Men’s Sexual Health

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Activity Overview

This activity will give an introduction to erectile dysfunction, the management and possible therapies

Target Audience

This activity is intended for medical oncologists, hematologist, primary care physicians and urologists.

Instructions to Receive Credit

To receive credit, read the introductory CME material, watch the webcast, and complete the evaluation, attestation, and post-test, answering at least 70% of the post-test questions correctly.

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Ahmed Aly Hussein Aly, MD, has indicated no real or apparent conflicts.

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Learning Objectives

Upon completion, participants should be able to:

- Recognize the steps on how to properly diagnose ED
- Understand the etiology of ED
- Be able to properly advise patients of potential treatments for ED

Anatomy

- 2 corpora cavernosa and corpus spongiosum.
- Corpora Cavernosa- sinusoids, smooth muscle trabeculae, elastic fibers.
- Corpus Spongiosum- urethra, distally becomes the glans.

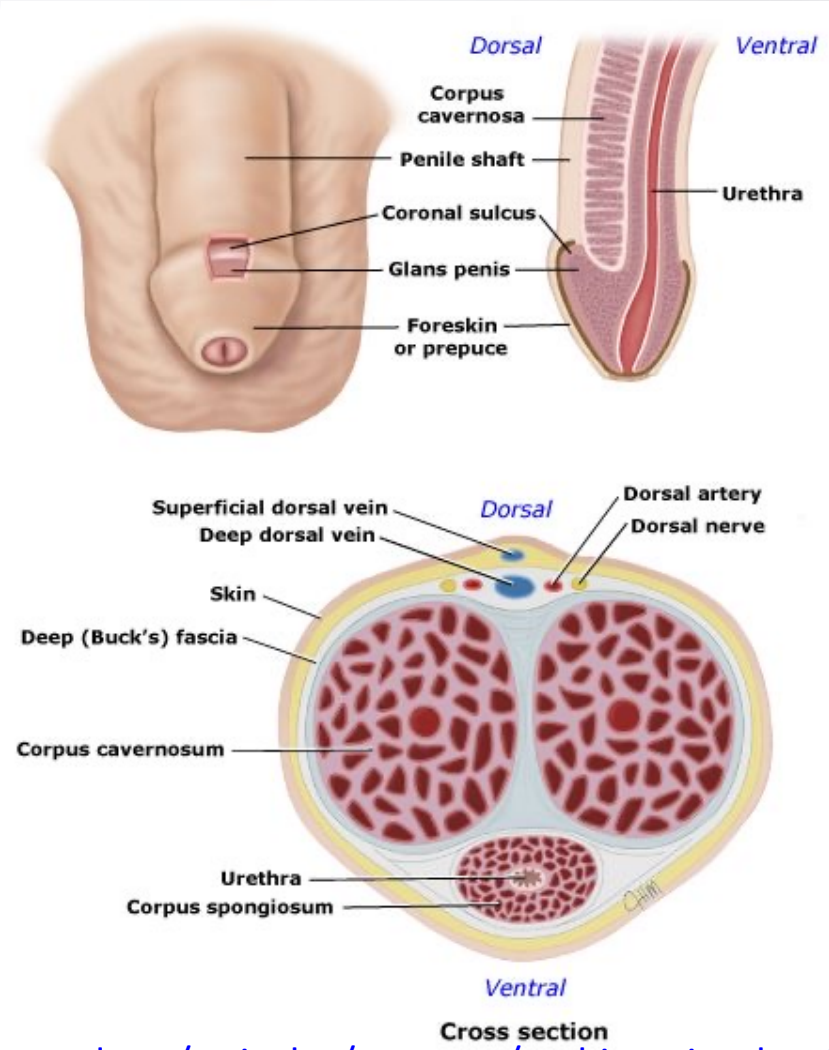

Image from: https://somepomed.org/articulos/contents/mobipreview.htm?0/26/418

Physiology

Smooth muscle relaxation and arterial dilation—↑ blood flow

Venous Occlusion—Maintaining blood within corpora

Contraction of ischiocavernosus and bulbospongiosus—↑ blood flow

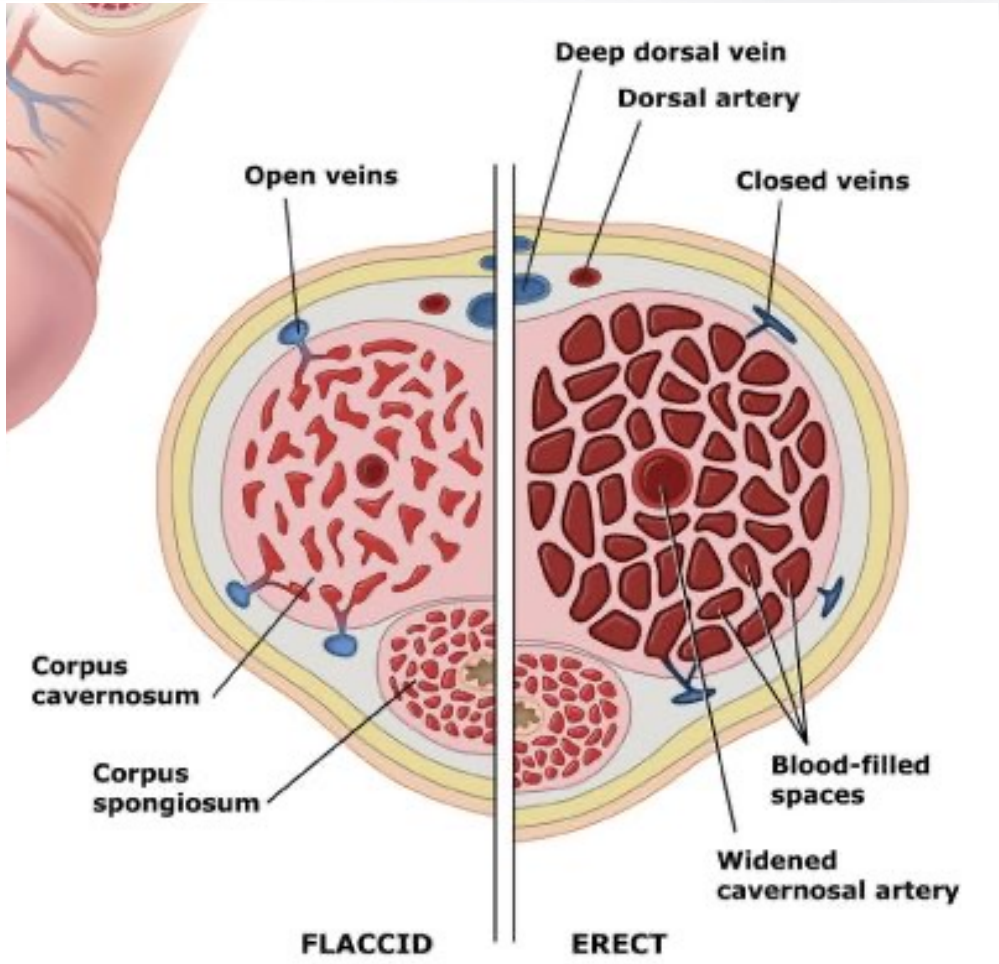

Image from: https://somepomed.org/articulos/contents/mobipreview.htm?2/47/2802

Definition of ED

- "Inability to attain or maintain penile erection for satisfactory intercourse"
- ED- ↑ risk of future CV events (MI, CVA, all-cause mortality)
- Organic, Psychogenic, Mixed

NIH Consensus Conference. Impotence. JAMA, 1993. 270: 83
Vlachopoulos, C.V., *et al.* Circ Cardiovasc Qual Outcomes, 2013. 6: 99.

Prevalence

- Massachusetts Male Aging Study (MMAS)- 52% (40-70 years in the Boston area)
- Cologne study- 19% (30-80 years, age-related increase from 2.3% to 53%).
- Summary: ≈ 30-40%, increases with age

Feldman, H.A., *et al.* J Urol, 1994. 151: 54.
Braun, M., *et al.* Int J Impot Res, 2000. 12: 305.

Etiology

Vasculogenic
Recreational habits (i.e., cigarette smoking)
Lack of regular physical exercise
Obesity
Cardiovascular diseases (e.g. hypertension, coronary artery disease, peripheral vasculopathy)
Type 1 and 2 diabetes mellitus; hyperlipidaemia; metabolic syndrome; hyperhomocysteinemia
Major pelvic surgery (e.g., radical prostatectomy) or radiotherapy (pelvis or retroperitoneum)

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Etiology

Neurogenic
Central causes
Degenerative disorders (e.g., multiple sclerosis, Parkinson's disease, multiple atrophy, etc.)
Spinal cord trauma or diseases
Stroke
Central nervous system tumours
Peripheral causes
Type 1 and 2 diabetes mellitus
Chronic renal failure; chronic liver failure
Polyneuropathy
Surgery (major surgery of pelvis/retroperitoneum) or radiotherapy (pelvis or retroperitoneum)
Surgery of the urethra (urethral stricture, urethroplasty, etc.)

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Etiology

Anatomical or structural
Hypospadias; epispadias; micropenis
Phimosis
Peyronie's disease
Penile cancer (other tumours of the external genitalia)
Hormonal
Diabetes mellitus; Metabolic Syndrome;
Hypogonadism (any type)
Hyperthyroidism
Hyper- and hypocortisolism (Cushing's disease, etc.)
Panhypopituitarism and multiple endocrine disorders

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Etiology

Mixed pathophysiology pathways
Chronic systemic diseases (e.g., diabetes mellitus, hypertension, metabolic syndrome, chronic renal failure, chronic liver disorders, hyperhomocysteinemia, hyperuricemia, etc.)
Psoriasis; gouty arthritis; ankylosing spondylitis; non-alcoholic fatty liver; chronic periodontitis; open-angle glaucoma; inflammatory bowel disease, chronic fatigue syndrome, allergic rhinitis, obstructive sleep apnoea, depression
Iatrogenic causes (e.g. TRUS-guided prostate biopsy, etc.)
Drug-induced
Antihypertensives (i.e., thiazidediuretics, beta-blockers)*
Antidepressants (selective serotonin reuptake inhibitors, tricyclics)
Antipsychotics
Antiandrogens (GnRH analogues and antagonists; 5-ARIs)
Recreational drugs (e.g., heroin, cocaine, marijuana, methadone, synthetic drugs, anabolic steroids, excessive alcohol intake, etc.)

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Etiology

Psychogenic
Generalised type (e.g., lack of arousability and disorders of sexual intimacy)
Situational type (e.g., partner-related, performance-related issues or due to distress)
Trauma
Penile fracture
Pelvic fractures

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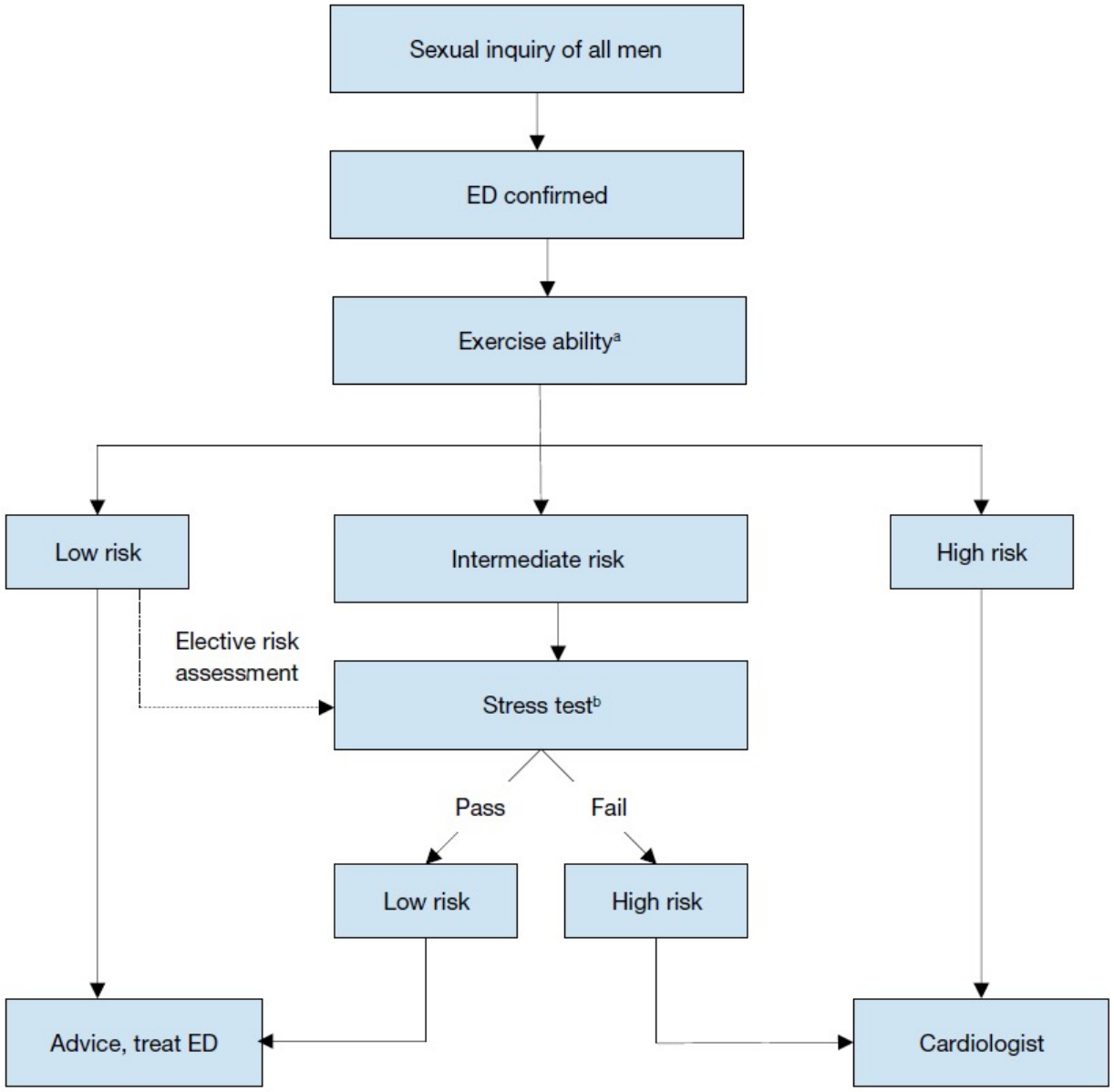
Evaluation

- History Taking (PMH, PSH, Social, Sexual, Partner)
- Physical exam (BP, BMI, penile abnormalities, etc.)
- Validated Questionnaires (IIEF, SHIM)
- Basic work-up
- Specific work-up

Table 11: Cardiac risk stratification (based on 2nd and 3rd Princeton Consensus) [389, 391]

Low-risk category	Intermediate-risk category	High-risk category
Asymptomatic, < 3 risk factors for CAD (excluding sex)	≥ 3 risk factors for CAD (excluding sex)	High-risk arrhythmias
Mild, stable angina (evaluated and/or being treated)	Moderate, stable angina	Unstable or refractory angina
Uncomplicated previous MI	Recent MI (> 2, < 6 weeks)	Recent MI (< 2 weeks)
LVD/CHF (NYHA class I or II)	LVD/CHF (NYHA class III)	LVD/CHF (NYHA class IV)
Post-successful coronary revascularisation	Non-cardiac sequelae of atherosclerotic disease (e.g., stroke, peripheral vascular disease)	Hypertrophic obstructive and other cardiomyopathies
Controlled hypertension		Uncontrolled hypertension
Mild valvular disease		Moderate-to-severe valvular disease

Nehra, A., et al. Mayo Clin Proc, 2012. 87: 766
Kostis, J.B., et al. Am J Cardiol, 2005. 96: 313.



A- Sexual activity is equivalent to walking 1 mile on the flat in 20 minutes or briskly climbing two flights of stairs in 10 seconds.

B- Sexual activity is equivalent to four minutes of the Bruce treadmill protocol.

Nehra, A., et al. Mayo Clin Proc, 2012. 87: 766; Sexual and Reproductive Health, EAU Guidelines 2020

Basic work-up

- HbA1C
- Hormonal profile (morning testosterone)
- Additional e.g. PRL, FSH, LH, PSA, etc.

Advanced work-up

- Penile duplex
- Arteriography and Cavernosography
- Psychiatric evaluation
- ICI
- NPTR (Organic vs Psychogenic)

Management

- General Measures
- Pharmacologic (oral, intracavernosal, intraurethral)
- VED
- Surgery

General Measures

- Smoking Cessation
- Weight Loss
- Exercise
- Control of Comorbidities e.g. DM, HTN, CVD

Treatment of the Cause

- Hypogonadism—TRT
- Penile Revascularization
- Psychiatric evaluation/ Referral to Sex therapist

PDEI5

- e.g. Sildenafil, tadalafil

- **Choice of medication:**

1- No data comparing the efficacy and/or patient preference
2- Frequency of intercourse
3- Patient's personal experience.
4- Associated LUTS

- A meta-analysis-
  Prioritize high efficacy—Sildenafil
  Prioritize tolerability—tadalafil 10 mg

Chen, L., *et al.* Eur Urol, 2015. 68: 674; Burns, P.R., *et al.* J Sex Med. 2015. 12: 720.

PDE5I- Contraindications

- **Contraindications:**

-Concomitant use of nitrates (e.g. nitroglycerine, isosorbide mononitrate/dinitrate)

-Nicorandil

- **Interactions:**

-Antihypertensive agents (ACEI, ARBs, Ca channel blockers, β-blockers, and diuretics)- minor decrease in BP.

-α-blockers- may result in orthostatic hypotension (especially doxazosin, mild with tamsulosin).

-Starting dose of sildenafil 25 mg is recommended.

Giuliano, F., *et al.*Int J Clin Pract, 2010. 64: 240.

PDE5I-Pharmacokinetics

	Sildenafil	Tadalafil
T max	0.8-1 hour	2 hours
T 1/2	3-4 hours	18 hours
Wait time	0.5-1 hour	15-30 min
Absorption affected by food?	Yes (4 hours after last meal)	No
Window for Efficacy	6-8 hours	36 hours

PDE5I- Side Effects

	Sildenafil	Tadalafil
Headache	13%	15%
Flushing	10%	4%
Dyspepsia	5%	12%
Nasal Congestion	1%	4%
Dizziness	1%	2%
Abnormal vision	2%	-
Back pain	-	7%
Myalgia	-	6%

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PDE5I- Patient Education

- Adequate trial – at least 6 attempts
- Adequate sexual stimulation
- Adequate dose
- Relation to meals
- Wait an adequate amount of time
- Avoid waiting too long

McCullough, A.R., *et al.* Urology, 2002. 60: 28; Hatzichristou, D., *et al.* Eur Urol, 2005. 47: 518
Gruenwald, I., *et al.* Eur Urol, 2006; Porst, H., *et al.* J Sex Med, 2013. 10: 130.

PDE5I- Non-Responders

- Check for Hypogonadism
- Switch to another PDE5I
- Combine tadalafil daily dosing with a short acting PDE5I- No RCTs

Isidori, A.M., *et al.* Eur Urol, 2014. 65: 99., Hatzimouratidis, J Sex Med, 2016. 13: 465, Corona, G., *et al.* Mol Cell Endocrinol, 2015, Cui, Andrologia 2015. 47: 20.

Intraurethral PGs

- Medicated pellet (MUSE™). Recommended starting dose 500 µg
- **Efficacy**- 30-66%. Constriction ring – may improve efficacy, ~30% of adherence to long-term therapy.
- **Adverse events**
  local pain- 30%
  dizziness with possible hypotension- 8%
  Penile fibrosis and priapism are very rare (< 1%).
  Urethral bleeding (5%)
  UTI (0.2%)

Padma-Nathan, H., N Engl J Med, 1997. 336: 1.

Intracavernosal injections

- **Efficacy**- 85%

- First dose- always in office

- **Side effects:**
  Penile pain
  Prolonged erection/Priapism
  Fibrosis
  Bleeding/Infection

Shabsigh, R., *et al.* Urology, 2000. 55: 109

Intracavernosal injections

- **Drop-out rates** – 50%, mostly within the first 2-3 months

- **Reasons for discontinuation**:
  Desire for a permanent modality (29%)
  Lack of a suitable partner (26%)
  Poor response (23%)
  Fear of needles (23%)
  Fear of complications (22%)
  Lack of spontaneity (21%)

Porst, H., J Sex Med, 2013. 10: 130; Vardi, Y., J Urol, 2000. 163: 467

VED

- VED w/ or w/o constriction ring- Passive engorgement
- **Efficacy-** 90%, regardless of the cause of ED, **Satisfaction-** 60%
- **Adverse events**
  Pain, inability to ejaculate, petechiae, bruising, and numbness. (Remove the constriction ring within 30 minutes).
- **Contraindication-** bleeding disorders/anticoagulant therapy

Levine, L.A., *et al.* Urol Clin North Am, 2001. 28: 335; Yuan, J., *et al.* Int J Impot Res, 2010. 22: 211; Cookson, M.S., *et al.* J Urol, 1993. 149: 290; Trost, L.W., *et al.* J Sex Med, 2016. 13: 1579.

Shockwave therapy

- Most studies suggest that SWT can significantly increase IIEF and EHS (mild vasculogenic ED)
- Prospective RCTs and longer follow-up data are needed.
- Patients with vasculogenic ED may be treated with LI-SWT, although they should be fully counselled before treatment.

Fojecki, G.L., *et al.* J Sex Med, 2017. 14: 106; Campbell, J.D.Ther Adv Urol, 2019.

Shockwave therapy

Use low intensity shockwave treatment (LI-SWT) in patients with mild vasculogenic ED or as an alternative first-line therapy in well-informed patients who do not wish or are not suitable for oral vasoactive therapy or desire a curable option. Use LI-SWT in vasculogenic ED patients who are poor responders to PDE5Is.	Weak

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Penile Prosthesis

- Most invasive, irreversible
- Highest satisfaction rates (92-100% in patients and 91-95% in partners)

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Penile Prosthesis- Complications

- Mechanical failure- < 5% after five years
- Infection- 2-3%, reduced to 1-2% (antibiotic-impregnated).
- Erosion- 1-6%.
- Glans ischemia and necrosis- 1.5%.
- Glans hypermobility
- Penile shortening

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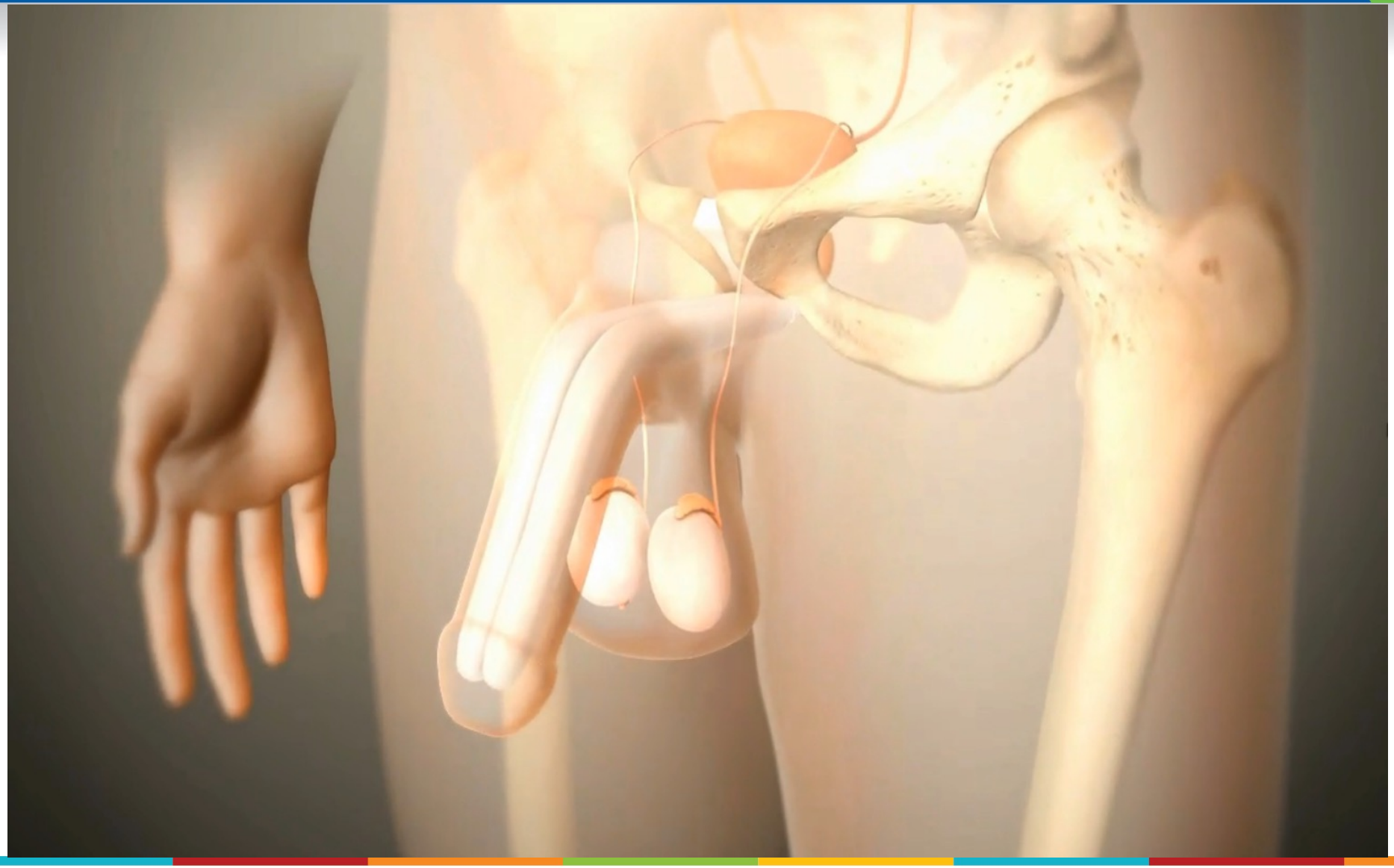
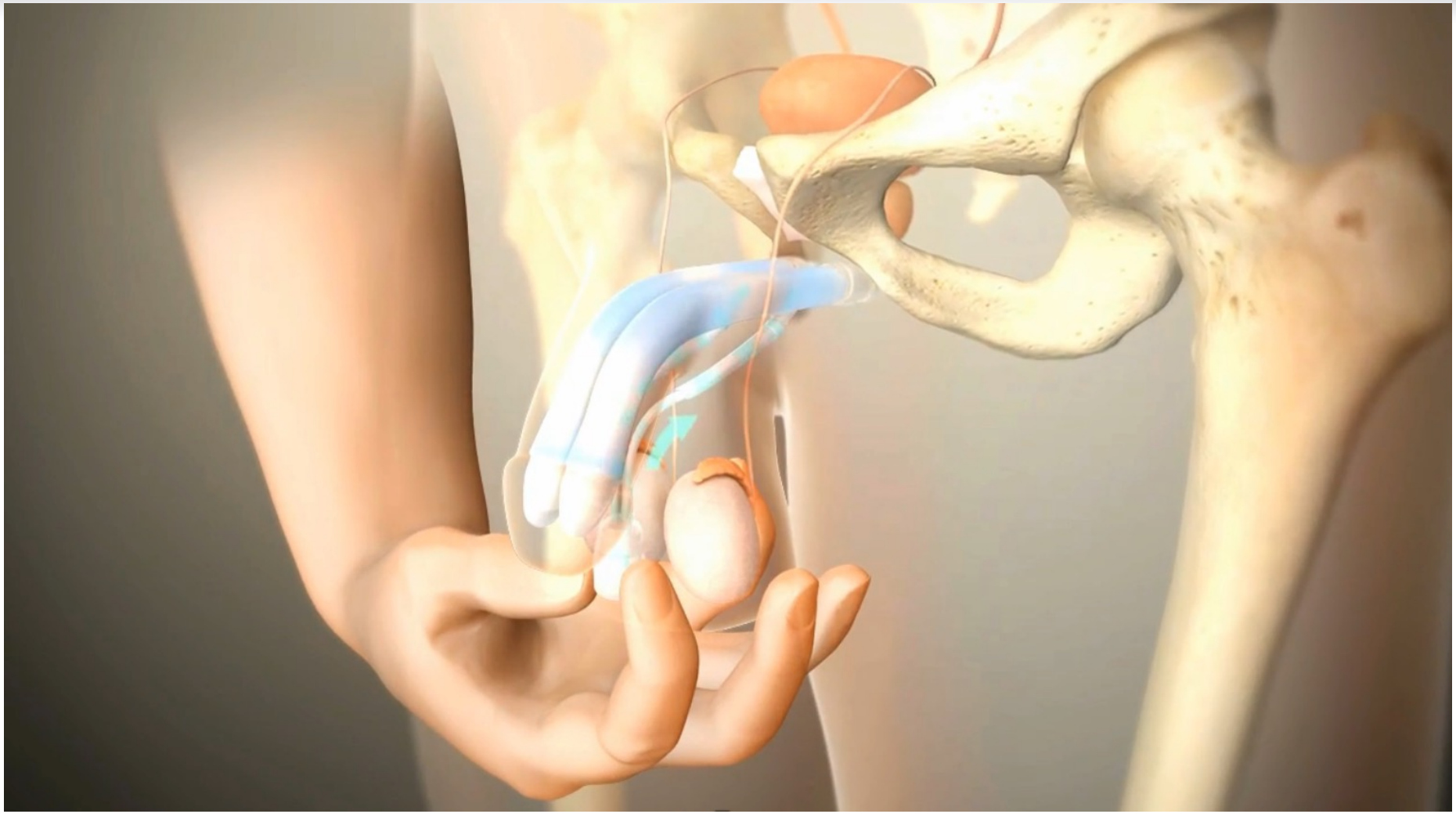
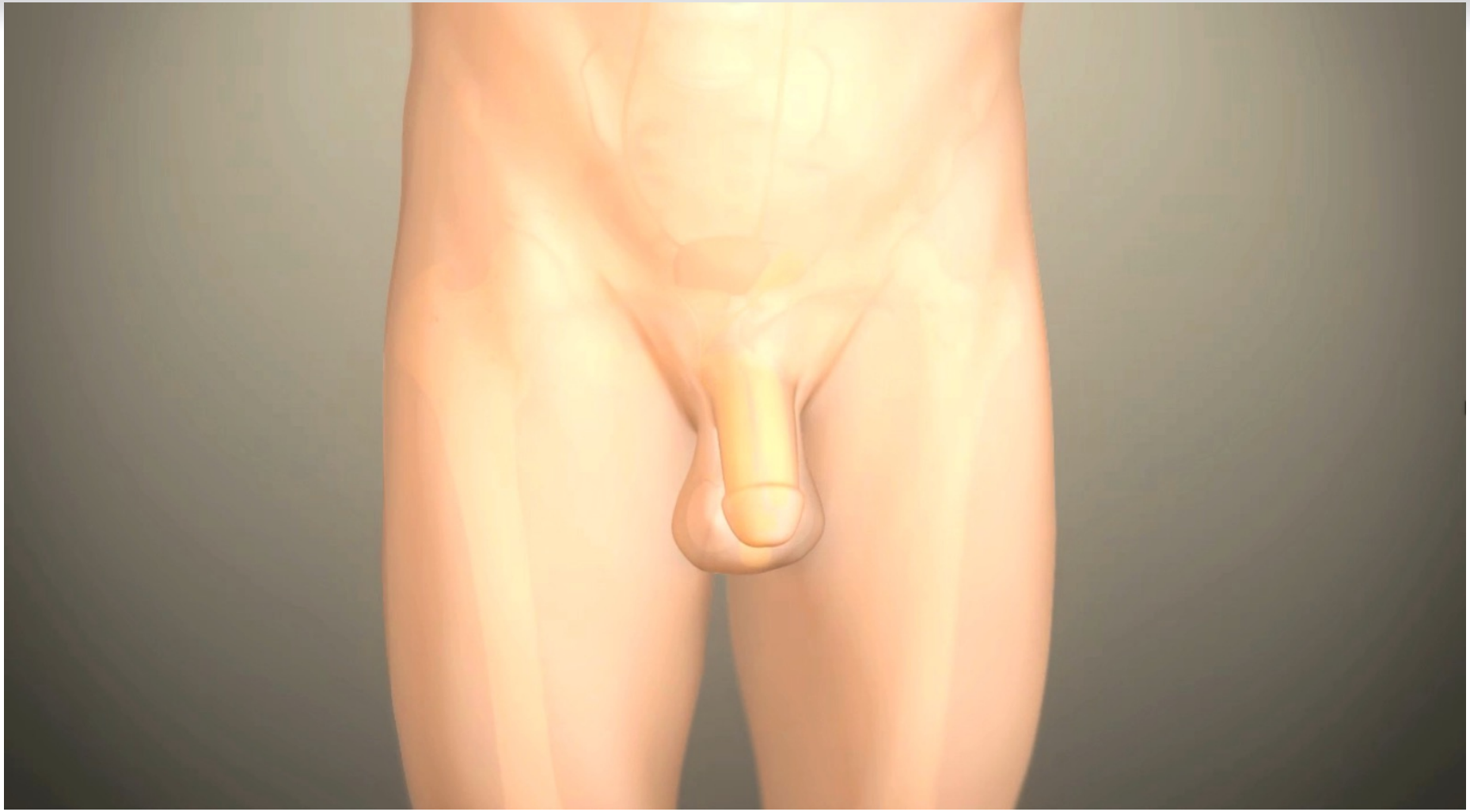
Semi-Rigid/Non-Inflatable

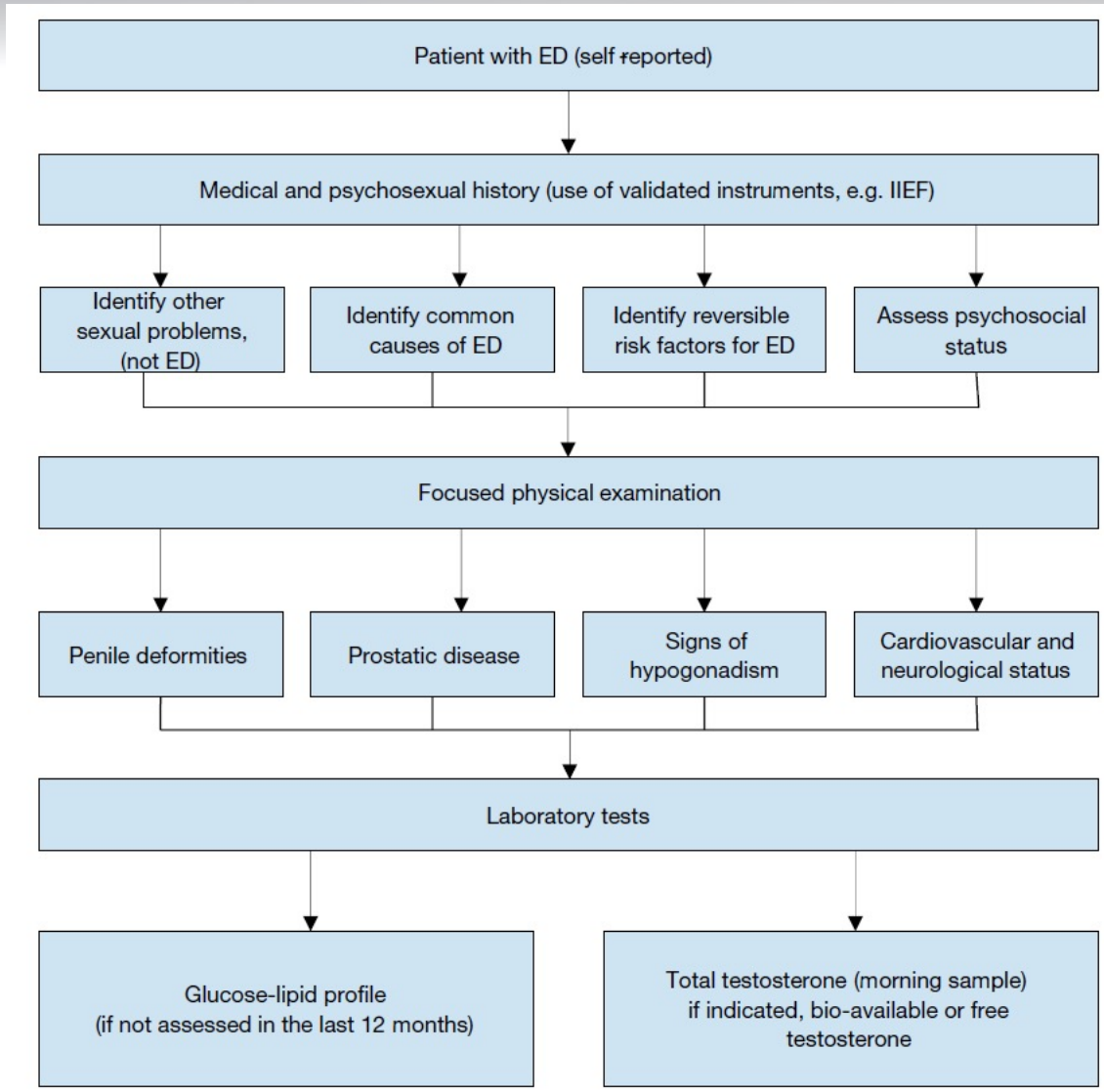


2-Piece IPP



3-Piece IPP





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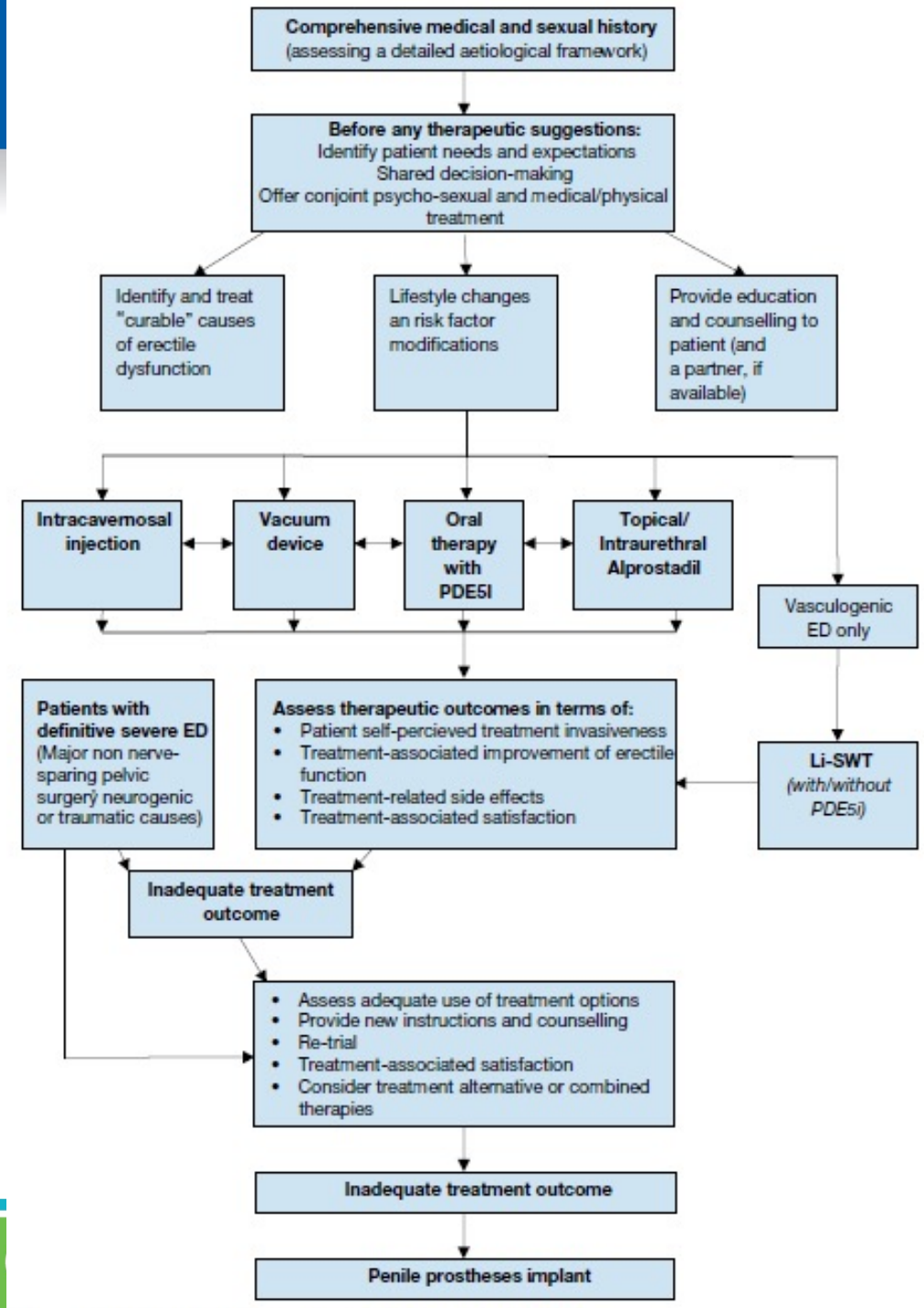

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Conclusion

- ED is common problem, increases with age
- Sign of early Cardiovascular disease
- Different management options available (General, Pharmacologic, Behavioral and Surgical).

Instructions to Receive Credit

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