

The Urinary Tract and How It Works

National Kidney and Urologic Diseases Information Clearinghouse



National Institute of
Diabetes and Digestive
and Kidney Diseases

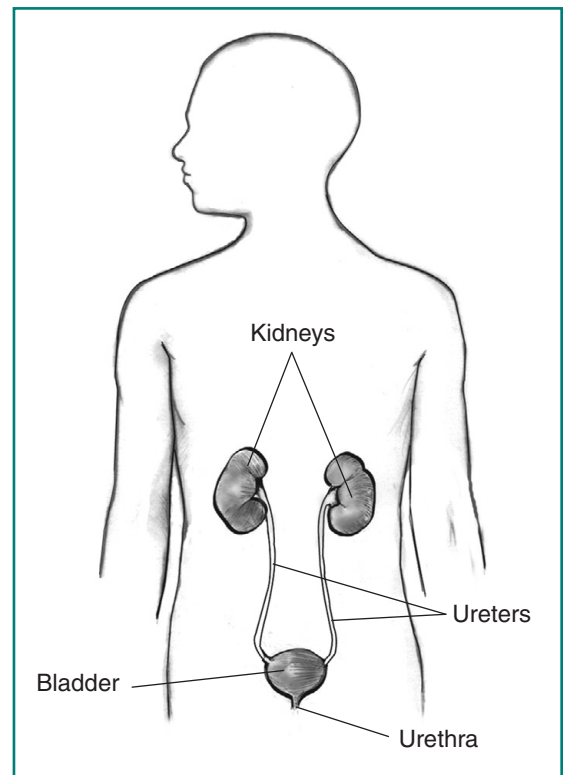
What is the urinary tract and how does it work?

The urinary tract is the body's drainage system for removing urine, which is composed of wastes and extra fluid. In order for normal urination to occur, all body parts in the urinary tract need to work together in the correct order.

Kidneys. The kidneys are two bean-shaped organs, each about the size of a fist. They are located just below the rib cage, one on each side of the spine. Every day, the kidneys filter about 120 to 150 quarts of blood to produce about 1 to 2 quarts of urine. The kidneys work around the clock; a person does not control what they do.

Ureters. Ureters are the thin tubes of muscle—one on each side of the bladder—that carry urine from each of the kidneys to the bladder.

Bladder. The bladder, located in the pelvis between the pelvic bones, is a hollow, muscular, balloon-shaped organ that expands as it fills with urine. Although a person does not control kidney function, a person does control when the bladder empties. Bladder emptying is known as



The urinary tract

urination. The bladder stores urine until the person finds an appropriate time and place to urinate. A normal bladder acts like a reservoir and can hold 1.5 to 2 cups of urine. How often a person needs to

urinate depends on how quickly the kidneys produce the urine that fills the bladder. The muscles of the bladder wall remain relaxed while the bladder fills with urine. As the bladder fills to capacity, signals sent to the brain tell a person to find a toilet soon. During urination, the bladder empties through the urethra, located at the bottom of the bladder.

Three sets of muscles work together like a dam, keeping urine in the bladder between trips to the bathroom.

The first set is the muscles of the urethra itself. The area where the urethra joins the bladder is the bladder neck. The bladder neck, composed of the second set of muscles known as the internal sphincter, helps urine stay in the bladder. The third set of muscles is the pelvic floor muscles, also referred to as the external sphincter, which surround and support the urethra.

To urinate, the brain signals the muscular bladder wall to tighten, squeezing urine out of the bladder. At the same time, the brain signals the sphincters to relax. As the sphincters relax, urine exits the bladder through the urethra.

Why is the urinary tract important?

The urinary tract is important because it filters wastes and extra fluid from the bloodstream and removes them from the body. Normal, functioning kidneys

- prevent the buildup of wastes and extra fluid in the body
- keep levels of electrolytes, such as potassium and phosphate, stable
- make hormones that help regulate blood pressure
- make red blood cells
- keep bones strong

The ureters, bladder, and urethra move urine from the kidneys and store it until releasing it from the body.

What affects the amount of urine a person produces?

The amount of urine a person produces depends on many factors, such as the amounts of liquid and food a person consumes and the amount of fluid lost through sweat and breathing. Certain medications, medical conditions, and types of food can also affect the amount of urine produced. Children produce less urine than adults; the amount produced depends on their age.

Points to Remember

- The urinary tract is the body's drainage system for removing urine, which is composed of wastes and extra fluid.
- In order for normal urination to occur, all body parts in the urinary tract need to work together in the correct order.
- The kidneys are two bean-shaped organs, each about the size of a fist.
- Every day, the kidneys filter about 120 to 150 quarts of blood to produce about 1 to 2 quarts of urine.
- Ureters are the thin tubes of muscle—one on each side of the bladder—that carry urine from each of the kidneys to the bladder.
- The bladder, located in the pelvis between the pelvic bones, is a hollow, muscular, balloon-shaped organ that expands as it fills with urine.
- Bladder emptying is known as urination.
- During urination, the bladder empties through the urethra, located at the bottom of the bladder.
- The urinary tract is important because it filters wastes and extra fluid from the bloodstream and removes them from the body.
- The ureters, bladder, and urethra move urine from the kidneys and store it until releasing it from the body.
- The amount of urine a person produces depends on many factors, such as the amounts of liquid and food a person consumes and the amount of fluid lost through sweat and breathing.

Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports a variety of research on kidney diseases and urinary tract disorders. The knowledge gained from these studies is advancing scientific understanding of why kidney diseases and urinary tract disorders develop, leading to improved methods of diagnosing, treating, and preventing them.

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at www.nih.gov/health/clinicaltrials. For information about current studies, visit www.ClinicalTrials.gov.

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This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit www.fda.gov. Consult your health care provider for more information.

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