Sexuality and Aging

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Sexual Health Matters

Don’t ask/ Don’t tell
Most personal/delicate subjects discussed with patients
MD’s, RN’s
   Embarrassed
   Personal religious/cultural beliefs make it difficult
“there exist fundamental rights for the individual, including the right to sexual health and a capacity to enjoy and control sexual and reproductive behavior in accordance with a social personal ethic-freedom from fear, shame, guilt, false beliefs and other factors inhibiting sexual response and impairing sexual relationships-freedom from organic disorders, disease and deficiencies that interfere with sexual and reproductive function.”

World Health Organization, 1994
Barriers In Treating Sexual Dysfunction in the Elderly

“Old people do not need to have sex”

young person

“90-95% of erectile dysfunction is secondary to a psychogenic component”

Masters and Johnson
1970
## Frequency of Intercourse Among Older Adults

<table>
<thead>
<tr>
<th>Age</th>
<th>Spouses having sex within past month (N=807)</th>
<th>Mean frequency (episodes/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60–65</td>
<td>65%</td>
<td>4.54</td>
</tr>
<tr>
<td>66–70</td>
<td>55%</td>
<td>4.52</td>
</tr>
<tr>
<td>71–75</td>
<td>45%</td>
<td>3.51</td>
</tr>
<tr>
<td>≥76</td>
<td>24%</td>
<td>2.75</td>
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</tbody>
</table>

In healthy seventy-year olds, 70% report having weekly sexual intercourse

National Institute on Aging, Bethesda, MD.

Sexual Activity in the Elderly

geriatric clinic pts, majority sexually active

NYU, Bellevue Geriatric Clinic
Common Risk Factors for ED: Aging*

*Based on the Massachusetts Male Aging Study.
Physician-Patient Communication About Sexual Issues

No med rx
- Very concerned: 46%
- Somewhat concerned: 30%
- Percentage: 76%

MD would dismiss concern
- Very concerned: 51%
- Somewhat concerned: 20%
- Percentage: 71%

MD uncomfortable with problem
- Very concerned: 46%
- Somewhat concerned: 23%
- Percentage: 68%

JAMA, 1999:281:2173-2174
Sexual History

Identification of the sexual disorder
- Disorders of libido (desire), erection (arousal), ejaculation/orgasm, pain
- Circumstances (ie, situational, generalized)
- Sexual preferences

Partner issues
- General health
- Sexual health
- Attitude toward sexual problems

Evaluation

Validated questionnaire
  Erectile dysfunction
  Androgen decline
History/physical
Laboratory evaluation
Penile blood flow (selected)
Use of Validated Questionnaires

<table>
<thead>
<tr>
<th>Examples</th>
<th>Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Index of Erectile Function (IIEF)</td>
<td>Complement history and physical exam</td>
</tr>
<tr>
<td>Sexual Health Inventory for Men (SHIM)</td>
<td>Saves office time: pt can complete at home</td>
</tr>
<tr>
<td>Erectile Dysfunction</td>
<td>May facilitate open communication</td>
</tr>
<tr>
<td>Inventory of Treatment Satisfaction</td>
<td>May use to monitor therapy</td>
</tr>
<tr>
<td>Brief Sexual Function Inventory (BSFI)</td>
<td></td>
</tr>
</tbody>
</table>
1) How do you rate your confidence that you could get and keep an erection?

2) When you had erections with sexual stimulation, how often were your erections hard enough for penetration?

3) During sexual intercourse, how often were you able to maintain your erection after you had penetrated your partner?

4) During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?

5) When you attempted sexual intercourse, how often was it satisfactory for you?

Risk Factors

Diabetes  
Hypertension  
Hyperlipidemia  
Hypogonadism  
Smoking  
Alcohol/Drug Abuse  

Trauma or Surgery to pelvis or spine  
CAD  
PVD  
Depression or Stress  
Aging?
Hypogonadism
Hypothalamic-pituitary-testicular Axis

Hypothalamus → GnRH → Anterior pituitary → LH, FSH → Testis → Testosterone (T) → Sperm

GnRH = gonadotropin-releasing hormone.  
LH = luteinizing hormone.  
FSH = follicle-stimulating hormone.

Plus signs indicate stimulatory effects, and the minus signs indicate inhibitory effects.
Circulation of Testosterone in the Blood

Only 2% is free testosterone—98% is bound.

Free testosterone
Sex-hormone–binding globulin (SHBG)-bound testosterone
Albumin-bound testosterone

Prevalence of Low Testosterone

4 Million to 5 Million Men Have Low Testosterone

5% of affected men are currently treated.

Low Testosterone: The Aging Testes

Inadequacy or absence of gonadal function, as manifested by deficiencies/failure in gametogenesis and/or secretion of gonadal hormones

Associated with
- Decrease in testosterone production and clearance
- Increase in SHBG levels
- Decline in Leydig cell count
- Lower testosterone values in morning
  (circadian rhythm lost)

Manifested by changes in sexual function, behavior, muscle mass, and loss of secondary characteristics

Association Between Age and Prevalence of Low Testosterone


N=856.

N=18
N=201
N=279
N=332
N=350
N=251
N=94
Long-Term Effects of Low Testosterone

Change in behavior (irritability, decreased concentration, and cognitive function)
Decline in libido and erectile function
Decline in well-being
Decreased muscle mass, bone mass, bone density, and strength
Increased body fat mass
Increased incidence of osteoporosis

Clinical and Social Impact of Osteoporosis in the Aging Male

Not just a woman’s problem
Associated with low serum testosterone
Incidence increases as men live longer
Impact on quality of life
Increased mortality

Evaluation of Low Testosterone: Androgen Deficiency in Aging Males (ADAM)

1. Do you have a decrease in libido (sex drive)? □ yes □ no
2. Do you have a lack of energy? □ yes □ no
3. Do you have a decrease in strength, endurance, or both? □ yes □ no
4. Have you lost height? □ yes □ no
5. Have you noticed a decreased enjoyment of life? □ yes □ no
6. Are you sad, grumpy, or both? □ yes □ no
7. Are your erections less strong? □ yes □ no
8. Have you noted a recent deterioration in your ability to play sports? □ yes □ no
9. Are you falling asleep after dinner? □ yes □ no
10. Has there been a recent deterioration in your work performance? □ yes □ no

Goals of Testosterone Replacement Therapy

Improve libido
Improve erectile function
Improve psychological well-being and mood
Increase muscle mass
Improve strength and stamina (prevent falls)
Preserve or improve bone mass (prevent fractures)
Possibly decrease cardiovascular disease (CVD) risk
  Decrease in total cholesterol and low-density lipoprotein (LDL) cholesterol

Testosterone Replacement Therapy: Dosing Regimens

Injection
200 mg every 2 weeks
Serum level should be midnormal after 1 week

Scrotal patch
1 patch every morning
Serum level should be midnormal after 4 hours

Nonscrotal patch
2 patches every evening
Serum level should be midnormal after 8 to 12 hours

Gel
5 g every morning (may be increased to 7.5 g, 10 g)*
Serum level should be midnormal after 4 hours

Buccal patch
50 mg bid

*This dosing flexibility applies to AndroGel 1%.
Contraindications and Risks of Testosterone Therapy

Contraindications
- Prostate cancer
- Breast cancer
- Advanced prostate obstruction with voiding disorder

Risks
- Hepatotoxicity (prolonged use of high doses of oral androgens, eg, methyltestosterone)
- Increased risk of prostate cancer in patients with clinical or demographic characteristics
- Edema in patients with preexisting cardiac, renal, or hepatic disease
- Gynecomastia
- Sleep apnea

Testosterone Replacement Therapy and Prostate Cancer Risk

Fact: Decreasing testosterone levels causes regression of prostate cancer

Question: Does increasing testosterone cause prostate cancer?

In 7 prospective testosterone replacement therapy trials (6-36 months), 5/461 (1.1%) diagnosed with prostate cancer
– Prevalence rate ~ general population

12 prospective studies examined androgen levels and risk of prostate cancer
– In one trial, mean testosterone levels equal between prostate cancer and controls
– No increased risk between highest and lowest quartile
– Only after adjustment of 4 other hormones was increased testosterone levels associated with increased risk of prostate cancer
– Other 11 studies showed no increased risk with increased testosterone

Testosterone Therapy: Risks of Prostate Cancer

Most epidemiologic studies suggest no association between testosterone levels and incidence of prostate cancer.

Treatment may stimulate growth in previously undiagnosed tumors.

No data support testosterone therapy as a cause of prostate cancer.

Testosterone Treatment: Self Report of Sexual Activity

Davidson JM, et al. J Clin Endocrinol Metab. 1979;48:955-958. Figure 3.
Conclusions

Bioavailable testosterone levels diminish with each decade

Low testosterone in adult men can be diagnosed and treated effectively

Testosterone replacement therapy can
  Increase hormone levels to normal ranges
  Improve cognition and mood
  Enhance sexual function and activity
  Improve body composition and muscle strength
  Increase bone mineral density

DIAGNOSE, TEST, and TREAT!
Viagra 1998
PDE5 Inhibition: Mechanism of Action

Smooth muscle cell

L-Arginine → eNOS → NO → Endothelial cell

O₂ → Cavernous nerve

Guanylyl cyclase → cGMP → Protein kinase G

PDE 5 → Decreased Ca²⁺ → Smooth muscle relaxation

# Comparative Exertion Levels of Sexual Activity With Other Common Activities

<table>
<thead>
<tr>
<th>Estimated METs</th>
<th>Description</th>
<th>Physical Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Sitting</td>
<td>Reading, watching TV</td>
</tr>
<tr>
<td>3</td>
<td>Very light exertion</td>
<td>Office work, strolling in park</td>
</tr>
<tr>
<td>4–6</td>
<td>Moderate exertion</td>
<td>Sexual activity, walking, golfing, gardening, softball</td>
</tr>
<tr>
<td>6–8</td>
<td>Heavy exertion</td>
<td>Running, racquetball, heavy snow-shoveling, competitive basketball</td>
</tr>
</tbody>
</table>

METs = metabolic equivalents of oxygen consumption.

Kloner RA, Zusman RM. *Am J Cardiol.* 1999;84:11N-17N.
## Cardiovascular Risk Assessment

<table>
<thead>
<tr>
<th>LOW</th>
<th>INTERMEDIATE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3 risk factors</td>
<td>&gt;3 risk factors</td>
<td>unstable</td>
</tr>
<tr>
<td>Mild, stable <strong>angina</strong></td>
<td>moderate</td>
<td>uncontrolled HTN</td>
</tr>
<tr>
<td>HTN, controlled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/P CABG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI &gt;6-8wks</td>
<td>2-6wks</td>
<td>&lt;2wks</td>
</tr>
<tr>
<td></td>
<td>CVA/PVD</td>
<td></td>
</tr>
<tr>
<td>NYHA class I</td>
<td>class II</td>
<td>class III/IV</td>
</tr>
<tr>
<td>All 1\textsuperscript{st} line RX</td>
<td>ETT/ECHO</td>
<td>cardiology</td>
</tr>
</tbody>
</table>

Debusk R et al, Am J Cardiol. 2000;86:175-181
Cardiovascular safety

Initial 8 months
6 million outpt scripts
130 Deaths reported to FDA
77 Cardiovascular
  19 pts on NTG/nitrates
  41 pts MI
  Led to CVD concern

Sildenafil with Ischemic Heart Disease
JAMA 287:6,2002
Sildenafil with no effect
  Sx
  Arrhythmias
  Wall motion abnl
Stable CAD, no nitrates, no MI
Intracavernosal Injection: Alprostadil

Description
- Synthetic PGE$_1$, rapidly metabolized, useful in treatment and diagnostic testing

Dosing/concentration
- Typical dosing 1–60 μg; concentration: 20–40 μg/mL

Efficacy
- Initiates erection across all etiologies of ED (60%–70%)
- Superior to papaverine or papaverine-phenolamine

Adverse effects
- Local: prolonged erection/priapism (0.35%–4%), fibrosis (1%–23%), painful sensations (10.6%)

Intraurethral Therapy: Alprostadil

Description\(^1\)
- Medicated urethral system for erection (MUSE\(^\circledR\))
- Semisolid pellet 3 x 1 mm; proprietary applicator

Dosing\(^1\)
- 125, 250, 500, 1000 µg

Efficacy\(^2,3\)
- Moderately effective; clinical experience suggests 1 in 3 patients respond at home
- Improved with constriction band (Actis\(^\circledR\))

Adverse Effects\(^2,3\)
- **Local:** Penile pain
- **Systemic:** Dizziness/hypotension, syncope

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1. MUSE\(^\circledR\) product information.
Oral Failures

VED
75% “not satisfied”

MUSE
25% refill rate

Injection therapy
Caverject
Edex
Triple drug
73% dropout

Hanash KA: J Urol 157:2135, 1997
Process VI

Third Line Therapy
surgical prosthesis
Invented 1973
>90% satisfaction
>80% partner
invasive
Penile Implants

AMS 700 CX

86% mechanical survival @ 5yrs
78% survival @ 5 yrs; all causes
>90% pt satisfaction
>85% partner satisfaction

Antibiotic coated
IPP in the Elderly

56 males (35 responded)
Age 71-86 (mean 74.3)
F/U 0.5-2.4 yrs
Complication 3.4%
  (2 of 56 pts)
Telephone interview
IPP in the Elderly

Overall satisfaction

# of patients

Satisfaction rating

0 5 10 15 20 25

1 2 3 4 5
IPP in the Elderly

![Frequency of Use](image)
The End