (MCDK)** is a condition in which the kidney has been essentially

replaced by multiple cysts. On ultrasound, the kidney appears like a bunch of grapes with very little kidney tissue. The kidney usually has no function. Most of the time, multicystic kidneys occur only on one side (left side). In this case, your child’s properly functioning kidney can provide the required amount of amniotic fluid. Sometimes, it occurs on both sides, and these cases are very serious. It is generally thought to be caused by a urinary tract obstruction early in development during pregnancy.

- **Polycystic kidney disease (PKD)** is an inherited genetic disorder. Clusters of cysts form in both kidneys. Polycystic kidney disease can also cause cysts in the liver and problems in other organs, such as the heart and blood vessels in the brain. The most serious complications of polycystic kidney disease are reduced kidney function and high blood pressure.

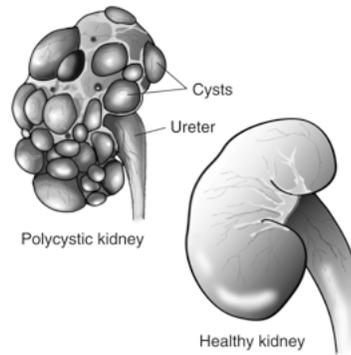


Image credit: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

- **Lower Urinary Tract Outlet Obstruction** is a rare condition that is caused by a blockage in the lower urinary tract, usually below the bladder. The baby is not able to release urine into the amniotic fluid and amniotic fluid levels can become very low. The most common cause of lower urinary tract obstruction in boys is posterior urethral valves. The long-term health of these infants depends on the severity of the effects from the low level of amniotic fluid.

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Image credit: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

- **Bladder exstrophy** is an abnormality present at birth in which the bladder and associated structures do not form properly. If the abdominal wall does not correctly join during development, a baby can be born with the bladder and other structures exposed on the outside of the body. The condition is very rare. Bladder exstrophy usually involves several systems within the body, including abnormally shaped and weakened lower abdominal wall muscles; displacement of the belly button, usually immediately above the defect and lower than normal on the abdominal wall; shortened penis in boys; narrow vaginal opening in girls. Bladder exstrophy is treated surgically. Several surgical treatment options are available depending on the severity of the condition. Surgery is recommended after the baby is born. With treatment, your child should be able to enjoy an active childhood.
- **Vesicoureteral reflux (VUR)** is the condition in which urine backs up from the bladder into the ureters and occasionally into the kidneys. Most children outgrow VUR. The goal of treatment for children with VUR is to prevent kidney infections and possible kidney damage.

How urinary system problems are found

You may have a prenatal ultrasound done while you are pregnant to learn about the health of your baby. A problem in the urinary system is usually found during a routine prenatal ultrasound, but sometimes it is discovered when the baby is born. Your doctor will talk to you about your ultrasound and the amount of amniotic fluid surrounding the baby. When the amniotic fluid is low, this can mean there is a problem with the way the baby's kidneys are working.

Care during your pregnancy

Most problems in the urinary system do not need treatment before birth, but do require observation by a high-risk obstetrician. A normal amount of amniotic fluid around the baby during the pregnancy is reassuring. In rare cases, if the fluid gets very low, your high risk obstetrician will talk to you about whether there are any treatment options during the pregnancy.

Your doctor will have a detailed plan to watch your pregnancy very closely. It is important to call your doctor if you have any questions or concerns during your pregnancy.

Ohio Fetal Medicine Collaborative

If this problem is found while you are pregnant, you will continue to receive care from your doctor and may be referred to the Ohio Fetal Medicine Collaborative (OFMC). Through the OFMC, you will see a doctor who specializes in taking care of high-risk patients. You can also meet with a pediatric urologist at Nationwide Children's Hospital to learn more about your baby's care after he or she is born. Nurse coordinators will be available to help answer your questions and concerns; guide you through your pregnancy; and prepare you for what to expect.

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Care after your baby is born

After your baby is born, an ultrasound or other tests may be done to check on your baby's urinary system. Some babies will need specialized attention in the neonatal intensive care unit after birth depending on the urinary problem. Some conditions will be treated with observation, some with medicine, and in some cases, surgery.

It is important that a pediatric urologist see your baby. The pediatrician in the hospital will let you know when your baby needs to be seen by a pediatric urologist; this is usually when your baby is 2 to 3 weeks of age. A kidney and bladder ultrasound or other tests may be done at that time.

Follow Up

Your baby will need regular follow-up appointments to measure growth, development and nutrition. You will want to find a local pediatrician to take care of the routine checkups, immunizations, and doctor's visits. The program coordinator can help if needed. The pediatric urologist will provide follow-up care for your baby's medical or surgical needs.