



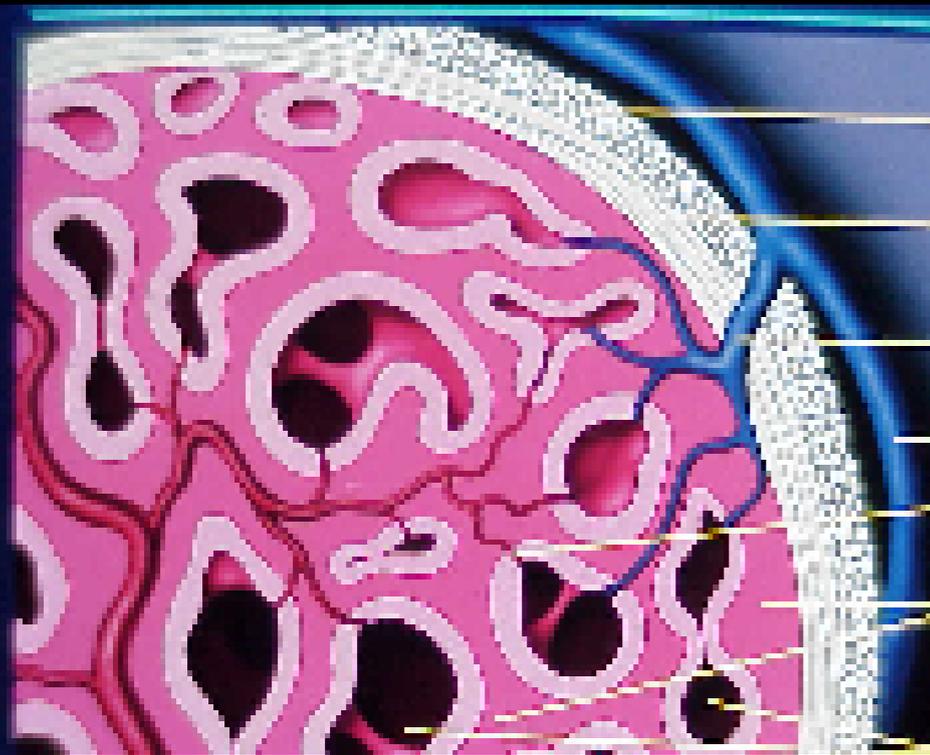


Male Erectile dysfunction

Jose E. Silva, MD, MPH
Urology
Adventhealth
Apopka & Winter Garden

What is ED?

- ED is the consistent inability to sustain an erection sufficient for sexual intercourse
 - Total inability to achieve erection
 - Inconsistent ability to achieve an erection rigid enough for penetration
 - A tendency to sustain only brief erection



Outer longitudinal

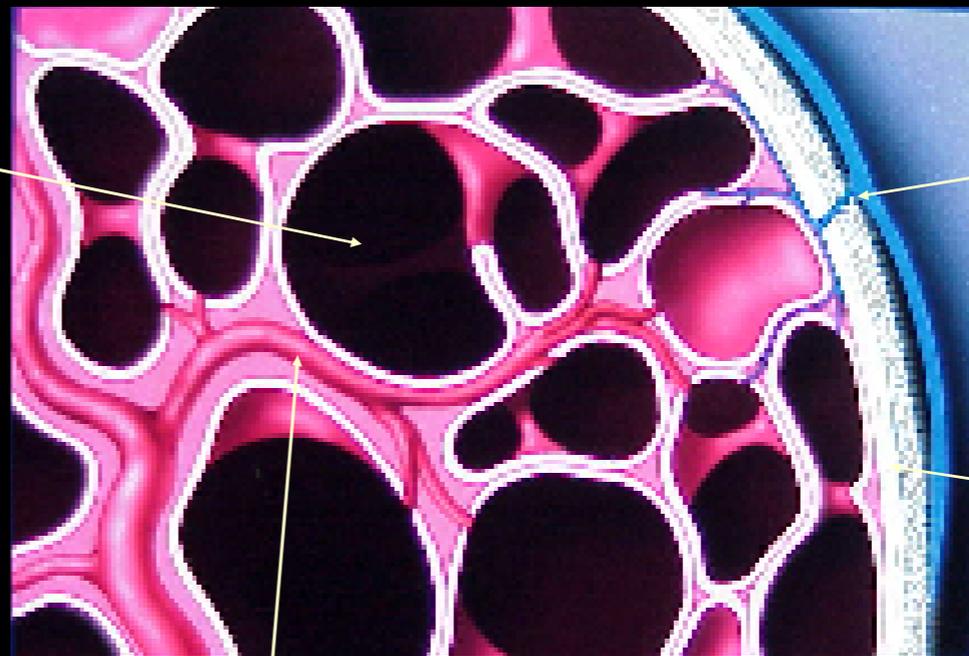
Inner circular

Emissary Vein

Cavernosal smooth muscle

Endothelial sinusoid

Sinusoid



Emissary vein

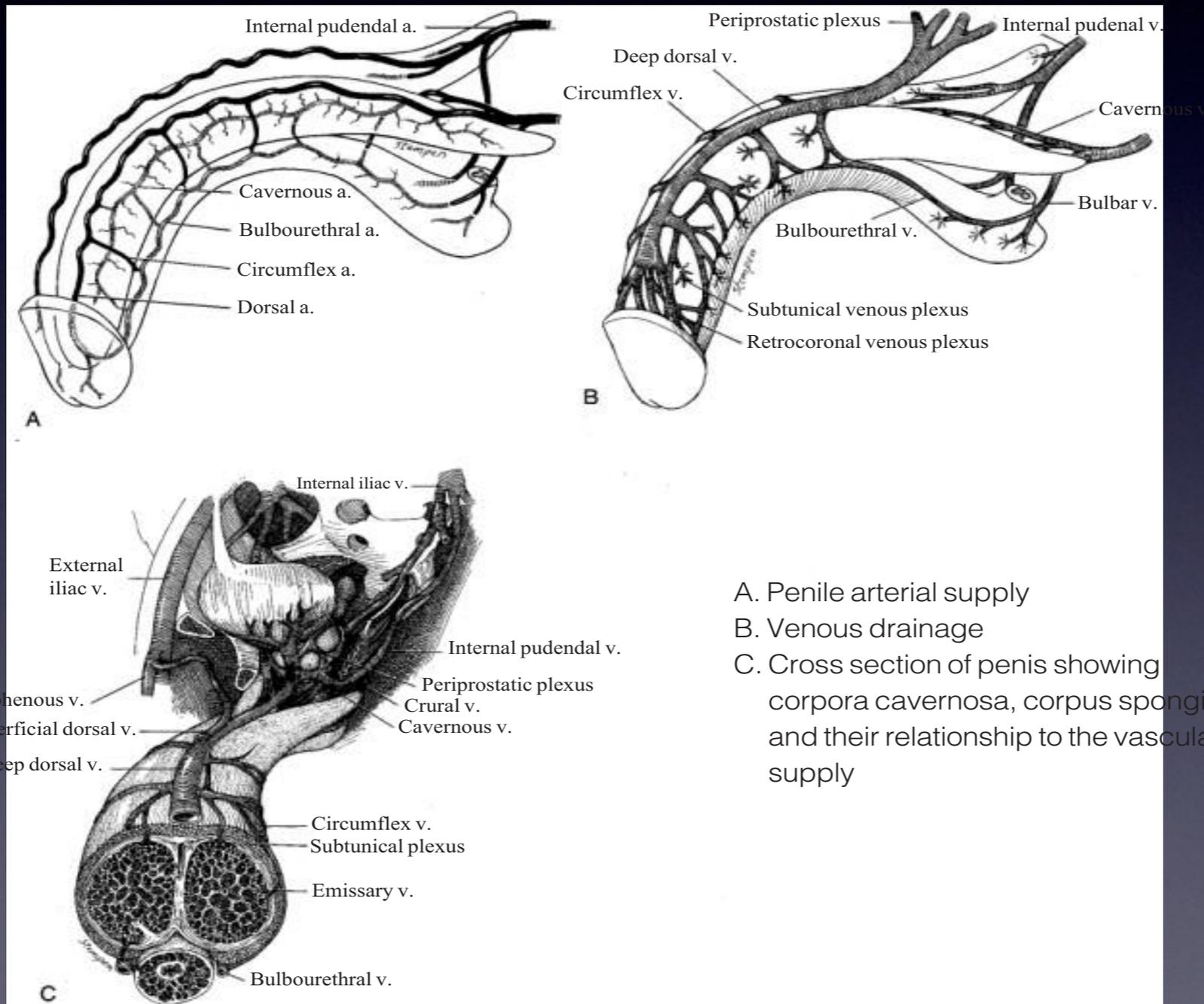
Tunica

Albuginea

Helicine arterioles

Vascular Supply

Penile anatomy and vascular supply



Neuroanatomic Considerations

- erectile: level of S2-4
- activation of parasympathetic nerve causes vascular changes that lead to erection
- Detumescence mechanism is under control of the sympathetic nervous system (T10-L3)
- Ejaculation is different neurogenical T10-L3
- Location of sympathetic chain (lateral to aorta) prone to damage in RPLD, aortic sx

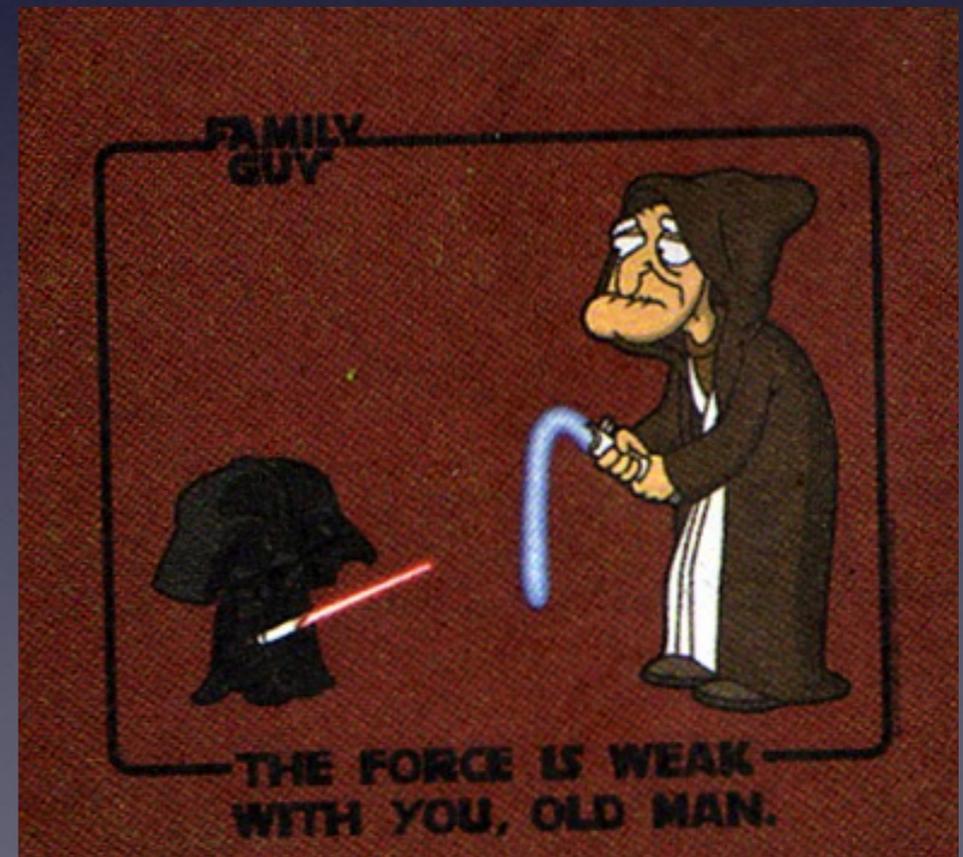
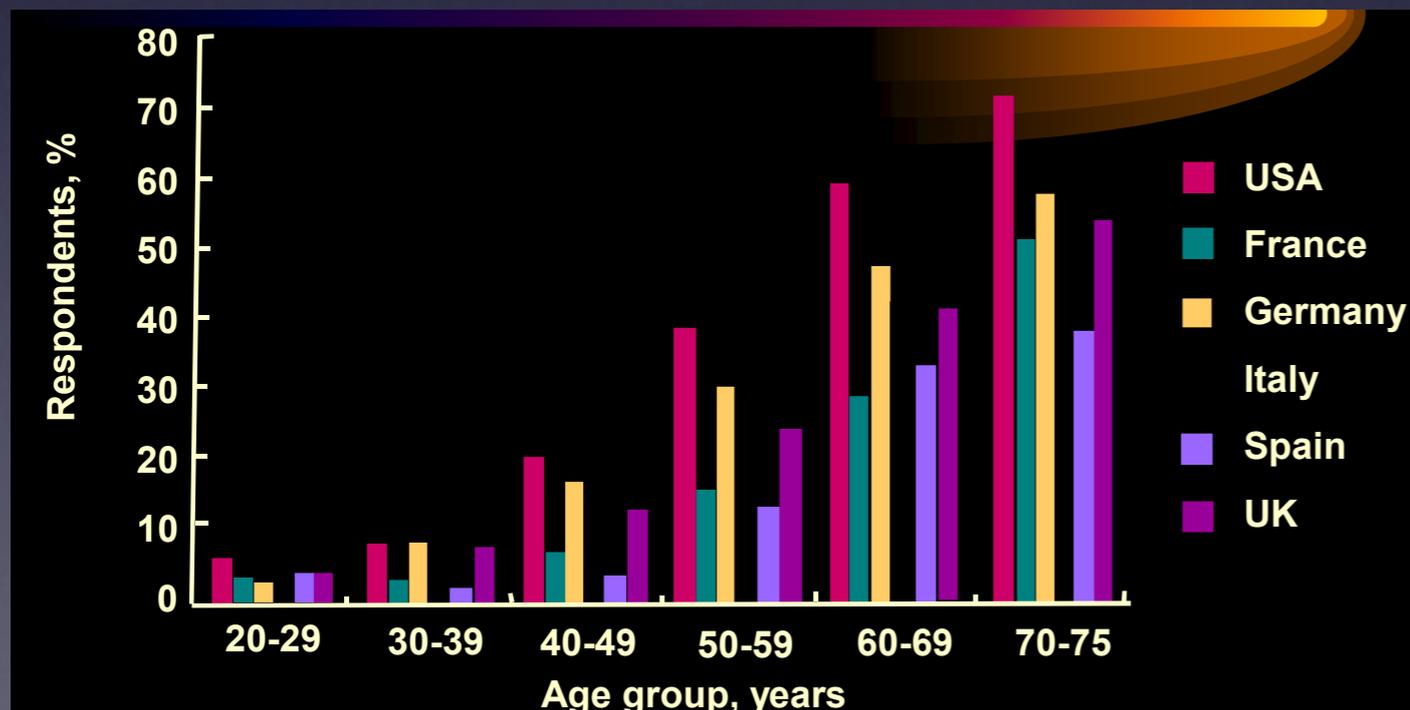
Neuroanatomic Considerations

- sexual activity initiated in CNS
 - Median pre-optic area
 - Nucleus paragigantocellularis
- serotonin, norepi, epi: inhibit libido, erectile response, and ability to climax
- antidepressants increase CNS serotonin or nor epi causing sexual dysfunction
- MC sexual adverse of SSRI is anorgasmia (good for premature ejaculation!)



ED epidemiology

- 50% of men 40-70 some sort of ED
- ED correlates with age, HTN, cardiovascular disease



Types of ED

- **Arteriogenic:** cannot increase blood vessels 20-40 fold. (ASD, DSVD, trauma)
- **Veno-occlusive dysfunction:** lack of smooth muscle relaxation in the cavernosal bodies (ischemia, trauma, diabetic microneuropathy, Peyronies)
- **Neurogenic:** diabetic, alcohol, MS, spinal cord injury, RRP
- **Hormonal:** testosterone deficiency leads to decrease production of NOS, NO, cGMP

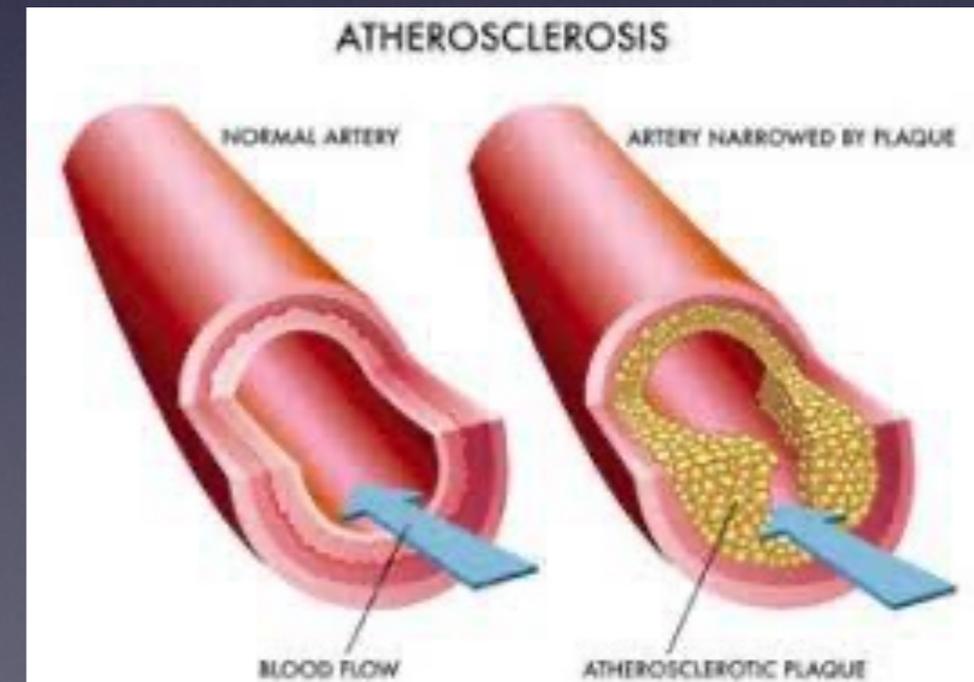
Types of ED

- **Anatomic:** Peyronie's Disease
- **Drug-induced:** anti-HTN, antidepressants
- **Psychogenic:** 90% organic, rest psychogenic



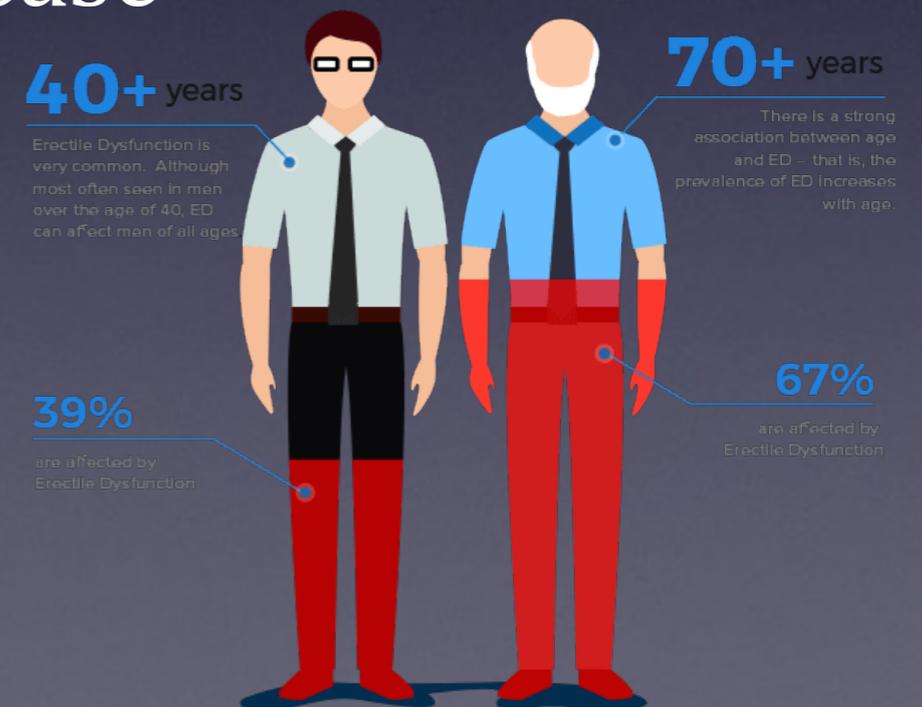
ED can be a marker for CVD

- The penis is a vascular organ
- Loss of erectile rigidity is the earliest sign of endothelial dysfunction
- Endothelial dysfunction is an early marker for CVD
- ***** arteries to the penis are smaller



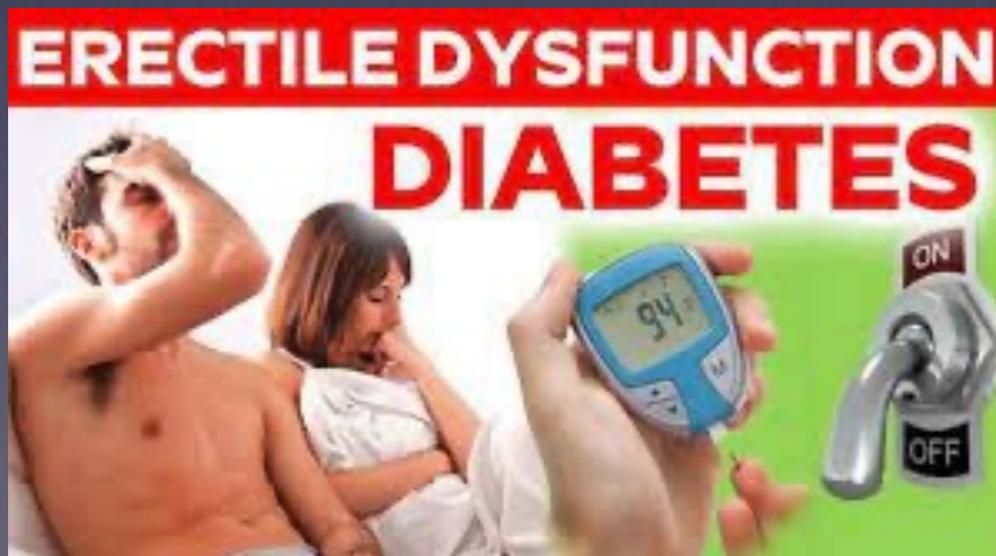
Risk factors for ED

- The process of aging increases your risk for ED
 - Progressive decline of sexual physiologic function
 - Increase prevalence of chronic disease
 - Psychological issues
 - Relationship and partner issues



DM and HTN

- Factors impacting ED in patients with DM
 - Increase age
 - Increase duration of diabetes
 - Poor glycemic control (HbA1c)
 - Complications of diabetes (neuropathy, vascular disease)
- Hypertension
 - 104 HTN patients (34-75 years old)
 - 68 % reported some ED
 - 45 % severe ED



Drugs Associated with Erectile Dysfunction

CLASS	SPECIFIC AGENTS
Antihypertensives	Thiazide diuretics, nonselective β -blockers
Antidepressants	Tricyclics; selective serotonin reuptake inhibitors
Antipsychotics	Phenothiazines
Antiandrogens	Nonsteroidal (flutamide); steroidal (cyproterone acetate); luteinizing hormone-releasing hormone analogues
Antiulcer drugs	Histamine H ₂ receptor antagonists (cimetidine)
Cytotoxic agents	Cyclophosphamide, methotrexate
Opiates	Morphine

Major Erectile Dysfunction Risk Factors

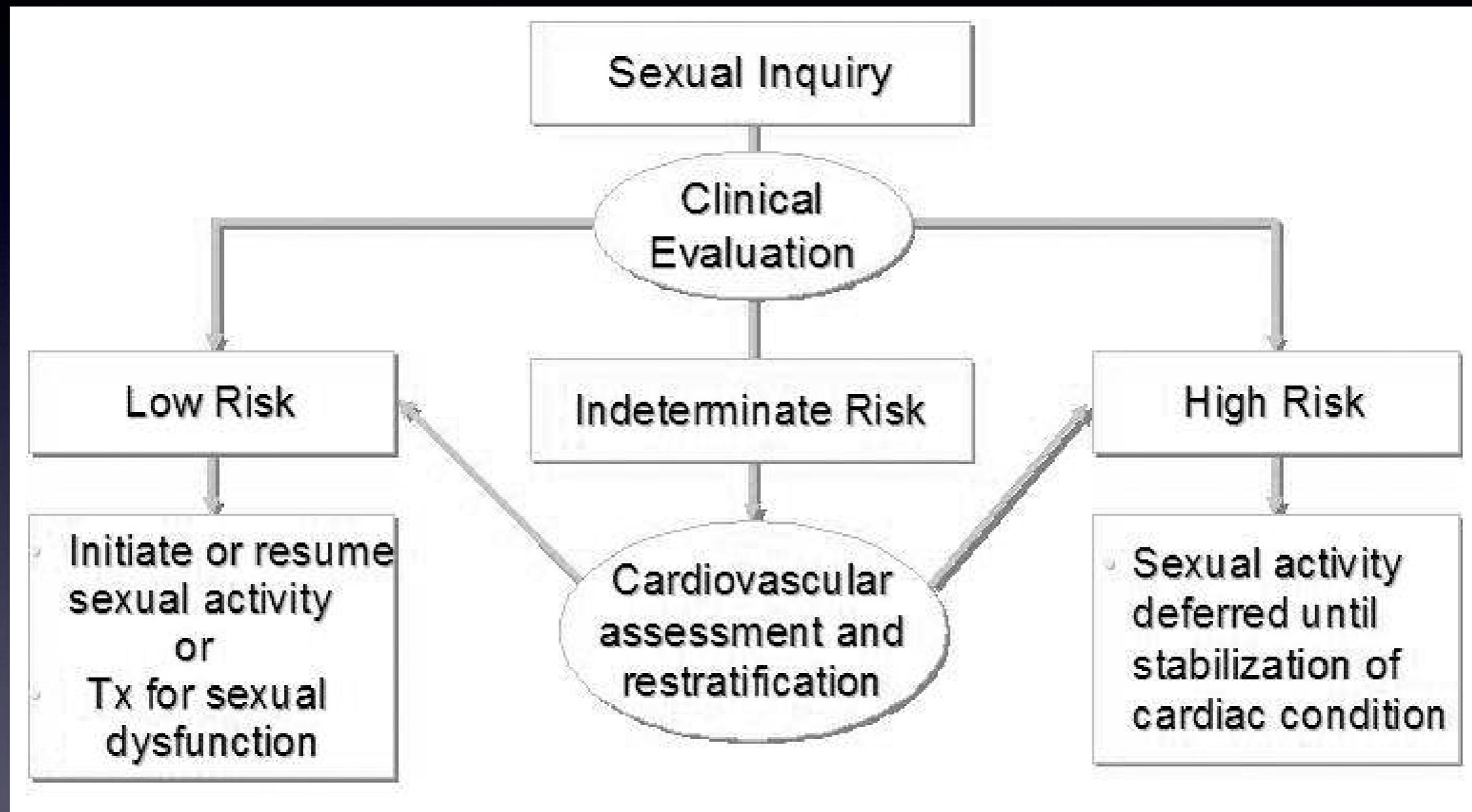
CONDITION	MULTIVARIATE ADJUSTED ODDS RATIO
Diabetes mellitus	2.9
Hypertension	1.6
Cardiovascular disease	1.1
Hypercholesterolemia	1.0
Benign prostate enlargement	1.6
Obstructive urinary symptoms	2.2
Increased body mass index (>30 kg/m ²)	1.5
Physical inactivity	1.5
Current cigarette smoking	1.6
Antidepressant use	9.1
Antihypertensive use	4.0

Smoking

- Smoking increases risk of moderate to complete ED 2 fold
- Association between smoking and ED is likely due to impairment of endothelium-dependent smooth muscle relaxation
- Lower prevalence of ED in former smokers compared with current smokers



**Princeton Guidelines algorithm for interaction between
erectile dysfunction treatment and cardiac risk**



Evaluation

1. Organic vs Psychogenic
2. cardiac risk (3-5 Mets)
3. Physical examination
4. Labs: testosterone level should be performed in all men presenting with ED, then LH, prolactin, thyroid, lipid profile, A1C

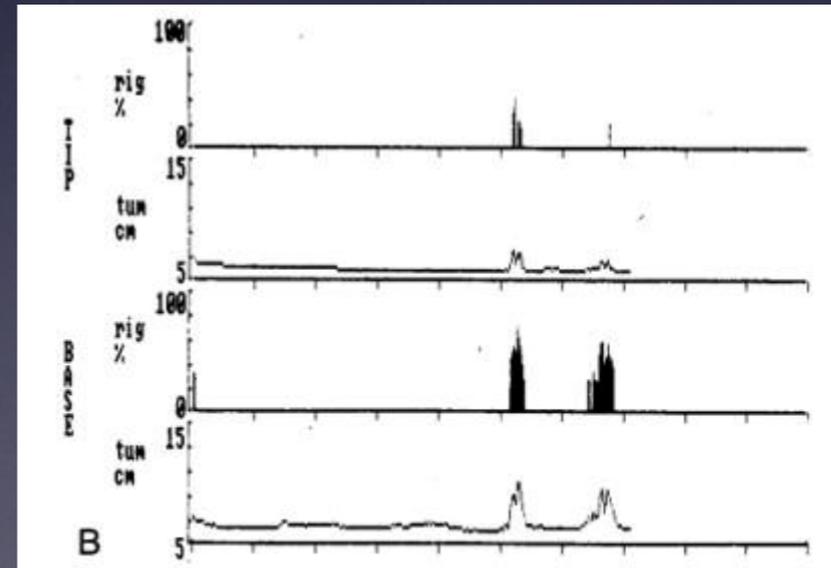
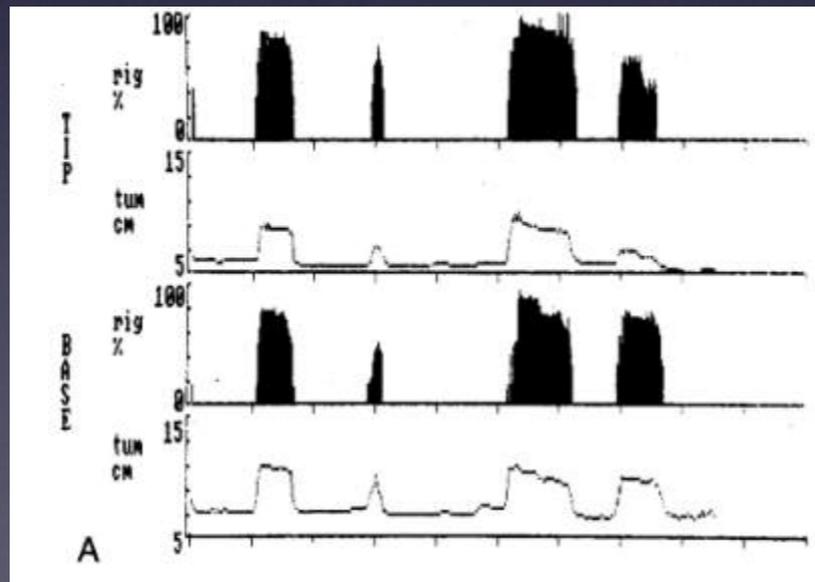


SPECIALIZED TESTING



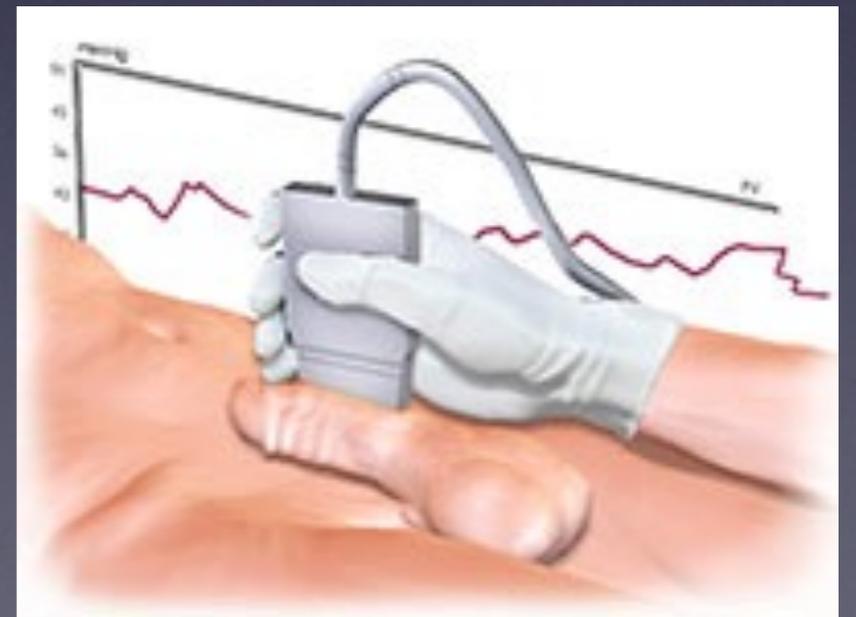
Nocturnal penile Tumescence

- organic vs psychogenic ED.
- Needs to have REM.
- Rigid Scan not measures REM



Duplex doppler ultrasonography

- ability to visualize artery, identification of Peyronie's plaques, direct measurement of BP after pharmacologic injection
- peak systolic blood greater than 25-35cm per second in cavernosal artery normal inflow
- end diastolic flow should be less than 3cm per second and resistive index > 0.85
- epinephrine causes false positive



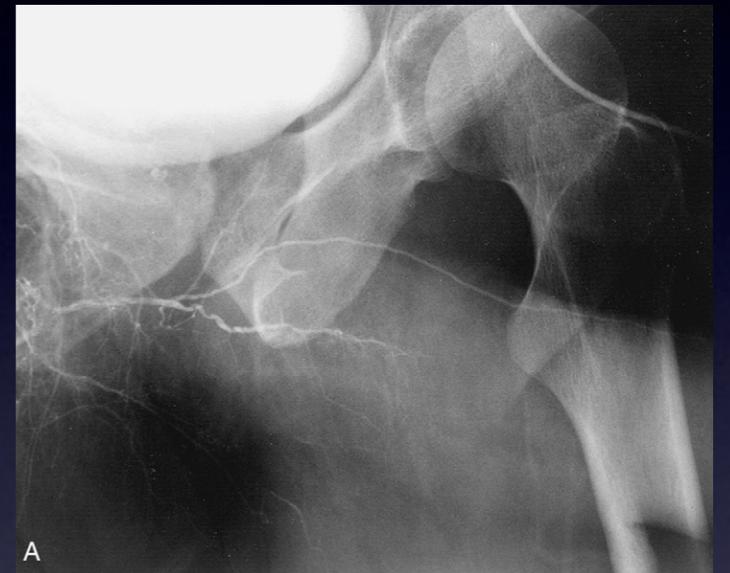
Cavernosometry / cavernosography

- Test is invasive, with 2 needles in the penis, 1 for perfusion of medication and saline, and the other for pressure measurement



Penile arteriography

- internal pudendal system
- reserved for patient whom penile revascularization is being considered
- examine potential donor arteries
- presence or absence of generalized atherosclerosis
- angiographers with experience!



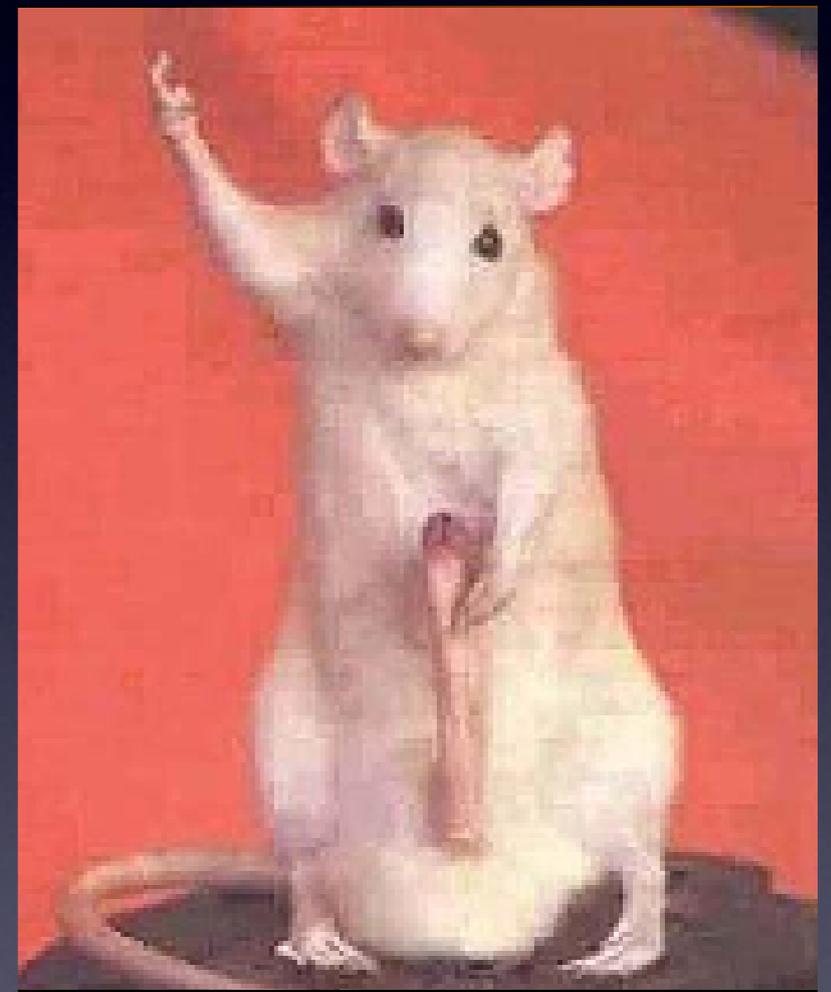
ED treatment

- Therapy: if psychogenic
- yohimbe: increase parasympathetic and decrease sympathetic activity
 - AUA does not recommend for treatment



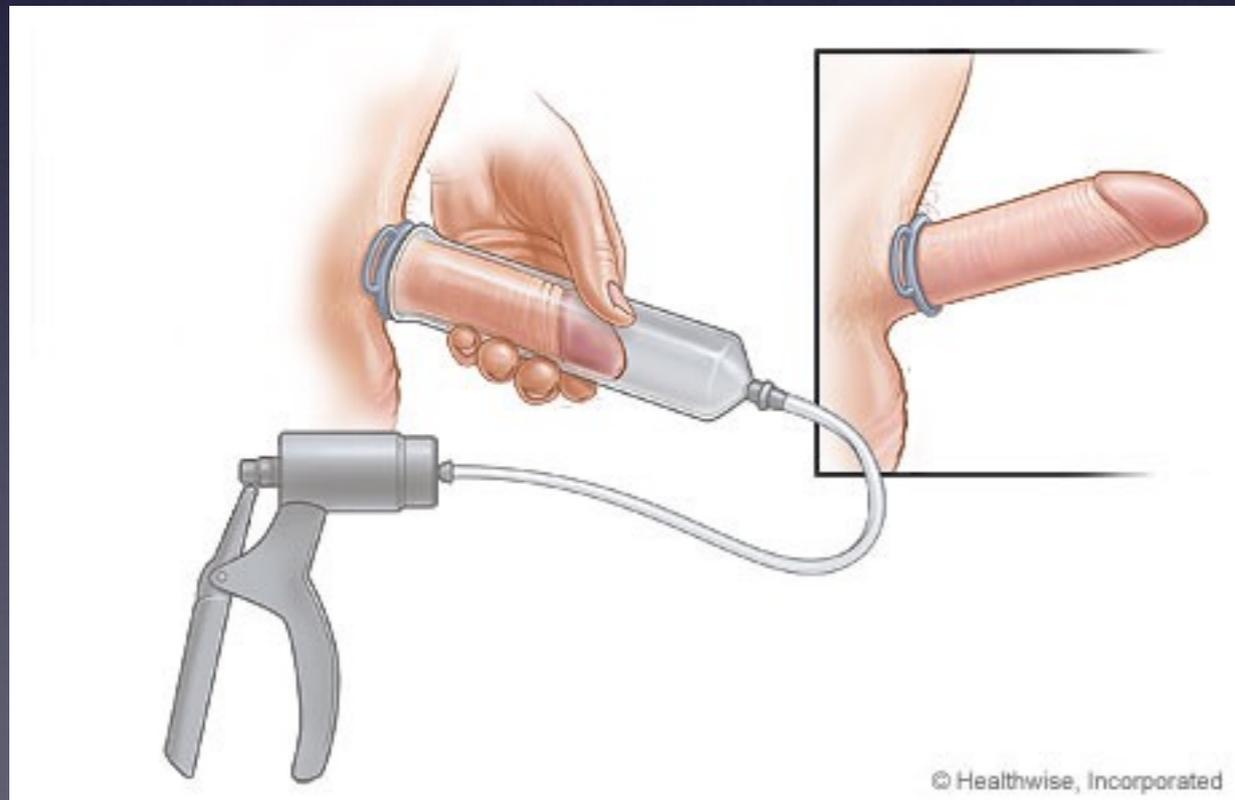
PDE5 inhibitors

- considered first line
- Levitra, Cialis, Viagra
- Do not provide automatic erection
- Not effective in 30%
- PDE5 may lead to acid reflux and dyspepcia, skin flushing, rhinitis, headache
- Do not give with nitrates



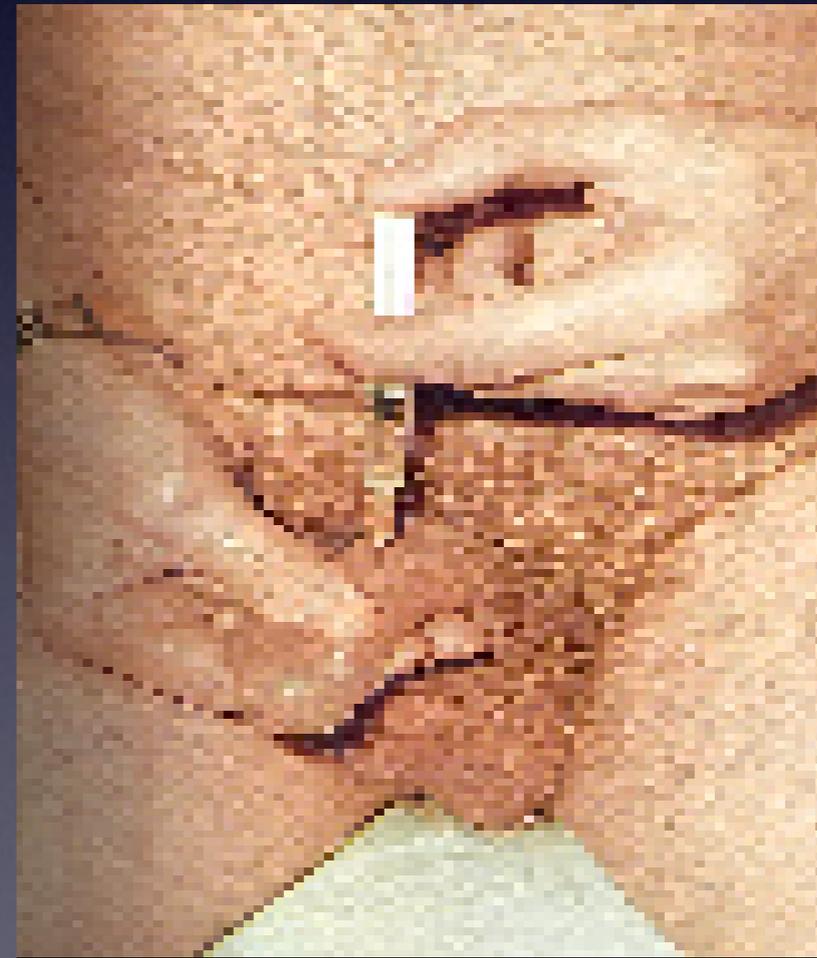
Vacuum constriction devices

- negative pressure pulls the blood in
- constriction band no more than 30min



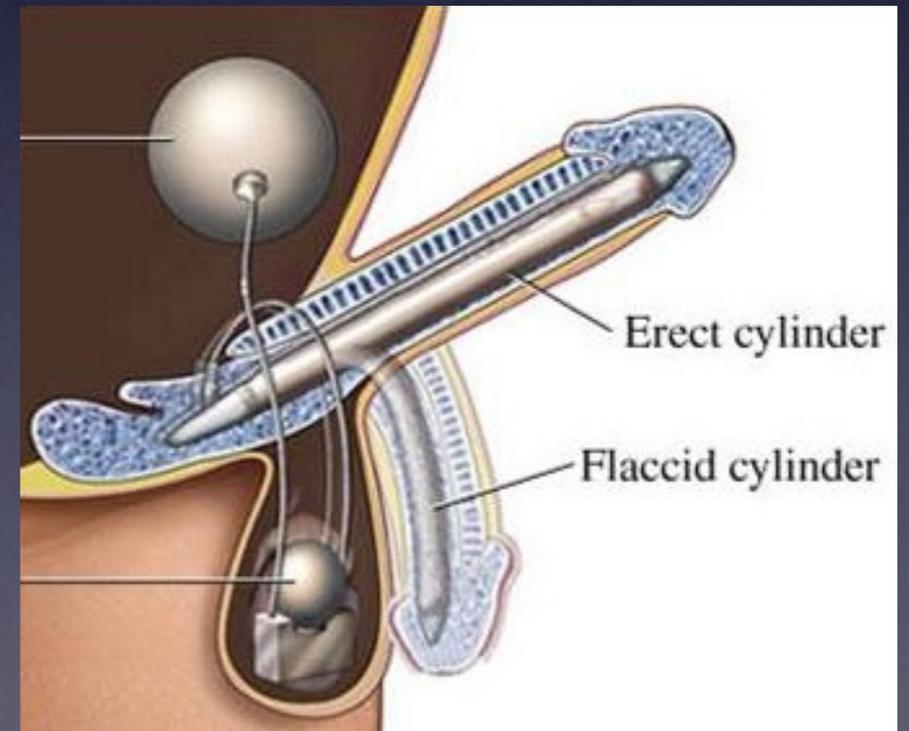
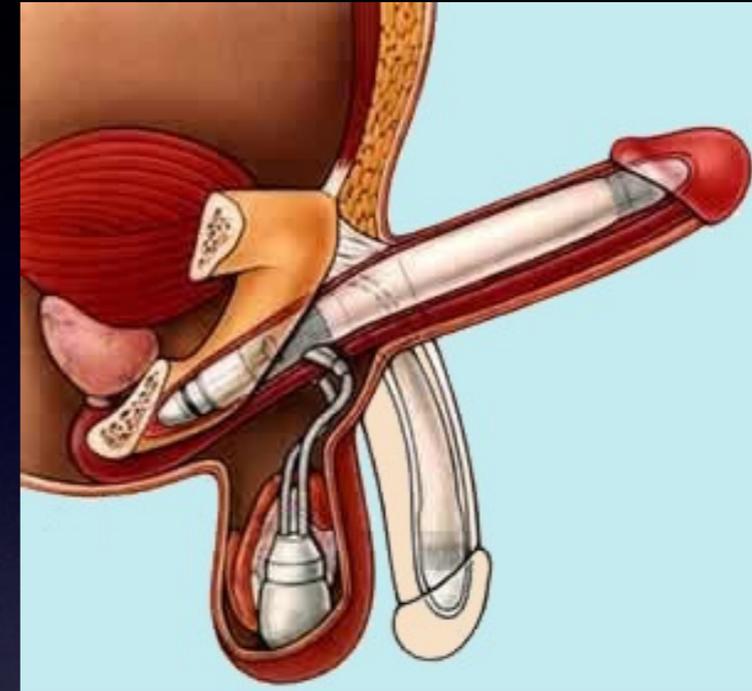
Penile injection therapy:

- apostradil (PGE1) only FDA approved
- activated via cAMP leading to calcium flux
- injection vs intraurethral
- Fast onset erection
- Risk of bleeding
- Risk of priapism
- Bruising
- Can cause peyronies



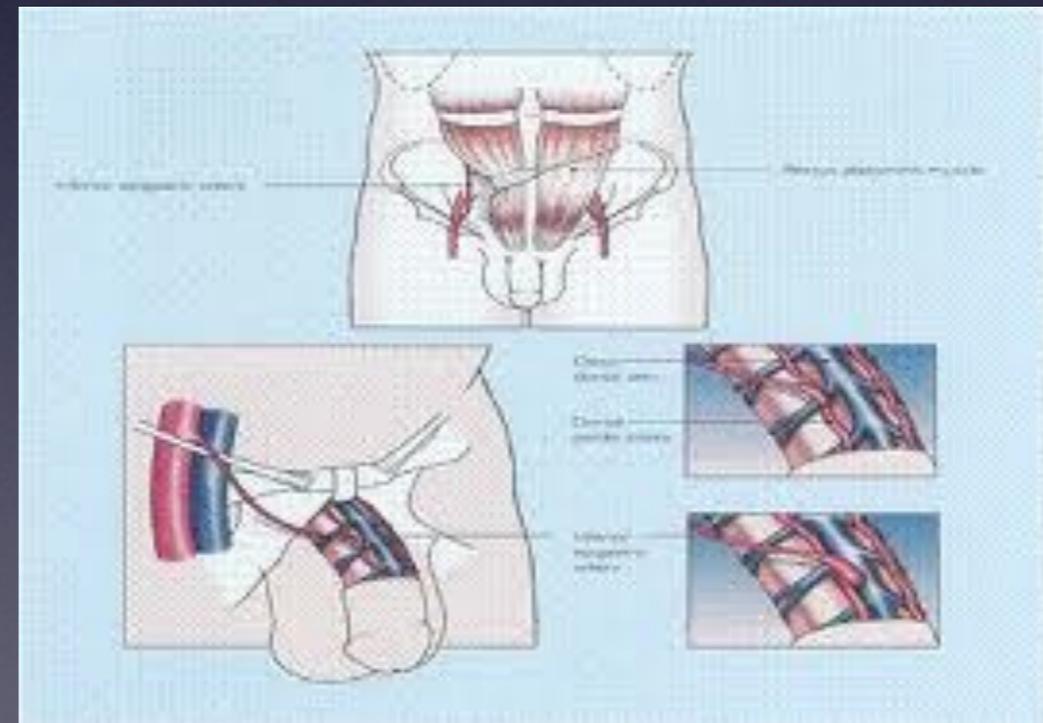
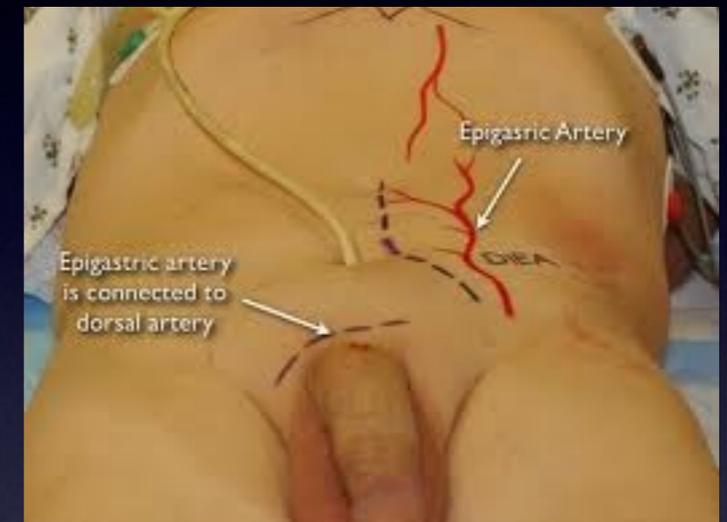
Penile prosthesis

- high efficacy!
 - malleable or semirigid
 - 2 piece inflatable
 - 3 piece inflatable
-
- Risks:
 - Infection
 - Chronic pain
 - Device malfunction
 - Satisfaction highly dependent on preop discussion



Penile revascularization

- young age
- trauma
- no preexisting erectile complaints



Clinical Trials

- Several restorative or regenerative treatments are under investigation for the future treatment of ED:
- Extracorporeal shock wave therapy (ESWT) - low-intensity shock waves that aim to fix the erectile tissues and help restore natural erections.
- Intracavernosal injection of stem cells - to help cavernous tissue regrowth
- Intracavernosal injection autologous platelet rich plasma (APRP) - to help cavernous tissue regrowth

Questions????
drjsilva@gmail.com

