

Hemolytic Uremic Syndrome

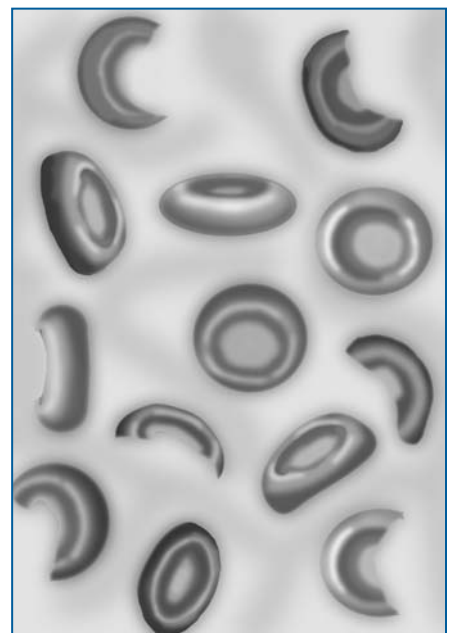
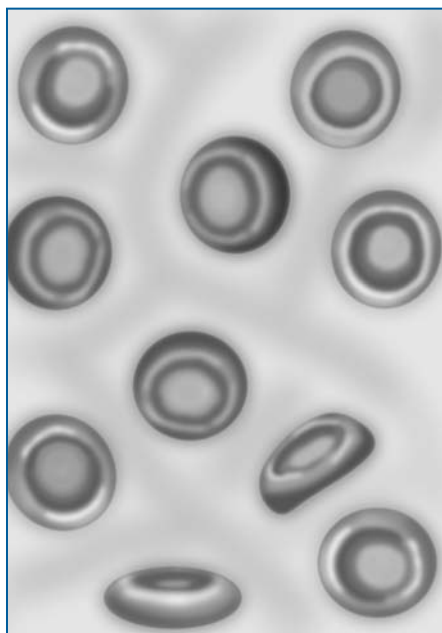
Hemolytic (HEE-mo-LIT-ik) uremic (yoo-REE-mik) syndrome, or HUS, is one of the most common causes of sudden, short-term kidney failure in children. In severe cases, this acute kidney failure may require several sessions of dialysis to temporarily take over the kidneys' job of filtering wastes from the blood, but most children recover without permanent damage to their health.

Course of the Disease

Most cases of HUS occur after an infection of the digestive system by *Escherichia coli* (*E. coli*) bacterium, which is found in contaminated foods like meat, dairy products, and juice when they are contam-

inated. Some people have contracted HUS after swimming in pools or lakes contaminated with feces. Washing and cooking foods adequately, avoiding undercooked meats, and avoiding unclean swimming areas are the best ways to protect your child from this disease.

Infection of the digestive tract is called gastroenteritis and may cause your child to vomit and have stomach cramps and bloody diarrhea. Most children who experience gastroenteritis recover fully in 2 or 3 days and do not develop HUS. In a few children, however, HUS develops when the bacteria lodged in the digestive system make toxins that enter the bloodstream and start to destroy red blood cells.



Healthy red blood cells (left) are smooth and round. In hemolytic uremic syndrome (right), toxins destroy red blood cells. These misshapen cells may clog the tiny blood vessels in the kidneys.



National Institute of Diabetes and Digestive and Kidney Diseases
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Signs and Symptoms

Symptoms of HUS may not become apparent until a week after the digestive problems. With HUS, the child remains pale, tired, and irritable. Other signs include small, unexplained bruises or bleeding from the nose or mouth that may occur because the toxins also destroy the platelets, cells that normally help the blood to clot.

You may notice that your child's urine output decreases. The urine may also appear red. Urine formation slows because the damaged red blood cells clog the tiny blood vessels in the kidneys, making them work harder to remove wastes and extra fluid from the blood. The body's inability to rid itself of excess fluid and wastes may in turn cause high blood pressure or swelling of the face, hands, feet, or entire body. This progression to acute kidney failure occurs in about half of HUS cases.

Call your child's doctor immediately if you notice unexplained bruises, unusual bleeding, swollen limbs or generalized swelling, extreme fatigue, or decreased urine output in your child. You should call your doctor or visit an emergency room if your child goes 12 hours without urinating.

Treatment

Treatments, which consist of maintaining normal salt and water levels in the body, are aimed at easing the immediate symptoms and preventing further problems. Your child may need a transfusion of red blood cells delivered intravenously—that is, through an I.V. needle. Only the most severe cases require dialysis. Some children may sustain significant kidney damage that slowly develops into permanent kidney failure and will then require long-term dialysis or a kidney transplant. Some studies suggest that limiting protein in the child's diet and treating blood pressure with a medicine from a class of drugs called angiotensin-converting enzyme inhibitors, usually called ACE inhibitors, helps delay or prevent the onset of permanent kidney failure. Most children recover completely with no long-term consequences.

Some parents feel a sense of responsibility for their child's illness after a case of HUS. While the disease may have been preventable, caregivers should not feel guilty because the invisible course of the disease cannot be predicted from the initial bacterial infection, which many children experience without developing HUS. Caregivers who get their children the appropriate medical care should rest assured that they have done all that any caring parent could do.

Hope Through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports research to help many kinds of people with kidney disease, including children. NIDDK's Division of Kidney, Urologic, and Hematologic Diseases (DKUHD) maintains the Pediatric Nephrology Program, which supports research into the causes, treatment, and prevention of kidney diseases in children. DKUHD supports several researchers working to find ways to prevent HUS from developing after the initial infection of the digestive system.

For More Information

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The National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health under the U.S. Department of Health and Human Services. Established in 1987, the Clearinghouse provides information about diseases of the kidneys and urologic system to people with kidney and urologic disorders and to their families, health care professionals, and the public. The NKUDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about kidney and urologic diseases.

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