

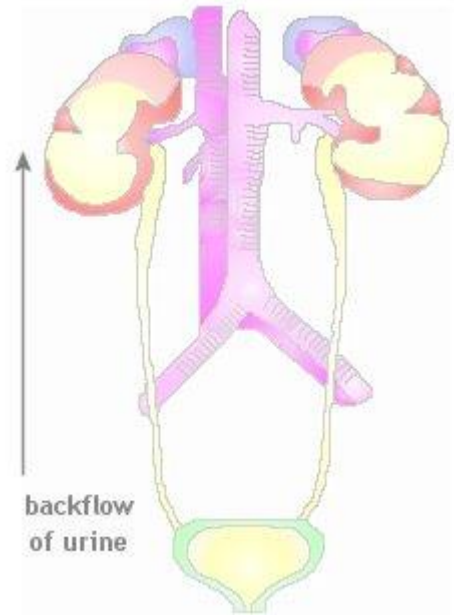
# Bladder Function

The urinary system includes the kidneys, ureters, bladder, sphincter muscles and the urethra. The purpose of the urinary system is to remove waste from the blood.

There are two kidneys, one on either side of the body. Blood flows to the kidneys and combines waste and water to make urine. A ureter connects each kidney to the bladder. It allows the urine to flow into the bladder. The bladder collects and holds the urine until it is time to urinate. It stretches when it is full and shrinks when it is empty.

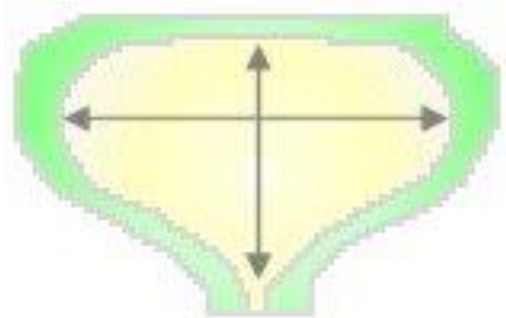
The sphincters are two muscles in the bladder that close to keep urine in the bladder and open to let urine out of the bladder. The urethra is a muscular tube that leads from the bladder to the outside of the body. This is the exit point for urine to leave the body.

Normally (before injury), the bladder empties (urination) when the brain sends messages through the spinal cord telling the bladder to contract so the sphincter muscles will open. When the sphincter opens, the bladder drains.



## Process of Normal Urination

1. The bladder stretches as it fills with urine.
2. This stretching pushes on area nerves.
3. The nerves send a message from the bladder to the spinal cord. Part of the message loops around in the cord, setting off a reflex, which causes the bladder to contract. The other part of the message goes to the brain. The "urge" (sensation/feeling) to urinate is felt.



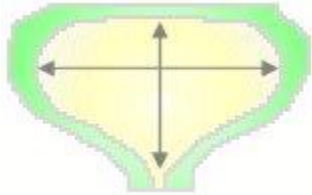
4. At this point, the brain decides if it is an acceptable time to urinate.
5. If it is not a good time to urinate, the brain sends a message back down the cord to tell the sphincters to stay closed and keep the urine in the bladder.
6. If it is a good time to urinate, the brain sends a message back down the cord to tell the sphincters to open and let the urine exit the body.

# Bladder Function

## Bladder Function after Brain Injury

Bladder problems are common after a brain injury. Possible issues include:

- **Retention:** keeping too much urine in the bladder
- **Urgency:** needing to urinate often
- **Incontinence:** wetting accidents



Urinary retention happens when the bladder cannot release urine correctly. Bladders that are too full may be painful and cause infections. The urine will need to be emptied by a tube called a catheter.

The catheter may stay in the bladder for a period of time (Foley Catheter) or can be put in at certain times and then removed (Intermittent Catheter, or IC).

Urgency and incontinence happen when the brain cannot understand the messages sent by the bladder. Sometimes the bladder may work fine, but the person does not remember what the "urge" to go feels like. Because the urge is not recognized, the brain cannot decide if it is the "right time" to urinate. It may release the urine at the wrong time.

Also, some people may feel the urge but it takes a while to "know" it. By the time it is known, it may be too late to get to a restroom. The remainder of this lesson contains information about managing the bladder.

The **Bladder Care Worksheet** is a tool designed to help you organize your own bladder program. You can print the worksheet to review and answer the answers.