

Erectile Dysfunction

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...by any chance have you
been rubbing the Viagra
on your head and swallowing
the Rogaine?"



Case Presentation

A 66 year old male presents to your office requesting Viagra. He states that for the past year he has had difficulty forming an erection. When he does have an erection, it is not very firm, and does not last as long as he would like. He is a heterosexual male in a monogamous relationship with his wife. His medical history is significant for hypertension and type 2 diabetes. His only home medications are Zestril, Glucophage, Lasix, and Aspirin. His physical exam is significant for a BP of 150/85 but is otherwise normal. His most recent HbA1C is 6.7.

The Most Appropriate Next Step

- A. Prescribe Viagra
- B. Refer him for erectile dysfunction workup, including penile dopplers and nocturnal tumescence
- C. Counsel the patient that his hypertension needs to be under better control before his ED can be addressed, and titrate up his ACE inhibitor
- D. Improve his diabetes management
- E. Counsel the patient that psychological factors may play a role in his erectile dysfunction and that he should pursue couples counseling with his wife
- F. Refer to urology for penile implants

Answer

A. Prescribe Viagra

Overview

- Erectile dysfunction (ED) is the inability to form or maintain an erection sufficient for satisfactory sexual performance
- Estimated to affect 30 million American men
- 40% of 40 year old men experience some degree of ED
- 60% of 70 year old men have ED

Causes of ED

- Organic (vascular, neurologic, hormonal)
 - Atherosclerotic disease is responsible for 50% of ED cases in men over 50
 - 80% of men with ED have organic source
- Psychogenic
 - Anxiety, depression, loss of self-confidence
- Mixed

Risk factors for ED

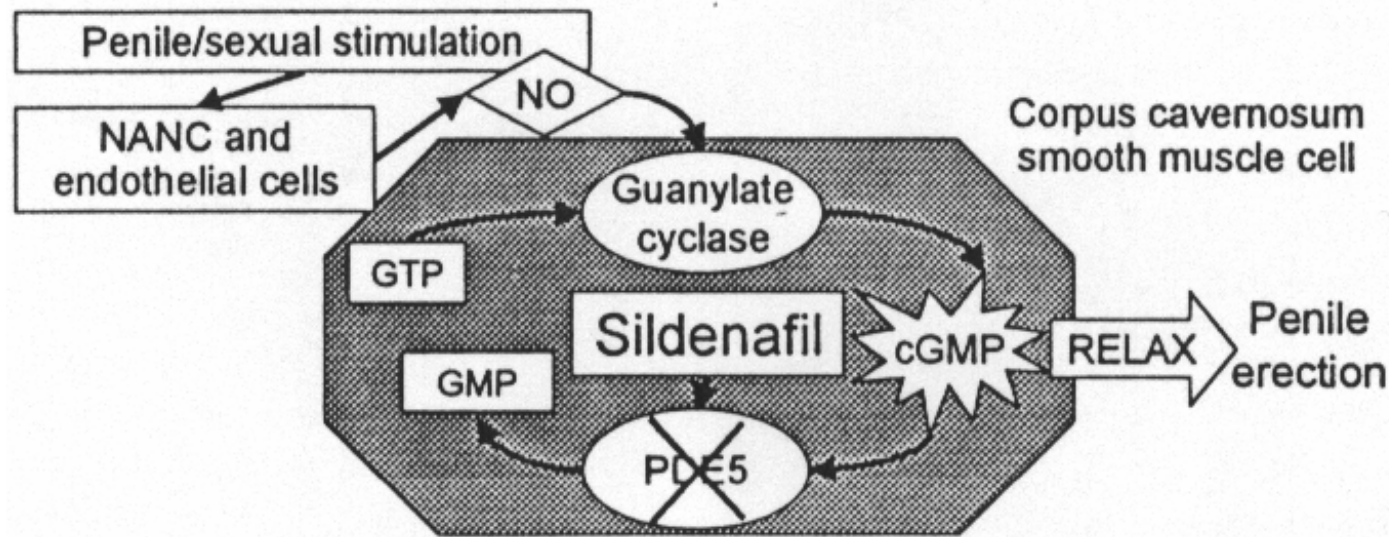
- **Diabetes**
 - 3x risk for ED
- Vascular disease (coronary or peripheral)
- Hypertension
- Low LDL
- Smoking, Alcohol, Depression

Erectile Physiology

- Complex psychological, hormonal, neurological, vascular interaction
- Erections caused by relaxation of smooth muscle and arteries in the corpus cavernosum
- NO released by cavernous nerves activates guanylate cyclase which produces cGMP which acts to reduce intracellular Ca^{2+}

Erectile Physiology

- Phosphodiesterase type 5 degrades cGMP to prevent permanent erection



ED in Primary Care

- Identify serious causes of ED
- Assess goals of patient and partner
- History and Physical
- Labs
- Treatment Plan

History

- Sexual History
 - ED vs. changes in desire
 - Onset of ED, frequency, quality, duration of erections
- Medical History
 - Diabetes, HTN, CAD, Smoking
 - Hx trauma to back or perineum

Physical

- Secondary male characteristics (hair, voice)
- Femoral and lower pulses
- Neuro exam for perianal sensation, sphincter tone
- Prostate exam

Labs

- Morning serum testosterone (indicated if history includes lower libido)
- CBC, TSH, Renal, Lipids useful to screen for conditions contributing to ED
- PSA if indicated

Special Tests

- Nocturnal Penile Tumescence
- Penile duplex ultrasound
- Dynamic infusion cavernosography and cavernosometry (DICCC) and arteriography
 - Invasive, used in young men (<50) with trauma who are considering vascular reconstruction

Indications for Referral

- Young men with history of pelvic trauma
- Peyronie's disease
- Young men who have never had an erection
- Patients who fail oral drug treatment
- Medicolegal

Patient Management

- Lifestyle modifications
 - Diet and exercise
 - Reduce stress
 - Reduce alcohol
 - Reduce drug abuse
 - Cut back or quit smoking
- Changes in medications do not normally have long term success

Treatment options

- **Treatment modality is not dependent on underlying cause for ED!**
- Counseling
- Oral therapy
- Noninvasive devices
- Intraurethral suppository
- Injectable agents
- Penile implants



Viagra

- **First line therapy for ED**
- Selectively inhibits PDE5
- Contraindications
 - Nitrates of any form
 - Erythromycin, cimetidine, ketoconazole, and saquinavir decrease clearance of Viagra; should not exceed 25mg in 48 hour period

Viagra Pearls

- Know contraindications! (Nitrates, erythromycin, ketoconazole, cimetidine)
- Start at 50mg, titrate up to 100 or down to 25 as needed
- Allow 60-90 minutes for effect
- Pills can be split (off label), 25mg and 50mg tablets cost about the same
- Trial should include several attempts at a given dosage and then titrate upward if no response

Viagra Effectiveness

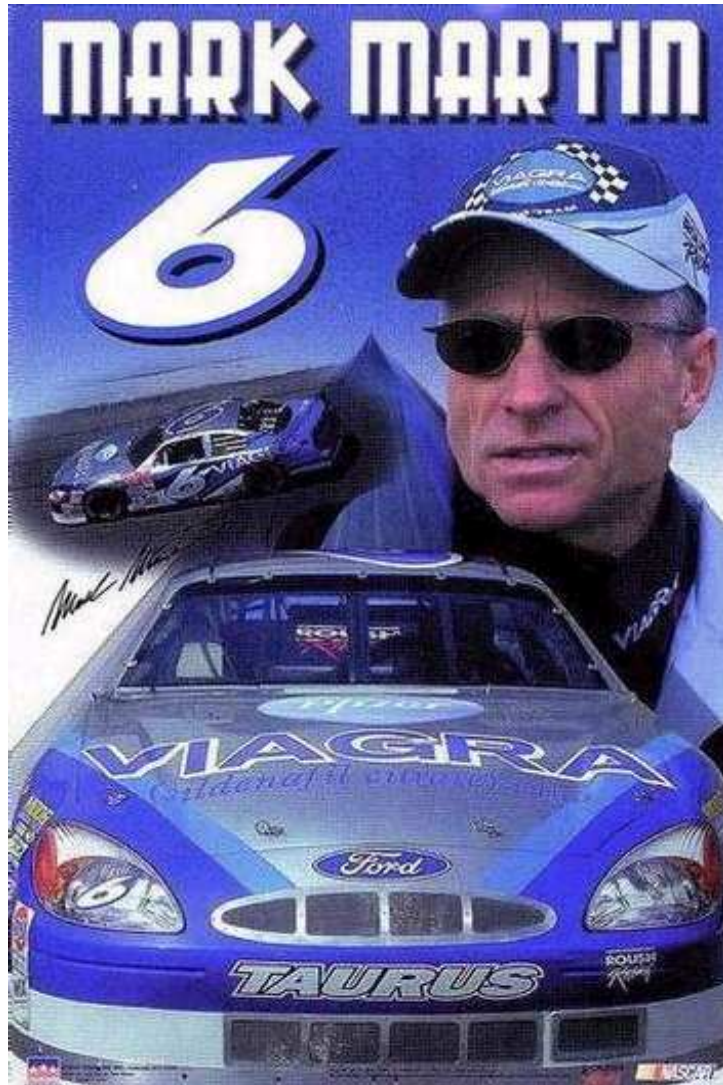
Percentage of Patients Reporting Improved Erections

Specific Populations	Sildenafil	Placebo
Hypertension	68%	18%
Depression	82%	20%
Smokers	80%	25%
Diabetes	63%	17%
Spinal cord injury	83%	12%
Transurethral resection of the prostate	61%	34%
Mild to moderate ED	87%	35%
Severe ED	48%	8%
Elderly (age: >65 vs <65): no significant difference	67% vs 75%	17% vs 22%
US multicenter trial (<i>N Engl J Med.</i> ¹⁷)	69% overall	24%

Viagra Side Effects

- Headache (15%)
- Facial Flushing (14%)
- Dizziness (2%)
- Visual Disturbance (2%)
- Nasal Congestion (4%)

Viagra in Society



Vacuum Pump

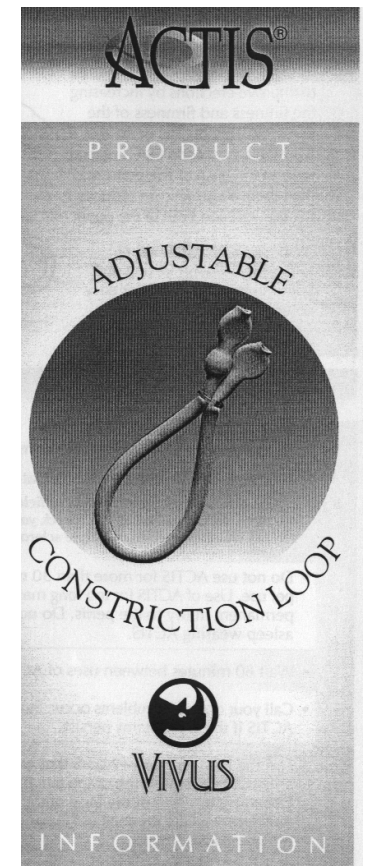
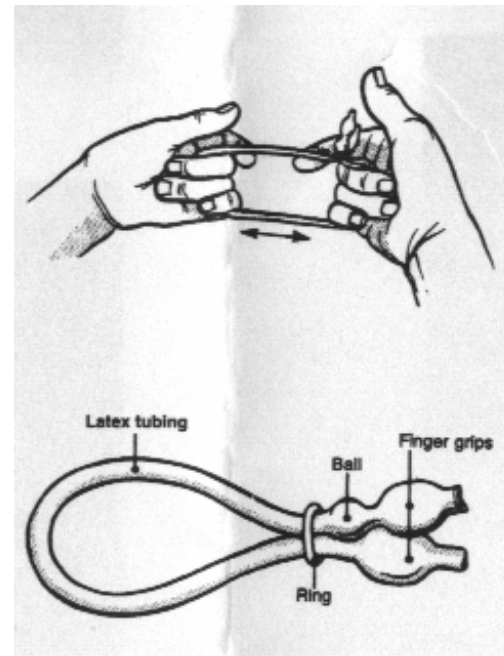


Vacuum Devices

- Second line Therapy
- Requires dexterity, reduces spontaneity
- Side effects
 - Penile pain
 - Bruising
 - Numbness
 - Delayed ejaculation

Actis

- Second Line Tx
- Constriction ring placed around base of penis after erection is obtained
- Useful to prolong erections in patients who are able to form erections initially



MUSE

- Second line therapy
- Medicated urethral system for erection
- Applicator delivers pellet of alprostadil inside the urethra
- 65% effectiveness
- Side effect
 - Penile pain

Caverject (ouch!!)

- Third Line Therapy
- Intracavernosal injection of alprostadil
- 85% Effective
- 50% dropout rate after 1 year
- Side effects
 - Prolonged erection
 - Penile pain
 - Fibrosis
 - ecchymosis

Penile Prostheses

- Fourth Line Therapy, last resort
- Applies to around 1% of ED patients
- Semirigid, Positionable, Inflatable
- Mechanical failure 2-15% over 5-10 years
- Prostheses functional for 7-10 years

Special Considerations

- In patients with low am testosterone, pursue endocrine workup, consider transdermal testosterone supplementation
- Psychosocial counseling should be considered in all ED patients
- Vascular surgery for correction of ED is considered experimental

New treatments

- Vardenafil
- Sublingual apomorphine (Recently withdrawn from application for further efficacy and safety studies)
- Topical agents applied to glans penis

References

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- Sadovsky R. Integrating erectile dysfunction treatment into primary care practice. Am J Med. 2000 Dec 18;109 Suppl 9A:22S-8S
- Kloner RA. Sex and the patient with cardiovascular risk factors: focus on sildenafil. Am J Med. 2000 Dec 18;109 Suppl 9A:13S-21S

Viagra Humor on the 'Net

- <http://www.viagra-viagraviagra.com/index.html>
- <http://www.viagra-humor.com/>