

Kidney and Other Urinary Tract Problems

What are kidney and other urinary tract problems?

- Urinary tract problems may include the kidneys, the bladder, or ureters.
 - The kidneys are 2 fist-sized organs in the back of the abdomen that are responsible for filtering blood and removing waste products.
 - Ureters are tubes that carry urine from the kidneys to the bladder.
 - The bladder sits right above the pubic bone and collects the urine.
- This Quick Reference Sheet provides information on the following problems:
 - Nephrotic syndrome
 - Nephritis (glomerulonephritis)
 - Recurrent urinary tract infections (UTIs)
- Nephrotic syndrome and glomerulonephritis are kidney problems.
- Recurrent UTIs affect the bladder, but the ureters or kidneys may also be involved.
- Occasionally, children will have renal (kidney) failure and may need to get some form of dialysis.
 - Dialysis is a procedure that removes waste products from the blood.
 - Dialysis can occur through the blood or abdomen.

Who might be on the treatment team?

- Primary care provider in the medical home
- Pediatric nephrologist (kidney specialist)
- Pediatric urologist (surgeon who specializes in the urinary system)

Nephrotic syndrome

What is nephrotic syndrome?

- Nephrotic syndrome is a condition in which protein leaks through the membranes in the kidney.

- Without the normal amount of protein in the blood to hold it in, fluid escapes out of the blood vessels and into the body tissue. This leakage causes swelling, especially of the legs, abdomen, and face.
- Dramatic weight gain can result from the water, and the child may urinate less.
- The cause is unknown.
- There are several types of nephrotic syndrome, but the most common in childhood is minimal change disease. The outlook for children with minimal change disease is quite good, and most children recover from it without any permanent kidney damage.

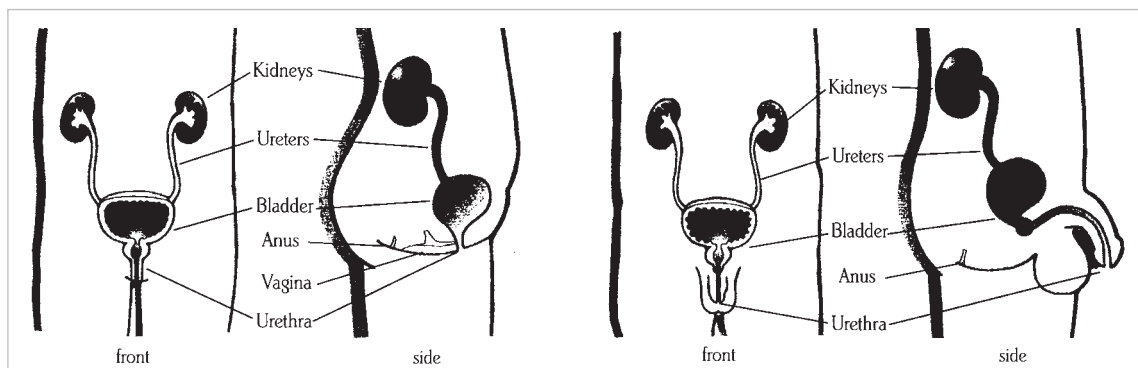
What are some common characteristics of children who have nephrotic syndrome or of nephrotic syndrome as children present with it?

Nephrotic syndrome can occur at any age but is most common between the ages of 18 months and 8 years. Boys are affected more often than girls. A child may come to the child care program or school with the diagnosis or may develop it while enrolled.

What adaptations may be needed?

Medications

- Treatment often starts with steroids.
 - If nephrotic syndrome is controlled with steroids, they are usually slowly discontinued in a tapering dose. Steroids may need to be given again if the syndrome relapses. Sometimes, the syndrome comes back when the steroids are tapered, and different medications may need to be considered.
 - Side effects from steroids may include mood swings, increased appetite, and weight gain (which can be hard to sort out from the fluid weight).
 - Over a longer period, steroids can suppress the immune system and make the child more vulnerable to infection.



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Urinary tract

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- Diuretics (“fluid pills”) are also used to decrease the amount of fluid in the body, by causing the child to urinate more frequently. Because of the recurrent nature of this condition and the need to repeatedly alter steroid dosages or add additional medications, these children are often referred to a pediatric nephrologist.
- All over-the-counter medications should be approved by the child’s health care professional and specified in the Care Plan.
- All staff who will be administering medication should have medication administration training (see Chapter 6).

Infection Precautions

- While the syndrome is active, the immune system is weakened for 2 reasons.
 - First, the body is not making proteins and is also losing proteins, which are needed to make cells and chemicals to fight infection.
 - Second, steroids can also suppress the immune system.
- It is important for the child to avoid exposure to chickenpox and measles at those times.

Medical Procedures

Because nephrotic syndrome can come and go, at times it is necessary to check the urine for protein. This is done with a dipstick that changes color if dipped in urine that contains protein. The Care Plan should specify whether this procedure is necessary.

Immunizations

- Some changes in the immunization schedule may need to be made because of nephrotic syndrome or the medications used to treat it. The child should have a medical note explaining any necessary changes.
- It is critical that children with kidney disease be immunized as fully as possible to protect them against any vaccine-preventable diseases.
- All children and staff should be fully immunized, including with influenza vaccine, to protect the child with kidney disease.

Dietary Considerations

- To prevent swelling and discomfort, a low-salt diet is a vital part of the care of these children.
- Foods containing caffeine, such as chocolate, tea, and coffee, should be avoided if high blood pressure is part of the condition.

What should be considered an emergency?

Check the child’s Care Plan. Emergencies include

- **Fever:** Because the child’s immune system might not be functioning properly, fever can be a serious symptom.
- **Increased swelling:** This type of swelling might signal worsening of the disease.
- **Blood clots:** Isolated swelling, color change, or pain in a limb may be a symptom of a blood clot.
- **Abdominal problems:** Specifically, watch for abdominal pain and for swelling of the abdomen.

What types of training or policies are advised?

- Recognizing symptoms of worsening disease or complication
- Urinary testing if that is a part of the child’s Care Plan
- Dietary changes

Nephritis (glomerulonephritis)

What is nephritis (glomerulonephritis)?

- Nephritis (glomerulonephritis) is a kidney condition that is like nephrotic syndrome, except the kidneys lose blood and protein in the urine.
- Nephritis can be acute or chronic.
 - The acute form frequently occurs after a strep throat (a sore throat caused by group A streptococcal infection). Although acute glomerulonephritis usually resolves, complications can occur during the acute phase, and these children should be under the close supervision of their health care professionals.
 - The chronic form has more causes and is more problematic.

What are some common characteristics of children who have nephritis or of nephritis as children present with it?

- Children may have swelling and red or brown color of the urine caused by blood loss.
- High blood pressure is more common with this form of kidney disease.

How common is it?

Nephritis is less common than nephrotic syndrome.

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What adaptations may be needed?

- Considerations are like those listed in the Nephrotic Syndrome section earlier in this Quick Reference Sheet. Because there are different types of nephritis, it is important to have a detailed Care Plan that specifies what the particular child needs.
- All children and staff should be fully immunized, including with influenza vaccine, to protect the child with kidney disease.

Recurrent urinary tract infections

What are recurrent urinary tract infections?

- Children can get a single UTI, but those who get them repeatedly may have a problem called *vesicoureteral reflux*.
- In a child with vesicoureteral reflux, the urine travels backward from the bladder toward the kidney. This reflux can cause bacteria to be washed up the urinary tract toward the kidney, where it can do damage. If the urine backs up too far, it may cause swelling of the kidneys or *hydronephrosis*.
- Some children are prescribed a low-dose antibiotic to try to prevent UTIs. Often, children outgrow this problem and then stop taking antibiotics.
- Children who have vesicoureteral reflux usually have it at birth, but it may take time to diagnose the condition.
- Other conditions can cause blockage of the flow of urine but are less likely to cause problems that need to be addressed in child care and school. These include ureteral-pelvic junction obstruction, ureterocele, and posterior urethral valves, which are often surgically corrected in boys shortly after birth. These conditions will not be addressed in this Quick Reference Sheet.

What are some common characteristics of children who have recurrent UTIs or of recurrent UTIs as children present with them?

Symptoms of a UTI include

- Fever
- Urinary “accidents”
- Painful urination

- Blood in the urine
- Sensation that one has to urinate, even when the bladder is not full
- Change in appearance or smell of the urine

What adaptations may be needed?

Medications

Antibiotic prophylaxis (daily low-dose antibiotics) may be recommended. This treatment can usually be administered by parents/guardians at home.

Dietary Considerations

Hydration is very important for children with UTIs. Children should drink 8 to 10 glasses of water or another fluid per day.

Physical Environment and Other Considerations

- Change diapers of infants and toddlers frequently.
- Encourage children to use the bathroom every 3 to 4 hours to help wash out the bacteria. Children often get busy with play and do not remember to go.

What should be considered an emergency?

High fever in the absence of other signs or symptoms may be caused by a kidney infection. Call parents/guardians immediately.

What types of training or policies are advised?

Recognizing symptoms of a UTI

What are some related Quick Reference Sheets?

- Abnormal Immunity: An Overview (page 63)
- Hypertension (high blood pressure) section in Heart Conditions, Nonstructural (page 141)

What are some resources?

- National Institute of Diabetes and Digestive and Kidney Diseases: National Kidney and Urologic Diseases Information Clearinghouse, www.niddk.nih.gov/health-information/communication-programs/information-clearinghouses, 1-800-860-8747
- National Kidney Foundation: www.kidney.org, 1-800-622-9010