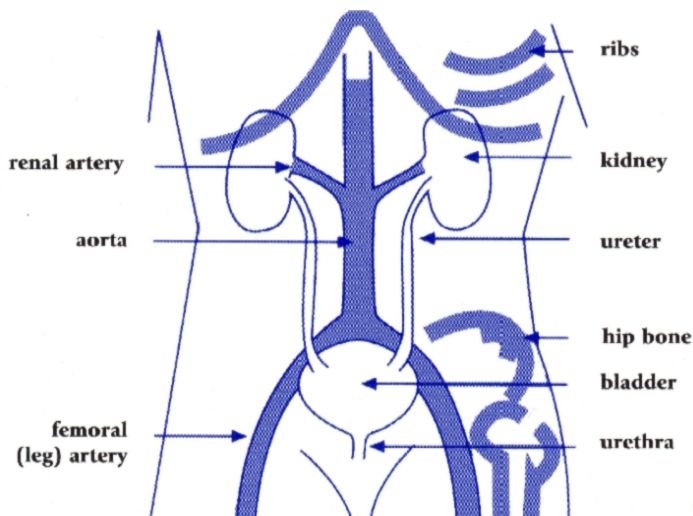


FINDING KIDNEY PROBLEMS BEFORE YOUR BABY IS BORN

HOW DOES THE URINARY SYSTEM WORK?

The urinary system is made up of the kidneys, the bladder and connecting tubes. The kidneys act as filters removing extra fluid and waste from your blood to make urine. Urine passes from the kidneys to your bladder through tubes called ureters. When the bladder is full, urine flows out of the body

through a tube called the urethra.



The ureters enter the bladder and travel through its wall for a short distance. This creates a tunnel and a flap-like, 'one direction only' valve at the end of each ureter. These valves stop the urine travelling in the wrong direction.

Location of the kidneys and bladder

HOW ARE PROBLEMS DETECTED?

An ultrasound is used to examine unborn babies. Clear jelly is put over the mother's belly then an instrument about the size of a small torch is passed over the skin. This instrument produces high frequency sound waves called ultrasound, which bounce back from the baby as "echoes" much like a radar gun. These echoes are processed to create an image of your baby and some internal organs. Newer ultrasound machines can produce a three or four dimensional images or video of the baby. These scans are limited from a medical viewpoint but can be helpful to look at internal organs. It is important to be aware that not all kidney problems can be found by ultrasound.

Most pregnant women undergo an ultrasound examination between the 18th and 20th weeks of pregnancy. From about 18 weeks it is often possible to find problems with a baby's kidneys or bladder. About one baby in two hundred is found to have a problem.

ARE ALL KIDNEY PROBLEMS SERIOUS?

No. Most problems are minor. The most common finding is dilation or widening of the central kidney area where urine is collected. In many babies it fixes itself before birth and in others, it gets better in the first year of life without treatment.

A repeat ultrasound is usually done at about 28 weeks of pregnancy when minor problems often return to normal. If the problem persists, the baby will have an ultrasound a few days after birth to decide if any further tests are needed.

Some parents worry that an ultrasound may hurt the baby but ultrasound has been used to test millions of unborn babies over the past thirty years. No harmful effects have been found using today's techniques.

WHAT ARE SERIOUS KIDNEY PROBLEMS?

These are some examples of kidney problems found in babies:

- **Hydronephrosis**

Hydronephrosis is the most common kidney problem in babies. It sometimes disappears during the first year or so of life as the kidney grows. Hydronephrosis is a "stretching" or widening of the inside or collecting part of the kidney. It may result from a blockage in the ureter where it joins the kidney, preventing urine from draining into the bladder. It usually occurs only in one kidney. Urine is trapped in the kidney causing the kidney to stretch. Hydronephrosis may also be due to abnormal backwash or reflux of urine from the bladder. In babies the amount of hydronephrosis may appear greater than the degree of blockage because of the "stretchiness" of young tissues.

- **Ureteric Reflux**

If the ureteric valve is not working well, urine can flow back up to the kidneys. Reflux only seems to increase the risk of kidney damage when children also have infections. Babies who have reflux but never have a urine infection are believed to be at low risk of kidney damage. Reflux usually goes away as a child gets older. This is an area of intensive research. See *Urinary Reflux in Children* fact sheet for more information.

- **Multicystic Kidney**

This is an uncommon condition, which affects only one kidney. The kidney tissue is completely replaced by large cysts. The affected kidney will not have any function but the remaining kidney is usually normal.

- **Kidney Cysts**

Different types of cysts can occur in the kidneys. Some types are inherited. Serious types can interfere with kidney function even in childhood. See *Polycystic Kidney Disease* fact sheet for more information.

- Posterior Urethral Valves

This problem causes a blockage in the urethra so the bladder becomes swollen. Investigation and surgery in the first days of life are needed. Posterior urethral valves is a very uncommon condition, which only occurs in boys. It can cause severe damage to both kidneys resulting in serious long-term health problems. When this condition is suspected, more frequent ultrasounds are needed to monitor the baby carefully.

- Abnormal kidney development or renal dysplasia:

Sometimes an ultrasound shows kidneys that are small and abnormal. Rarely, one or even both kidneys may be absent. When only one kidney is present it is usually healthy so this does not cause serious problems. Occasionally very poor kidney function requires intensive treatment or dialysis shortly after birth. In this case, a kidney transplant would usually be considered in the future.

CAN YOU FIND OUT HOW WELL A BABY'S KIDNEYS ARE WORKING BEFORE BIRTH?

Yes – partly. The amount of amniotic fluid or the 'waters' around the baby can be estimated by ultrasound. If there is the usual amount of amniotic fluid and the kidneys are of normal size and shape then kidney function is probably normal. If both kidneys look abnormal and there is a normal amount of amniotic fluid, there is probably enough function to sustain life. If there is a serious shortage of amniotic fluid, kidney function is probably poor or absent. For these babies, lung function may also be affected because the fluid around the baby is important in lung development. In serious cases, testing the amniotic fluid may give more information.

CAN PROBLEMS BE CORRECTED BEFORE BIRTH?

If the bladder is severely blocked and kidney function is getting worse, the pressure can sometimes be reduced by passing a tube into the unborn baby's bladder. An instrument is passed through the mother's belly into the space around the baby. This can give some relief until the baby can be born safely. Unfortunately, these babies are usually born with abnormal kidneys and reduced kidney function. This is another area of intensive research.

WHAT TESTS ARE USED AFTER THE BABY IS BORN?

Once the baby is born, a doctor will examine the baby and will run some tests. After birth a number of tests can be used to examine the kidneys and urinary tract:

- An ultrasound during the first weeks of life.
- A special X-ray of the bladder called a cystogram: A small tube or catheter is passed into the bladder through the urethra. The bladder is filled with a fluid that allows the bladder to show up in an x-ray.

- A renal scan can be used to examine the function of the kidneys. The scan uses small amounts of radioactive materials called isotopes. Isotopes are injected into a vein and later removed by the kidney. The isotope is tracked as it passes through the kidney so that information about kidney function and any blockages can be obtained. The isotope dose is very tiny and sensitive equipment is used to measure them in the body.

WHAT CAN I EXPECT IF MY CHILD HAS A URINARY TRACT ABNORMALITY?

Babies with urinary tract abnormalities usually do very well. They will need to have tests after birth to see if treatment is necessary. Some babies may only need periodic visits to a doctor or may need to see a specialist. Sometimes antibiotics are needed and a small operation is needed to fix the problem.

**For more information about kidney health or this topic, please contact Kidney Health Australia:
Kidney Information Line (freecall) on 1800 682 531 or visit website www.kidney.org.au**

This is intended as a general introduction to this topic and is not meant to substitute for your doctor's or Health Professional's advice. All care is taken to ensure that the information is relevant to the reader and applicable to each state in Australia. It should be noted that Kidney Health Australia recognises that each person's experience is individual and that variations do occur in treatment and management due to personal circumstances, the health professional and the state one lives in. Should you require further information always consult your doctor or health professional.

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