Patient Education:

Kidney Disease, Pediatric

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The kidneys are two organs that lie on either side of the spine between the middle of the back and the front of the abdomen. The kidneys:

- Remove wastes and extra water from the blood.
- Produce important hormones. These regulate blood pressure, help keep bones strong, and help create red blood cells.
- Balance the fluids and chemicals in the blood and tissues.

Kidney disease occurs when the kidneys are damaged. Kidney damage may be sudden (*acute*) or develop slowly over a long period of time (*chronic*). A small amount of damage may not cause problems, but a large amount of damage may make it difficult or impossible for the kidneys to work the way they should. Early detection and treatment of kidney disease may prevent kidney damage from becoming permanent or getting worse. Some kidney diseases are curable, but most are not. Many children with kidney disease are able to control the disease and live a normal life.

TYPES OF KIDNEY DISEASE

- **Acute kidney injury.** Acute kidney injury occurs when there is sudden damage to the kidneys.
- **Chronic kidney disease.** Chronic kidney disease occurs when the kidneys are damaged over a long period.
- **End-stage kidney disease.** End-stage kidney disease occurs when the kidneys are so damaged that they stop working. In end-stage kidney disease, the kidneys cannot get better.

CAUSES

Any condition, disease, or event that damages the kidneys may cause kidney disease.

Acute kidney injury.

- A problem with blood flow to the kidneys. This may be caused by:
  - Blood loss.
  - Heart disease.
  - Severe burns.
  - Liver disease.
- Direct damage to the kidneys. This may be caused by:
  - Some medicines.
  - A kidney infection.
  - Poisoning or consuming toxic substances.
  - A surgical wound.
  - A blow to the kidney area.
- A problem with urine flow. This may be caused by:
  - Cancer.
  - Kidney stones.

Chronic kidney disease. The most common causes of chronic kidney disease are diabetes and high blood pressure (*hypertension*). Chronic kidney disease may also be caused by:

- Diseases that cause the filtering units of the kidneys to become inflamed.
- Diseases that affect the immune system.
- Genetic diseases.
- Medicines that damage the kidneys, such as anti-inflammatory medicines.
- Poisoning or exposure to toxic substances.
- A reoccurring kidney or urinary infection.
- A problem with urine flow. This may be caused by:
    - Cancer.
    - Kidney stones.

End-stage kidney disease. This kidney disease usually occurs when a chronic kidney disease gets worse. It may also occur after acute kidney injury.

SYMPTOMS

- Swelling (*edema*) of the eyes, face, ankles, or feet.
- Problems with urination, such as:
    - Painful or burning feeling during urination.
    - Decreased urine production.
    - Frequent accidents in children who are potty trained.
    - Bloody urine.
- Hypertension.
- Tiredness.
- Problems sleeping.
- Your child does not seem to be developing as quickly as his or her peers.
- Your child is short for his or her age.

Sometimes no symptoms are present.

DIAGNOSIS

Kidney disease may be detected and diagnosed through routine tests before your child is born. After birth, a health care provider may diagnose kidney disease by taking blood, urine, imaging, or kidney biopsy tests.

TREATMENT

Acute kidney injury. Treatment of acute kidney injury varies depending on the cause and severity of the kidney damage. In mild cases, no treatment may be needed. The kidneys may heal on their own. If acute kidney injury is more severe, your health care provider will treat the cause of the kidney damage, help the kidneys heal, and prevent problems from occurring. Severe cases may require a procedure to remove toxic wastes from the body (*dialysis*) or surgery to repair kidney damage. Surgery may involve:

- Repair of a torn kidney.
- Removal of an obstruction.

Most of the time, your child will need to stay overnight at the hospital.

Chronic kidney disease. Most chronic kidney diseases cannot be cured. Treatment usually involves relieving symptoms and preventing or slowing the progression of the disease. Treatment may include:

- A special diet. Your child may need to avoid foods that:
  - Have added salt.
  - Are high in potassium.
  - Are high in protein.
- Medicines. These may:
  - Lower blood pressure.
  - Relieve anemia.
  - Relieve swelling.
  - Protect the bones.
  - Help your child grow.

End-stage kidney disease. End-stage kidney disease is life-threatening and must be treated immediately. There are two treatments for end-stage kidney disease:

- Dialysis.
- Receiving a new kidney (*kidney transplant*).

Both of these treatments have serious risks and consequences. In addition to having dialysis or a kidney transplant, your child may need to take medicines to control hypertension and cholesterol and to decrease phosphorus levels in his or her blood.

LENGTH OF ILLNESS

- **Acute kidney injury.** The length of this disease varies greatly from child to child. Exactly how long it lasts depends on the cause of the kidney damage. Acute kidney injury may develop into chronic kidney disease or end-stage kidney disease.
- **Chronic kidney disease.** This disease usually lasts a lifetime. Chronic kidney disease may worsen over time to become end-stage kidney disease. The time it takes for end-stage kidney disease to develop varies from child to child.
- **End-stage kidney disease.** This disease lasts until a kidney transplant is performed.

PREVENTION

Kidney disease can sometimes be prevented. If your child has diabetes, hypertension, or any other condition that may lead to kidney disease, you should try to prevent kidney disease with:

- An appropriate diet.
- Medicine.

- Lifestyle changes.

FOR MORE INFORMATION

- American Association of Kidney Patients: www.aakp.org
- National Kidney Foundation: www.kidney.org
- American Kidney Fund: www.akfinc.org
- Life Options Rehabilitation Program: www.lifeoptions.org and www.kidneyschool.org

This information is not intended to replace advice given to you by your health care provider. Make sure you discuss any questions you have with your health care provider.

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