Urinary System

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The major function of the urinary system is to remove waste from the body, regulate fluids, and maintain electrolyte concentration.

Let's begin with organs of the urinary system –

The kidneys can be defined as two brownish bean shaped organs, located on each side of the spinal column. To me they resemble a kidney bean, in color and shape. The function of the kidneys are to remove waste products from the blood, as well as to maintain water and electrolyte balance. Sounds similar to filtering systems, doesn't it?

Within each kidney there are millions of nephrons. Nephrons are referred to as the urine producing unit of the kidney.

The glomerulus is a group of capillaries located the entrance of the nephron. This is where the process of filtering the blood and urine formation occurs.

The renal pelvis is a funnel-shaped reservoir that collects the urine and passes it to the ureters. The funnel looks like an upside down funnel that is used to put oil in your car.

The hilum is the area where the ureter leaves the kidney.

The ureters are two tube-like structures, approx 10 – 13 inches long. Ueters receive urine from the kidney and carry it to the bladder.

The urinary bladder is referred to as a muscular, hallow organ that temporarily holds urine. As it fills, the thick muscular wall becomes thinner and the organ increases in size. Think of it as if you were filling a balloon with water.

The urethra is also a tube like structure, where urine passes from the urinary bladder to the outside of the body. The urethra varies in length from male to female. In the female the urethra is approximately 1.5 inches in length. In the male the urethra is it approximately 8 inches in length and also serves the purpose of carrying sperm during intercourse.

The urinary meatus is the opening which urine passes to the outside of the body.

Now, let's take look at some common combining forms utilized in the urinary system:

albumin/o	albumin

azot/o	urea, nitrogen
blast/o	developing cell, germ cell
cyst/o & vesic/o	bladder, sac
glomerul / o	glomerulus
glyco/o, glycos/o	sugar
hydro/o	water
lith / o	stone
meat / o	meatus (opening)
nephro/o & ren/o	kidney
noct/i	night
olig / o	scanty, few
pyel/o	renal pelvis
son / o	sound
tom / o	cut, section
ureter/o	ureter
urethr/o	urethra
urin/o, ur/o	urine

Let's move on to some common suffixes for the urinary system:

-gram	record, radiographic image
-iasis, -esis	condition
-lysis	loosening, dissolution, separating
-megaly	enlargement

-ptosis	drooping, sagging, prolapsed *(I remember this one due to the fact that as you get older, they droop and sag and point to your toes)*
-rrhaphy	suturing, repairing
-tripsy	surgical crushing
-trophy	nourishment, development
-uria	urine, urination

And, here are some common prefixes we have discussed in the previous units:

an-	without or absence of
dia-	through, complete
dys-	painful, abnormal, difficult, labored
endo-	within
epi-	on, upon, over
eu-	normal or good
hyper-	above, excessive
hypo-	below, incomplete, deficient
intra-	within
meta-	after, beyond, change
neo-	new
pan-	all, total
para-	beside, beyond, around
per-	through
poly-	many, much
sub-	under, below

tachy- fast, rapid

Now, let's have some fun and start to break down our medical terms for the urinary system –

The first term is **cystitis**. We know that *itis* mean inflammation, *cyst/o*- means bladder or sac; so we have inflammation of the bladder.

Albuminuria – *uria* means urine or urination, *albumin/o* means albumin; so albuminuria means albumin in the urine.

Cystoscopy – *scopy* is visual examination, *cyst/o*- means bladder or sac; so a cystoscopy is a visual examination of the bladder.

Cystogram – *gram* is a radiographic image, *cyst/o*- means bladder or sac; so a cystogram is a radiographic image of the urinary tract. Also called an intravenous pyelogram (IVP).

Cystorrhaphy – *rrahapy* is suturing or repairing, *cyst/o*- means bladder or sac; so a cystorrhaphy is suturing of the bladder.

Hydronephrosis – *sis* is abnormal condition, *hydr/o* is water, *neph/o* is kidney; so hydronephrosis is an abnormal condition of water in the kidneys.

Lithotripsy – *tripsy* is surgical crushing, *lith/o* is stone; so lithotripsy is surgical crushing of a stone.

Meatotomy – *tomy* means to cut into or incision, *meat/o* means of the meatus; so a meatotomy is a incision into the meatus.

Meatoscope – *scope* is an instrument use for the visual examination, *meat/o* means of the meatus; so a meatoscope is an instrument used for visual examination of the meatus.

Nephrolithiasis – *iasis* is condition, *neph/o* is kidney, and *lith/o* is stone; so nephrolithiasis is a condition of stone(s) in the kidney.

Nephromegaly – *megaly* is enlargement, *neph/o* is kidney; so nephomegaly is enlargement of the kidney.

Nephroptosis – *ptosis* is drooping, sagging or prolapsed, *neph/o* is kidney; so nephroptosis is a drooping kidney.

Nephrostomy – *stomy* is creation of an artificial opening, *neph/o* is kidney; so a nephostromy is a creation of an artificial opening into the kidney.

Pyelolithotomy – *tomy* means to cut into or incision, *pyle/o* means renal pelvis, and *lith/o* means stones; so a pyelolithotomy is an incision of the renal pelvis to remove a stone.

The following are common abbreviations associated with the urinary system:

BUN	Blood urea nitrogen
cath	catheterization, catheter
ESWL	extracorporeal shock wave lithotripsy
HD	hemodialysis
IVU	intravenous pyelgram
IVU	intravenous urogram
SG	specific gravity
UA	urinalysis
UTI	urinary tract infection