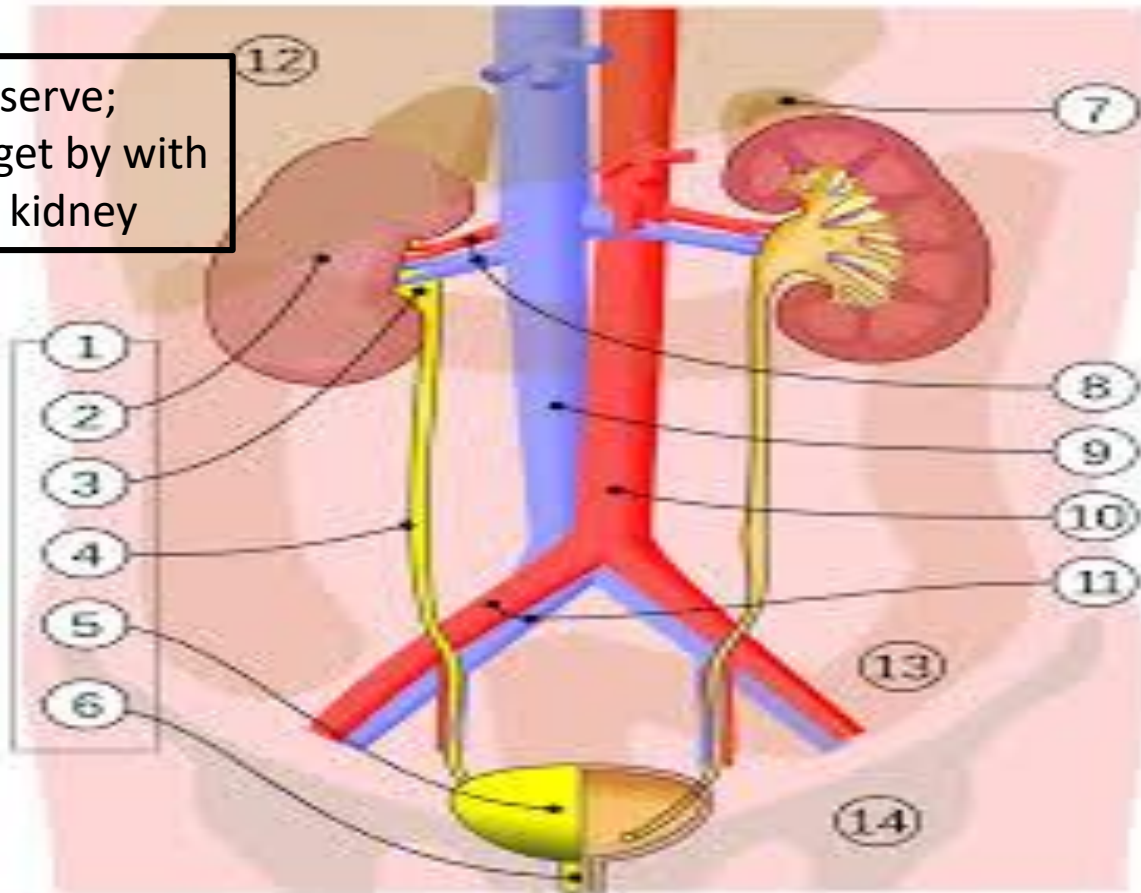


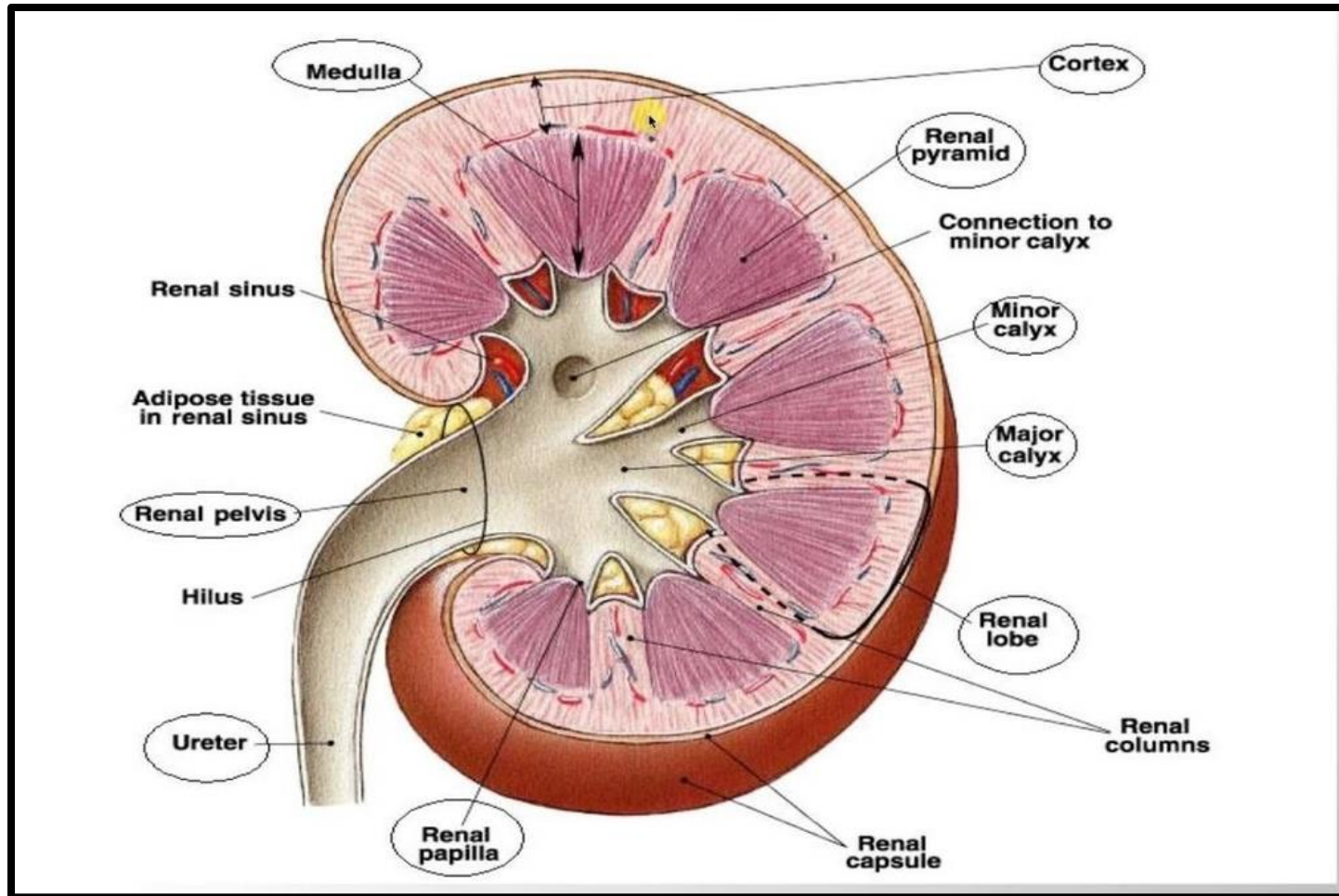
Genitourinary System

The Urinary System

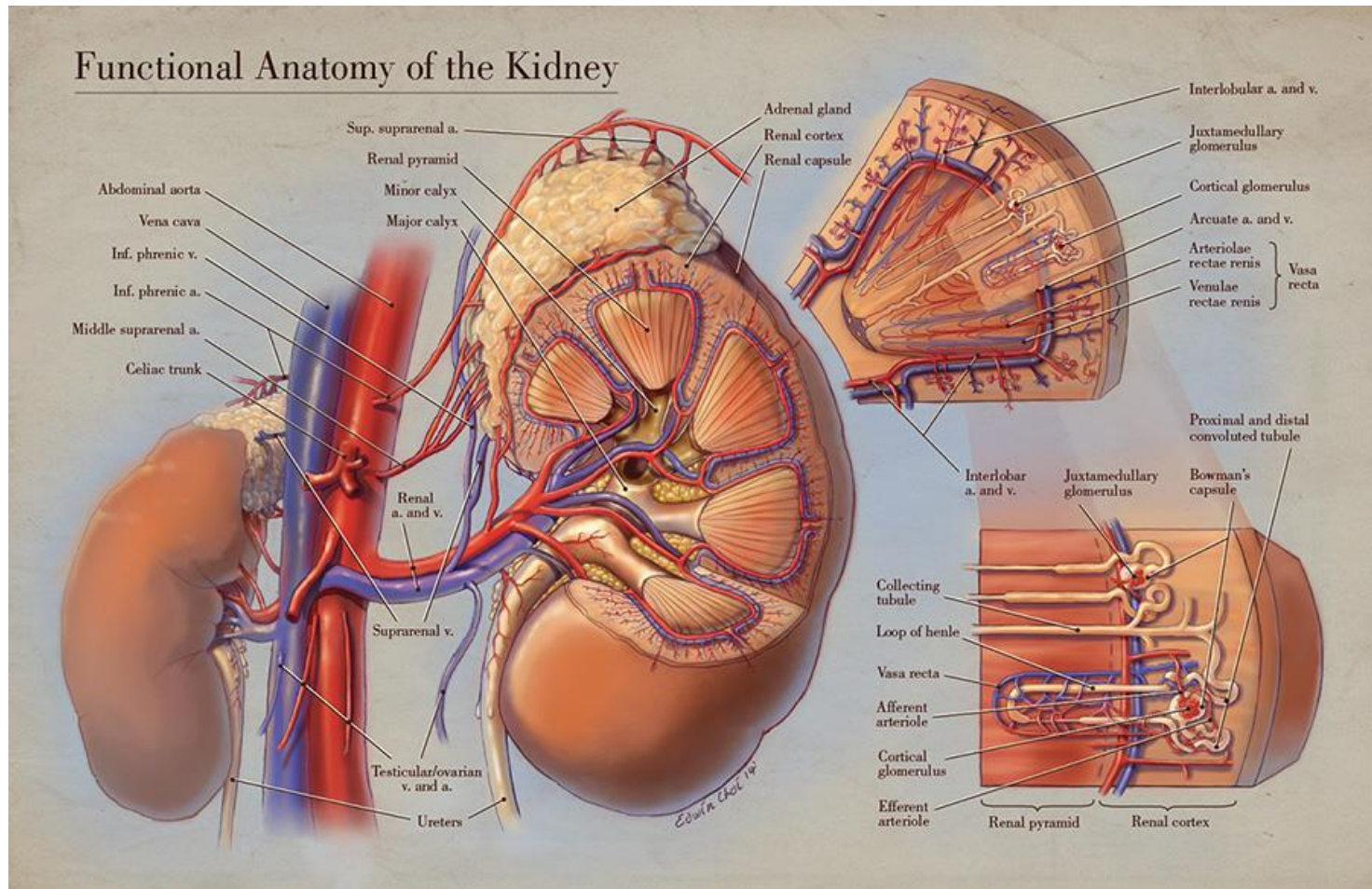
Renal Reserve;
You can get by with
 $\frac{1}{4}$ of one kidney



Renal Collecting System

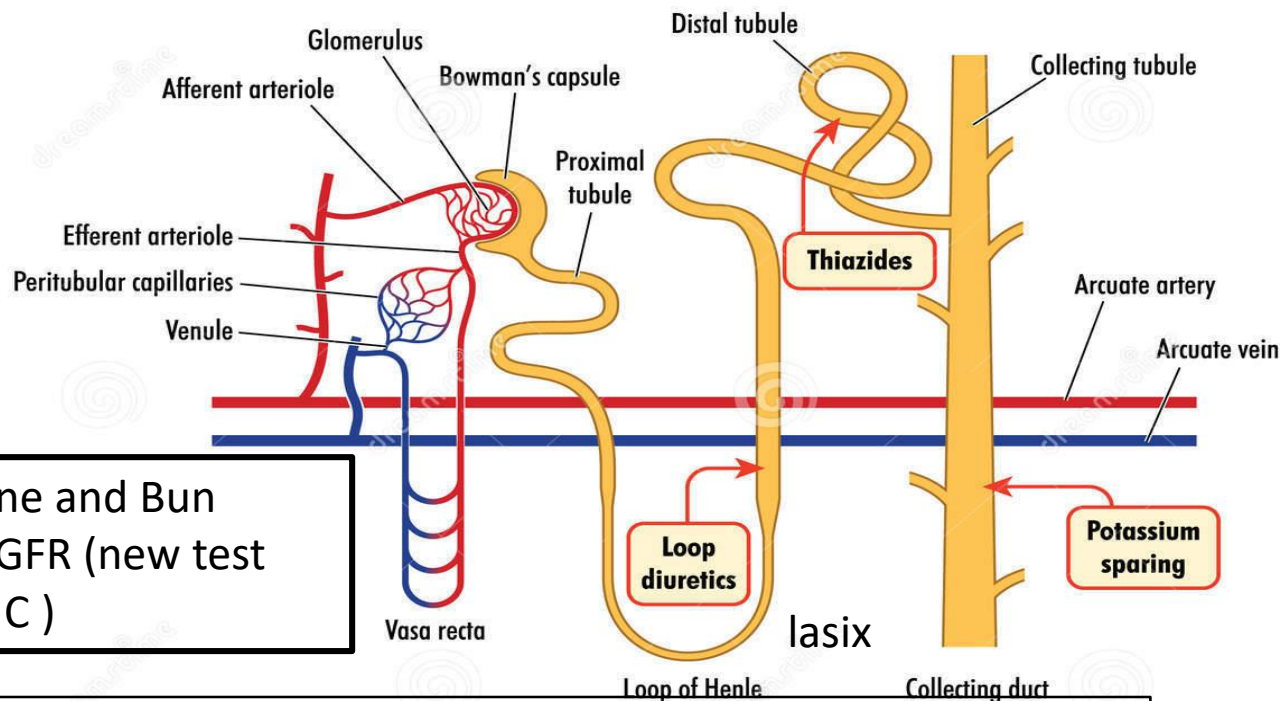


Renal Blood Supply and Anatomy



20 Percent of Cardiac output goes to the Kidney

Diagram of Renal Tubule/Nephron



Creatinine and Bun
Values: GFR (new test
cystatin C)

Cystatin C-an alternative to creatinine to evaluate renal function



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.

ID 41502329

© Legger | Dreamstime.com

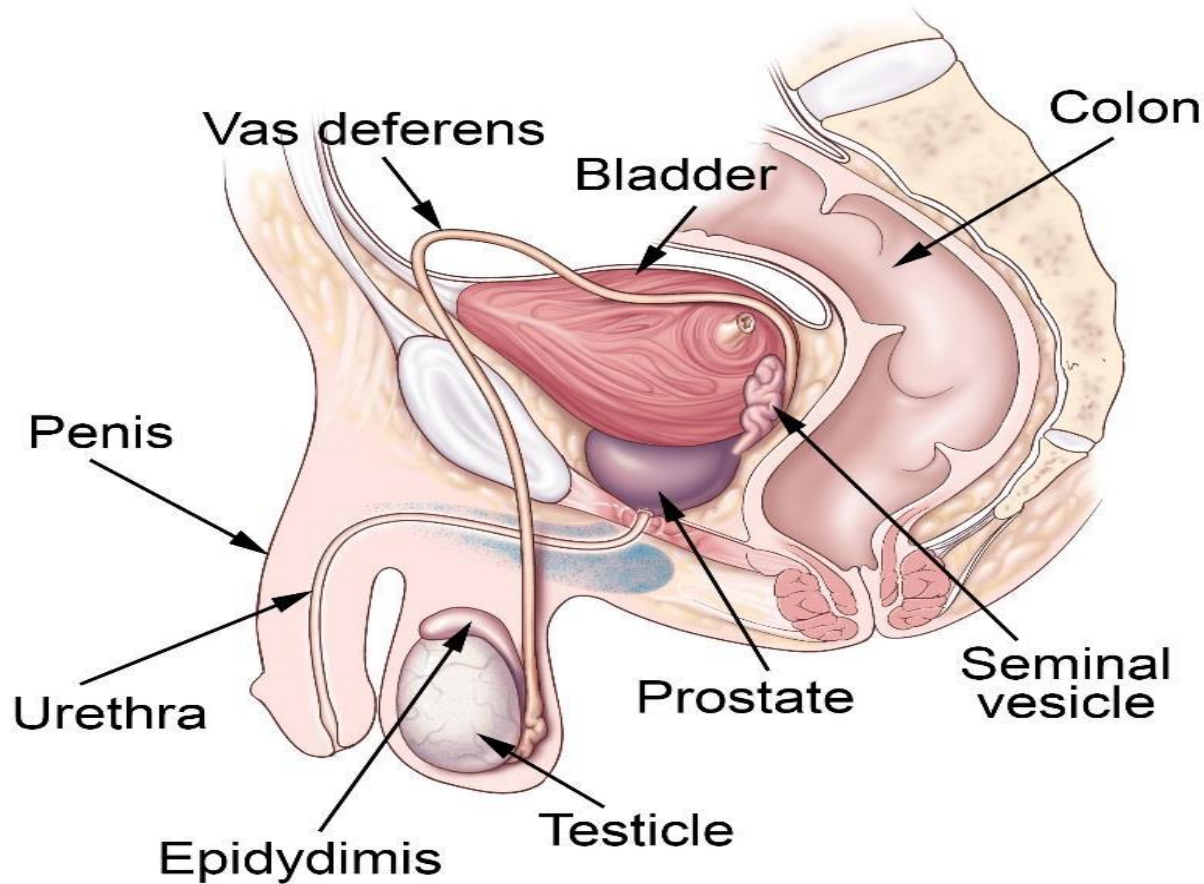
Functions of the Kidney

- ❖ Water and electrolyte balance (Na & K)
- ❖ Acid-base balance (Hydronium ion)
- ❖ Elimination of metabolic waste like urea, creatinine, drugs and toxins
- ❖ Blood pressure regulation with renin/angiotensin
- ❖ Erythropoietin hormone that stimulates RBC production

Affliction of the Kidneys and Urinary System

- Pyelonephritis
- Cystitis more common in women/short urethra, contamination from vaginal flora.
- Kidney Stones (most calcium oxalate, often very small)
- Renal Cell Carcinoma (76,000 new cases and almost 14,000 deaths per year)
- Transitional cell bladder cancer (17,200 deaths per year: males 4/1 females; **cigarettes and chemical risk factors**)
- Uremia due to ESRD (age loss in GFR of 1 per year after age 40 and one million Americans are on dialysis)
- Glomerulonephritis
- Congenital conditions (solitary kidney, horseshoe kidney, polycystic kidney disease)

Male Reproductive System



Male Problems

BPH or benign prostatic hypertrophy (almost universal with obstructive voiding complaints as you age)

a. Conservative treatment is often quite effective

1. Alpha blockers medication
2. Anti-androgen medication (takes 3-4 months to shrink the prostate)

Surgical intervention when complaints: safe with good outcomes.

- a. Impacts quality of life (The AUA voiding score)
- b. Urinary retention develops
- c. Decline in renal function or renal failure

Many modalities to remove the obstruction (**TUR** or transurethral resection still the gold standard)

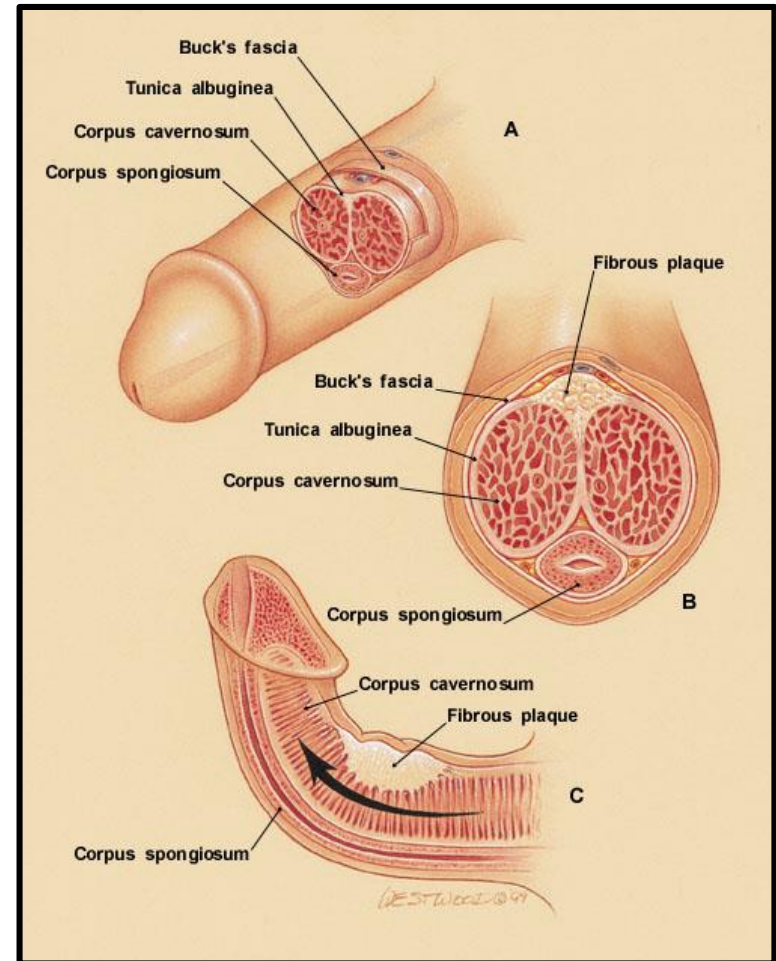
- Foley catheters; intermittent self-catheterization and UTI.

STD (sexually transmitted disease)

- Gonorrhea; over a million new cases a year; easily treated although some resistant strains.
- **Condyloma accuminata or genital warts (HPV)**—get vaccinated
- Molluscum contagiosum
- Syphilis, Chancroid, Granuloma Inguinale
- Nonspecific urethritis; chlamydia, trichomonas, and mycoplasma
- Herpes
- **HIV-no longer death sentence but expensive treatment that does not cure but makes the virus undetectable and non-transmittable.**

Peronei's Disease: recent ads on TV

- Deposition of normal scar tissue on dorsum of penis of unknown etiology (one half percent of men?)
- Associated with Dupuytren's contracture of the palm
- **Treatment:**
 1. Conservative and if penetration is achievable--no treatment.
 2. Surgical excision or injection with fibrinolytic substances in select cases; often poor results..



Erectile Dysfunction

- Psychological or organic; always a question that is probably irrelevant.
- Sexual functioning is a very durable function that is hard wired into old age
- Sexual identity probably occurs in intrauterine life. (LGBT-lesbian, gay, bisexual, or transgender-- gender dysphoria)
- Sexual mapping and addiction through positive reinforcement

A very complex multifaceted disorder

- Inherent sexual drive/ upbringing
- Male and female differences?
- Partner needs, morals, mood, privacy, expectations, reproduction, birth control and responsiveness
- **Performance anxiety (sex on demand) even one failure can be devastating and raise doubts)**
- Premature ejaculation
- **Very sensitive to negative reinforcement**
- Female sexuality and orgasm (frigidity)
- Experimentation and turn on and fantasy
- Age and comorbidities (youth is wasted on the young)

Diagnosis;

- History: duration and descriptions of the problem
- Is it partner specific?
- How about nocturnal erections?
- Erections with masturbations and pornography
- Is it a problem with premature ejaculations?
- History of medical problems

- Physical exam; rare congenital abnormalities
- Penile blood pressures
- General medical conditions like diabetes, obesity, heart disease.

Treatment of ED

Mainstay of treatment is listening and reassurance; often helpful when appropriate if you talk with the significant other.

Try to afford the patient an organic explanation for the problem (prostatitis) to take the pressure off of performance.

- The modern miracle of Viagra, Cialis and Levitra: cause the local release of NO, inhibition of PDE5 and vasodilatation
- Injection of penis with Prostaglandin E to produce erection.
- Penile prostheses of various types (rods and pumps)
- VED-vacuum erectile device
- Testosterone and Vitamin E
- Lidocaine cream for premature ejaculation

Priapism—an prolonged erection that become painful with time and can result in impotence if left untreated.

Acute and Chronic Prostatitis

- Acute bacterial prostatitis can be serious with spiking fever and even sepsis. Treatment with prolonged courses of antibiotics.
- Iatrogenic bacterial prostatitis— usually from transrectal needle biopsy to detect cancer.

- Chronic Prostatitis/ prostatic pain causing pelvic area pain and lower urinary tract symptoms generally in younger men.
- Prostatic fluid generally unremarkable
- Treatment;
 1. Prostatic massage
 2. Reassurance/counseling
 3. NSAIDS
 4. Antibiotics
 5. Regularity in sexual activity

Deaths in 2019 related to cancer

- 139,603 people died of lung cancer (64,743 females and 74,860 males).
- 51,896 people died of colorectal cancer (24,222 females and 27,674 males).
- 45,886 people died of pancreatic cancer (22,154 females and 23,732 males).
- 42,281 females died of breast cancer.
- 31,638 males died of prostate cancer.
- 27,959 people died of liver and intrahepatic bile duct cancer (9,267 females and 18,692 males).

About 21,000 from Renal Cell and Bladder cancer a year combined

Cancer of the Prostate; most common cancer in men

- Only 11 percent of men are clinically diagnosed with prostate cancer (350,000 diagnosed and 33,000 deaths annually) but the majority of men will have foci of prostate cancer microscopically.
- Diagnostic screening with PSA (and DRE): if elevated-- followed by trans-rectal biopsy with results of Gleason Score (1-5/1-5) and staging with bone scan and CT.
- The PSA is a nonspecific test and is elevated in all inflammatory conditions of the prostate.
- Outside of Gleason scores urologist are hard pressed to determine if your prostate cancers will behave benignly or spread aggressively.
- Higher risk with family history, African-Americans, BRAC-2 gene.

In most instances a relatively benign cancer that, in my opinion, is over treated and to consider total prostatectomy (radical prostatectomy, radiation Rx, Brachytherapy) the patient should have a life expectancy of **10-15 years**.

- Most prostate cancers respond to bilateral orchiectomy or drugs that suppress the secretion of Testosterone.

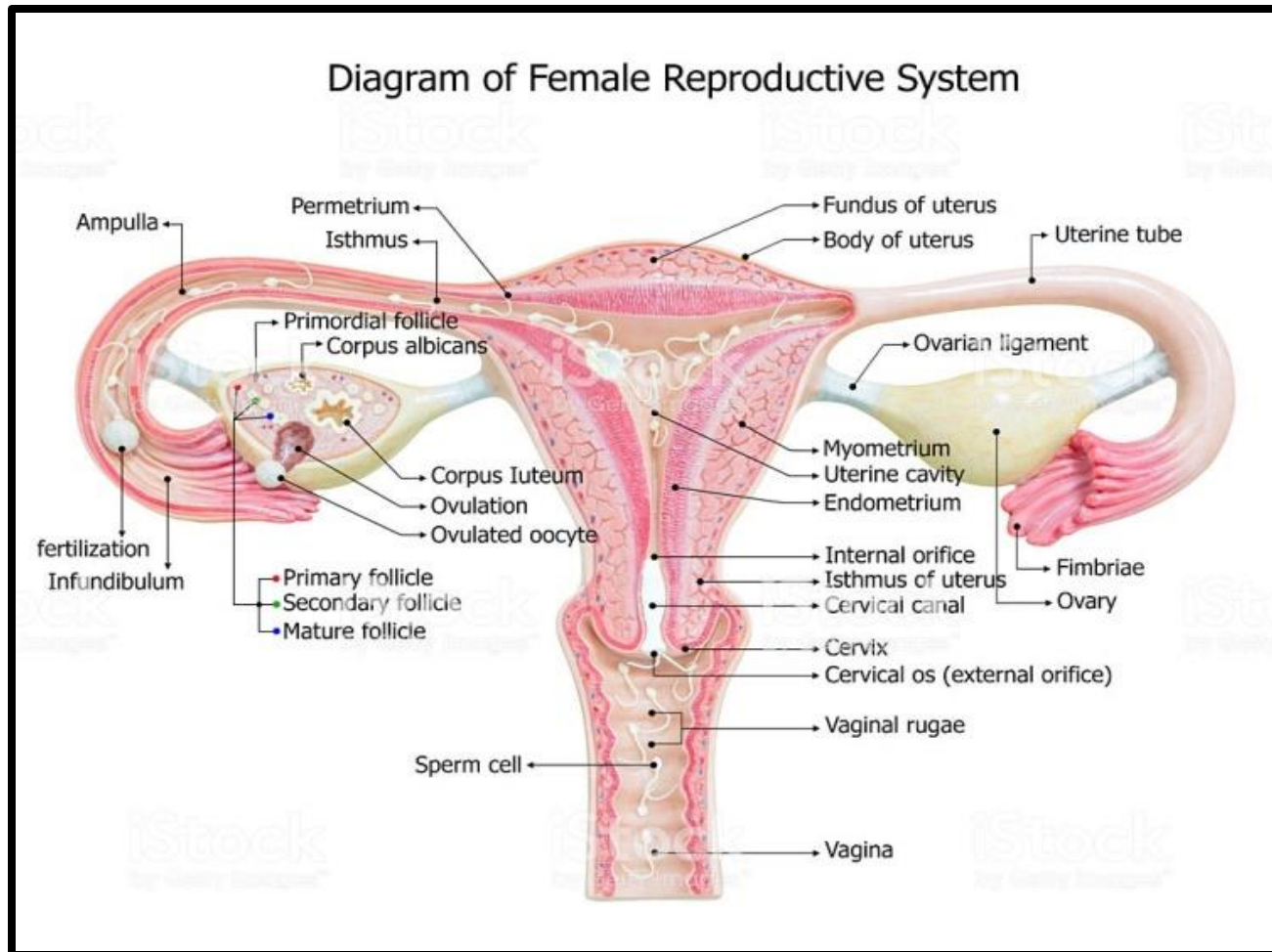
Cancer of the testicle; a modern miracle of treatment success

- A cancer in young adult males that in 1970 had a 2 year survival rate of 23 percent, today due to early detection and imaging plus new treatments with radical orchidectomy, **chemotherapy**, and radiation its has a 95 percent five year survival rate. Only 400 men die yearly.
- Seminoma, teratoma, embryonal cell ca and chorio-carcinomas.
- Good Tumor markers-(AFP, HCG and LDH)

Kidney Stones

- Usually Calcium Oxalate (Some inherited factors and southeast United States is the stone belt)
- Renal colic occurs when one of these small spiculated stones/crystals blocks the ureter (number 10 on the pain scale). Most stones pass spontaneously with patience and pain medicine. More men than women.
- If spontaneous passage does not occur the urologist can extract the stone (usually with a basket, or break up the stone with laser or ultrasound) or employ ESWL.

Female Reproductive System



Common Causes of Urinary Incontinence

- Urinary Stress Incontinence (pelvic relaxation in women due to pregnancies and post prostatectomy in men) 30 % of 80 year old women have incontinence.
- Urge incontinence (unstable or overactive bladder)
- Overflow incontinence due to urinary retention
- Neurologic deficits (spina bifida, dementia, spinal cord injuries, neurogenic bladder)
- Enuresis (stop between ages 5 and 6-an issue of maturation)

Treatment of total urinary incontinence--the nursing headache in the bedridden cognitively impaired patient: condom catheter, diapers, timed voiding, indwelling Foley catheter, intermittent straight catheterization, placement of a suprapubic tube, and other surgical remedies

Overactive Bladder Disorder (OBD) and Urinary Stress Incontinence (Pelvic Relaxation)

OBD treatments:

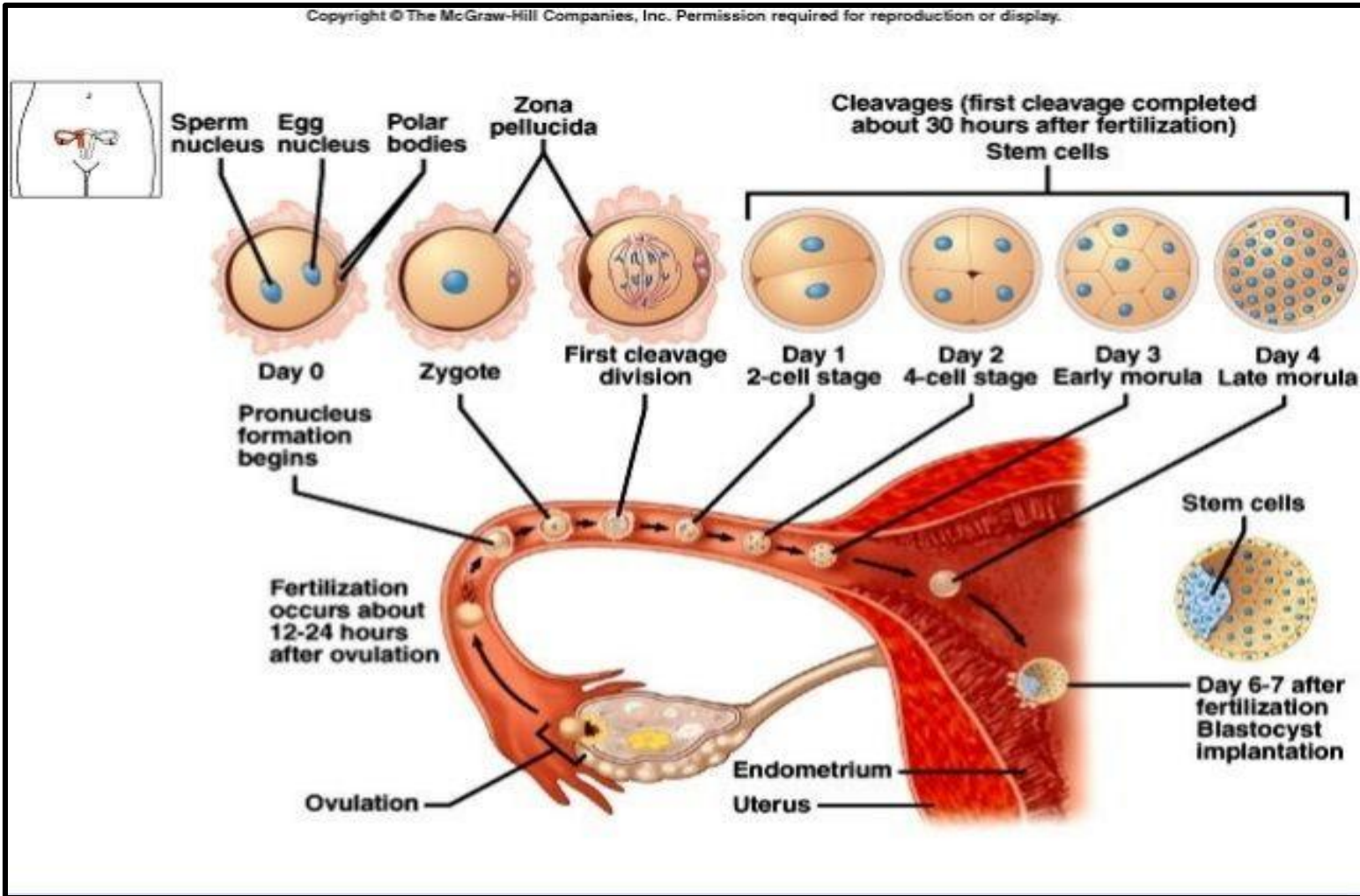
- Timed Voiding
- Anticholinergics
- Sacral and tibial nerve stimulation
- Botox injections
- Sacral neuromodulation (S-3 electrode through foramen in two stages)
- New expensive M-3 selective antagonists and Beta 3 adrenergic agonists.

Urinary Stress Incontinence:

- Pessary and perineal exercises (Kegel)
- Urethral occlusive inserts (like large tampon)
- Estrogen vaginal cream
- Urethral suspension procedures and Sling procedures; most commonly now is the transvaginal placement of a mid-urethral sling.

The Travels of the fertilized ova

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.



Spontaneous Abortion

One in 3 pregnancies end spontaneously in the first trimester (“early pregnancy loss”), affecting 1 million patients in the US annually. The most common etiology of early pregnancy loss is fetal chromosomal abnormalities, accounting for more than two-thirds of pregnancy losses between 6 and 10 weeks’ gestation. Advancing maternal age, prior pregnancy loss, teratogenic exposures, and maternal endocrine or autoimmune conditions, such as diabetes, hyperthyroidism, and systemic lupus erythematosus, are risk factors.

The blood placental barrier

- The greatest risk of adverse drug effects on the fetus is probably during organogenesis which takes place in the first trimester.
- **women shouldn't drink any alcohol during pregnancy.**
- Drugs entering the fetus depends on molecular weight and lipid content.

Cervical Cancer—13,000 cases a year

- HPV (types 16 & 18) responsible for 70 percent of cases.
- HPV vaccination (females and males?) with Gardasil 9 at age 11 or 12.
- Pap smears and HPV Testing on cervical smears
- Colposcopy
- Why don't PCPs do pelvic examinations and rectal exams for that matter?