

# Urologic Diseases



By Dr. Catherine Shaffer, Ph.D.

*Reviewed by Dr. Tomislav Meštrović, MD, Ph.D.*

The urinary system is comprised of the kidneys, ureters, bladder, and the urethra. The purpose of the urinary system (also called the renal system) is to remove waste from the body and to regulate electrolytes, blood volume, blood pressure, and blood pH. The kidneys filter the blood so the waste can exit through the ureters to the bladder in the form of urine.

Diseases that affect the urinary system are grouped under an umbrella term of urologic diseases. These diseases can arise from a genetic defect or an acquired illness. The illness may arise from the urinary system itself, or it could be secondary to a disease of another bodily system. For example, in diabetes, the kidneys become vulnerable to hypertension.

## Urinary System of Human Body

- Celiac Trunk:
  - Left Gastric Artery
  - Splenic Artery
  - Common Hepatic Artery

- Right Suprarenal Gland
- Right Inferior Suprarenal Artery
- Minor Calyx
- Major Calyx

- Renal Hilum  
(including renal artery, vein, and ureter)

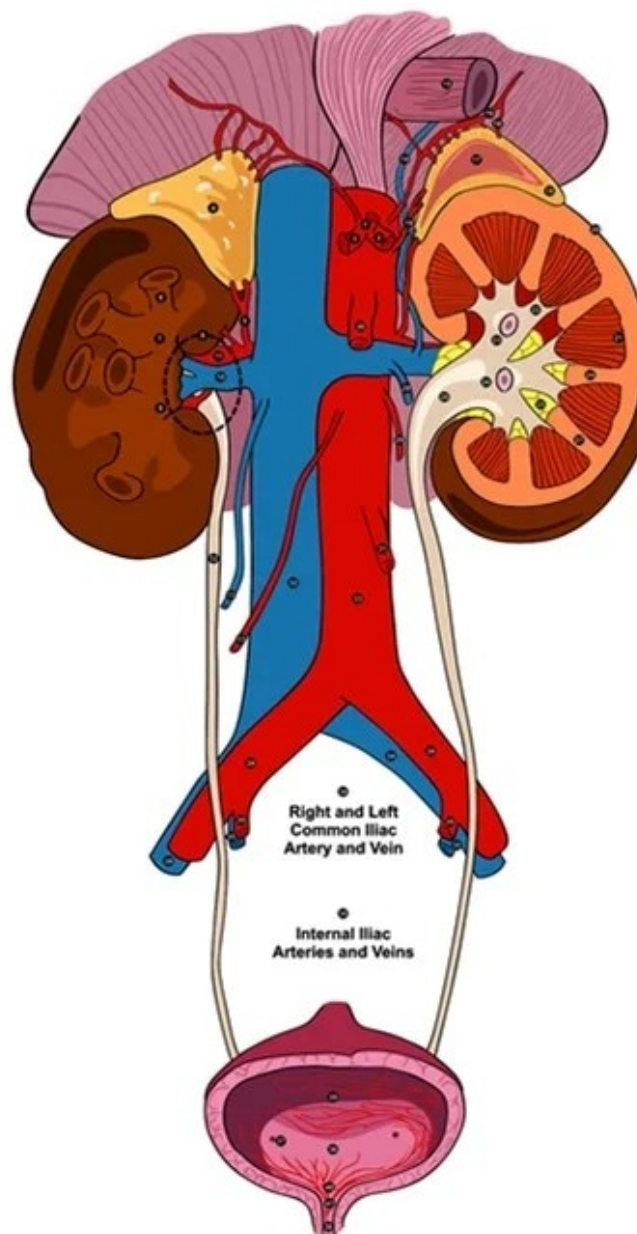
- Renal Pelvis

- Renal Vein
- Renal Artery
- Ureter

- Right Gonadal  
(testicular or ovarian artery and vein)

- Interureteric Fold

- Opening of Right Ureter
- Urethra



- Left Inferior Phrenic Vein
- Esophagus  
(entering through esophageal hiatus)

- Left Suprarenal Arteries  
(from inferior phrenic artery)

- Left Suprarenal Gland:
  - Medulla
  - Cortex
- Left Middle Suprarenal Artery

- Fibrous Capsule
- Renal Pyramids (medulla):
  - Base of Pyramid
  - Minor Calyx
  - Major Calyx

- Cortex (renal column)

- Renal Sinus

- Renal Pelvis

- Renal Column (of Bertini)

- Infundibulum

- Left Gonadal  
(testicular or ovarian artery and vein)

- Superior Mesenteric Artery

- Inferior Mesenteric Artery

- Inferior Vena Cava

- Abdominal Aorta

- Urinary Bladder:

- Fundus of Bladder
- Trigone of Urinary Bladder
- Neck of Bladder

*Urinary Renal System of Human Body. Image Credit: Udaix / Shutterstock*

## Kidney Disease

The kidneys represent a central organ of the urinary system. Disease of the kidney can lead to renal failure, which is a serious, life-threatening condition, and the etiology can be divided into pre-renal, intrinsic and post-renal failure.

Renal failure that occurs as a result of impairment of the blood supply to the functional kidney cells (nephrons) is known as pre-renal failure. Diseases causing pre-renal failure include renal artery stenosis, intravascular volume

depletion, relative hypotension, compromised cardiac output, as well as hepatorenal syndrome.

Intrinsic renal failure is caused by diseases of the functional tissue of the kidney, or the parenchyma. Forty-five percent of intrinsic acute renal failure is caused by acute tubular necrosis.

Post-renal acute kidney failure is caused by an obstruction of the urinary tract by an object such as a clot, a kidney stone, or a tumor. Almost twenty percent of community-acquired renal failure can be a result of some process that results in post-renal etiology of kidney disease.

Urologic diseases affecting parts of the urinary system other than the kidneys include urinary tract infections, benign prostatic hyperplasia, obstructions of the urinary ducts, and malignancies of various localizations.

## Diagnosis

Blood tests for urea and serum creatinine can indicate the functional status of the kidneys, potentially identifying the presence of a renal disease. Urinalysis is used to check for infection or high levels of protein indicating a problem. The flow of urine from the bladder can be measured by urodynamic testing, while ultrasound is used for imaging studies of the kidneys and the bladder.

## Treatment

Urologic diseases have many potential treatments, some of them making use of newer technologies. Minimally invasive surgeries are now available for kidney disorders, prostate, and reproductive systems - including laser prostatectomy.

Microwave therapy is a procedure used for treatment of disorders of the lower urinary tract caused by benign prostatic hypertrophy. It is carried out by insertion of a catheter into the bladder to position a microwave antenna near the prostate gland. The microwave antenna then safely heats and destroys prostate tissue.

Another newer treatment that is available in the area of urologic disease is laser therapy for kidney stones. Kidney stones are formed from crystals of calcium, ammonia, urea, and other substances that build up over time. They are most

common in men between 30 and 60 years of age. The laser is delivered by a fine wire, guided by a tiny camera that can reach the stones without invasive surgery and break them apart, so that they can pass out of the body.

## Sources

- <https://www.niddk.nih.gov/health-information/urologic-diseases>
- <https://www.ncbi.nlm.nih.gov/pubmed/2256104>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3895370/>
- [www.clevelandclinicmeded.com/.../](http://www.clevelandclinicmeded.com/.../)
- <http://www.mayoclinic.org/tests-procedures/tumt/home/ovc-20233737>
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## Further Reading

- [All Urology Content](#)
- [What is Urology?](#)
- [Types of Urodynamic Test](#)
- [What Happens During Urodynamics?](#)
- [Urinary Problems in Children](#)

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**Written by**

**Dr. Catherine Shaffer**

Catherine Shaffer is a freelance science and health writer from Michigan. She has written for a wide variety of trade and consumer publications on life sciences topics, particularly in the area of drug discovery and development. She holds a Ph.D. in

Biological Chemistry and began her career as a laboratory researcher before transitioning to science writing. She also writes and publishes fiction, and in her free time enjoys yoga, biking, and taking care of her pets.