



This meeting is organised by  
the ESHRE Special Interest Group "Andrology"

**Reproductive andrology:**  
linking laboratory to clinical practice

ESHRE Campus 2009  
Thessaloniki Greece, 1-3 October 2009

# ERECTILE DYSFUNCTION & FERTILITY

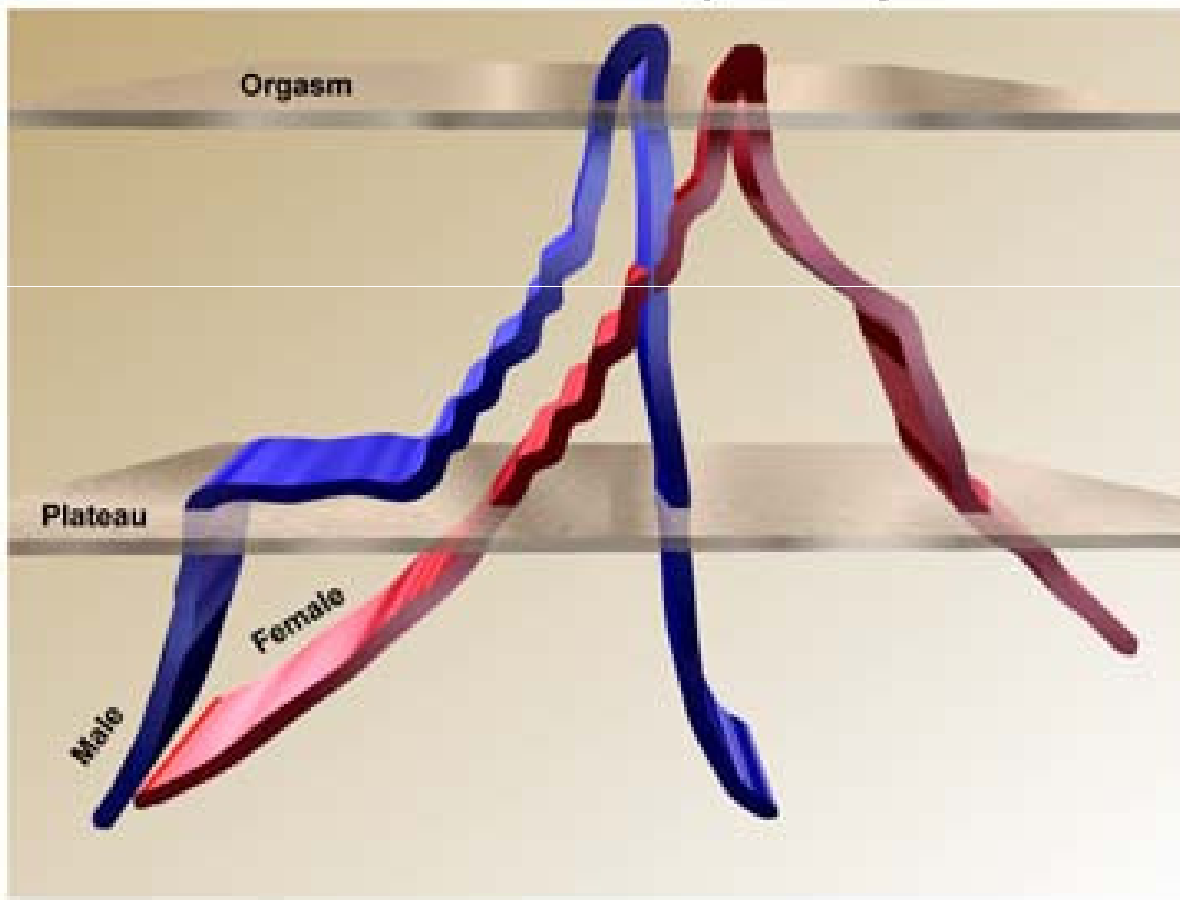
Dimitris Hatzichristou, MD

Center for Sexual and Reproductive Health  
Aristotle University of Thessaloniki, Greece



# Sexual Response

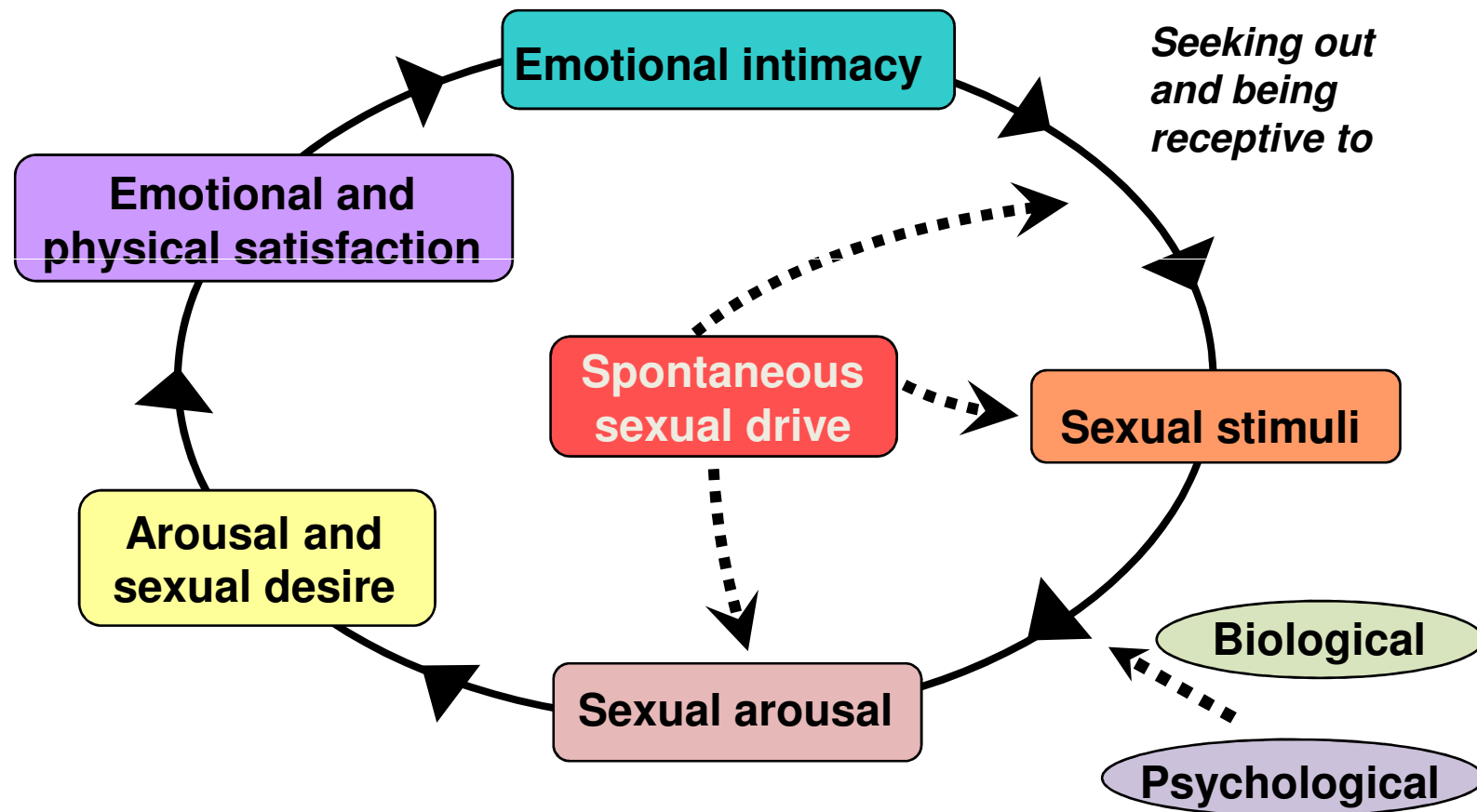
Human Sexual Response Cycle



Masters EH, et al. *Human Sexual Response*. Boston, Mass: Little Brown & Co.; 1966.

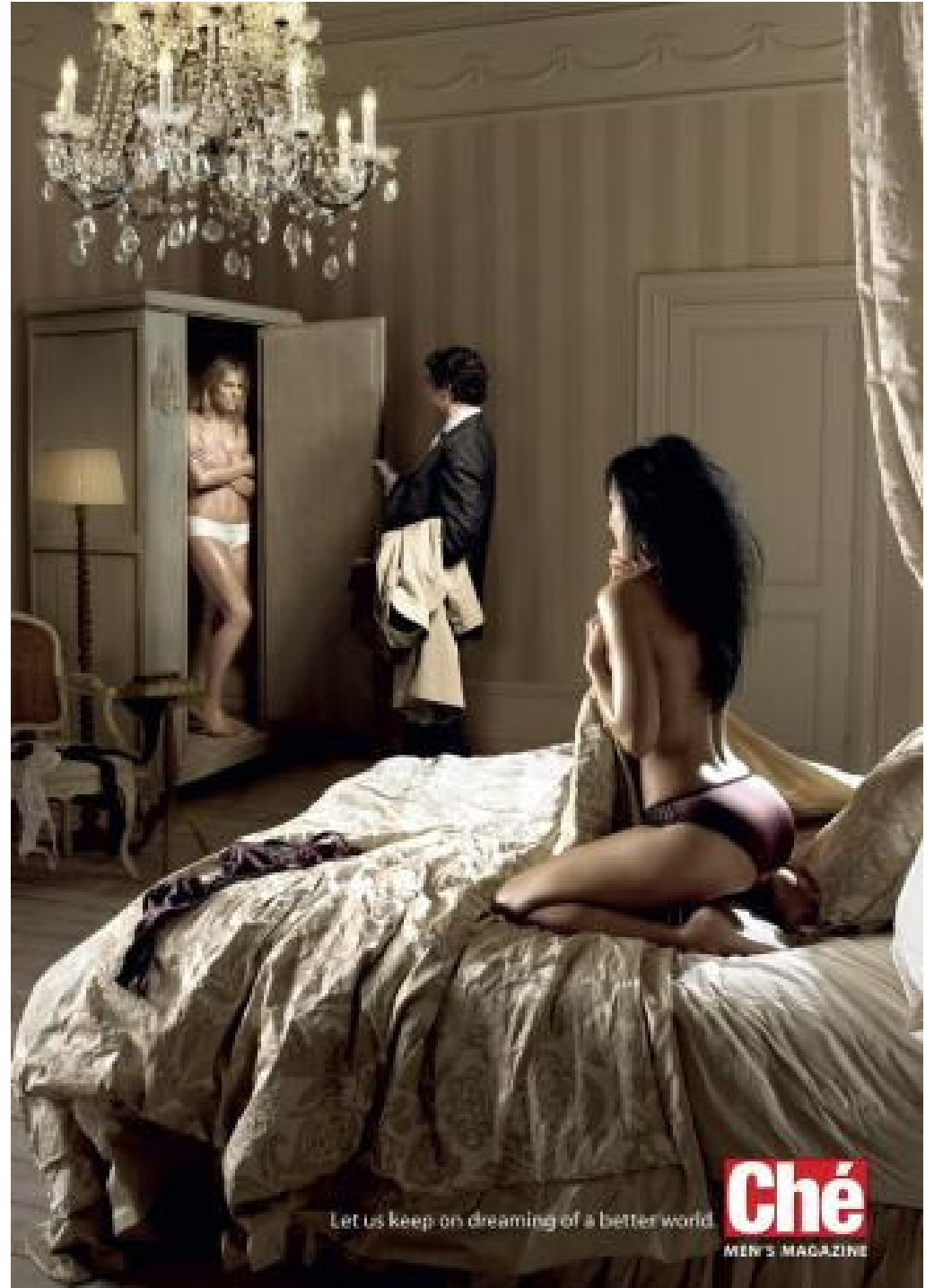
Kaplan HS. *Disorders of Sexual Desire and Other New Concepts and Techniques in Sex Therapy*. New York, NY: Brunner/Mazel Publications; 1979.

# Women's Sexual Response





What men dream of...

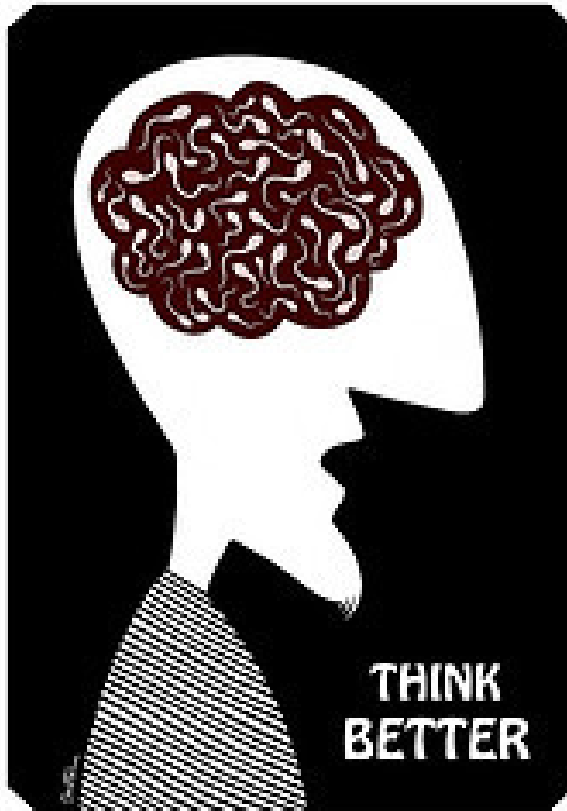


Let us keep on dreaming of a better world.

**Ché**  
MEN'S MAGAZINE



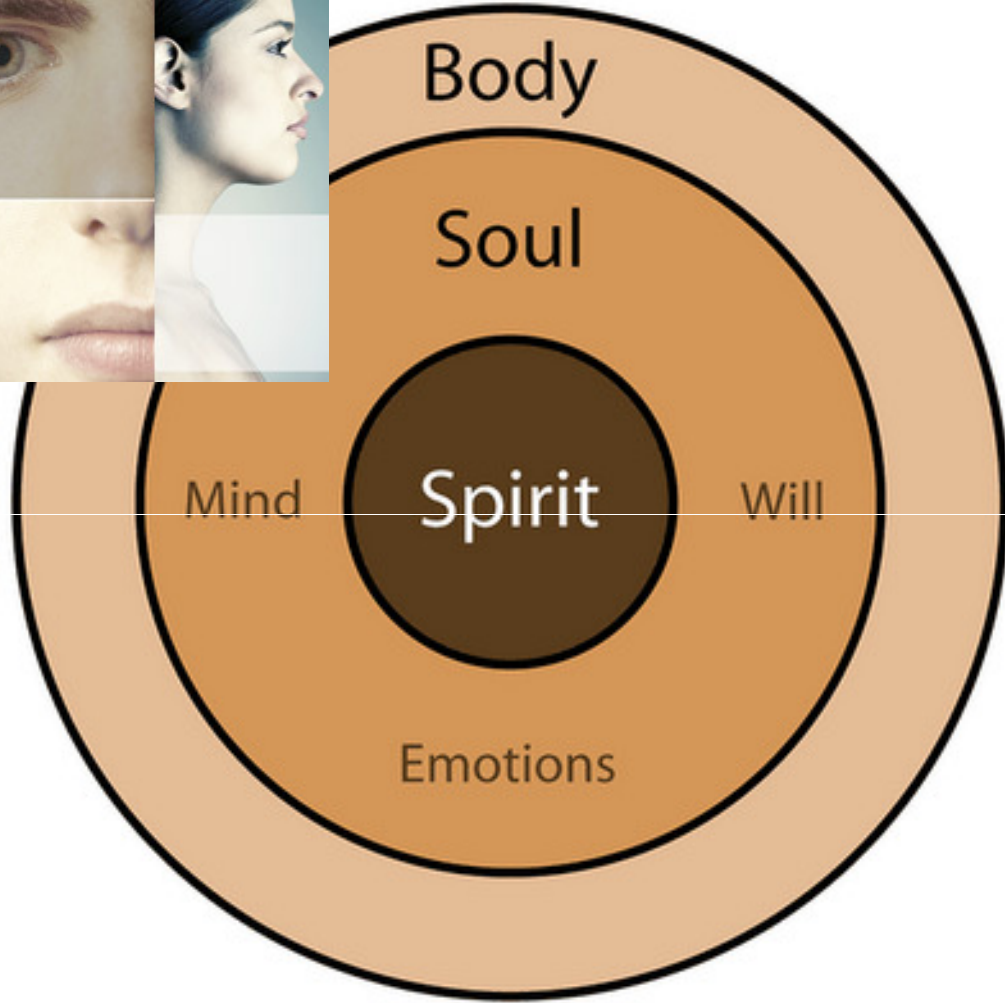
# How women expect men to think?



**WHY?**



# WHY ED?



# Risk factors for cardiovascular disease (CVD) and erectile dysfunction(ED)

## CVD

- Age
- Dyslipidemia
- Hypertension
- Diabetes
- Smoking
- Sedentary lifestyle
- Obesity
- Depression
- **Male,**  
postmenopausal women

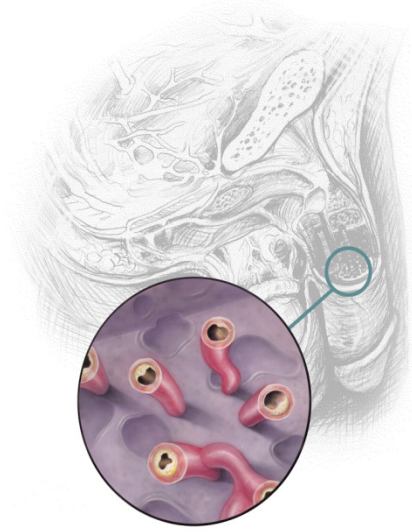
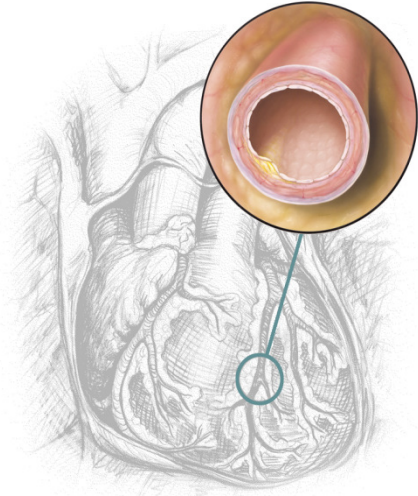
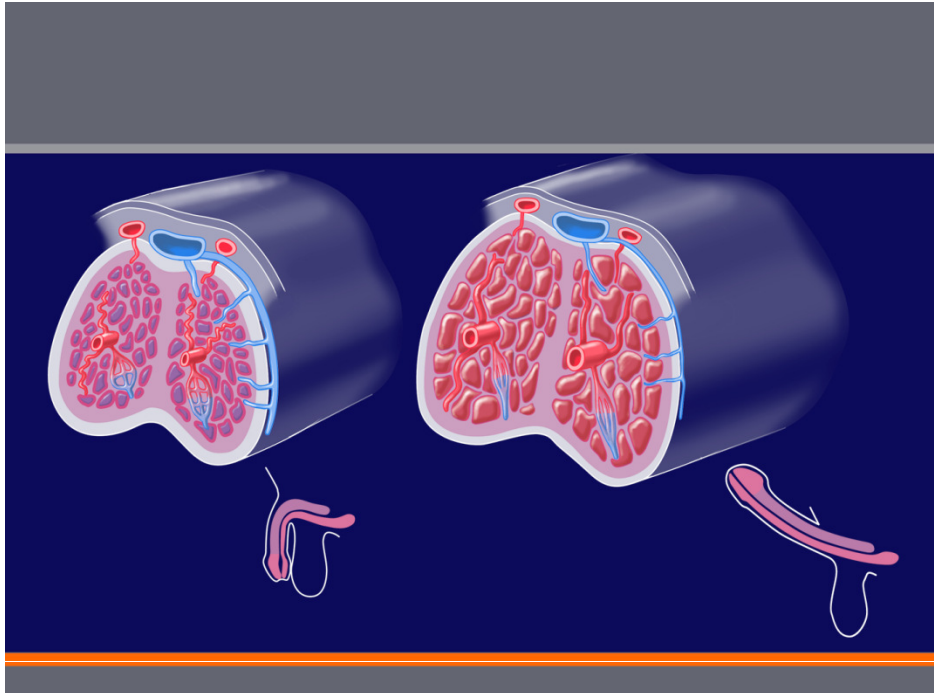
## ED

- Age
- Dyslipidemia
- Hypertension
- Diabetes
- Smoking
- Sedentary lifestyle
- Obesity
- Depression
- **Male**

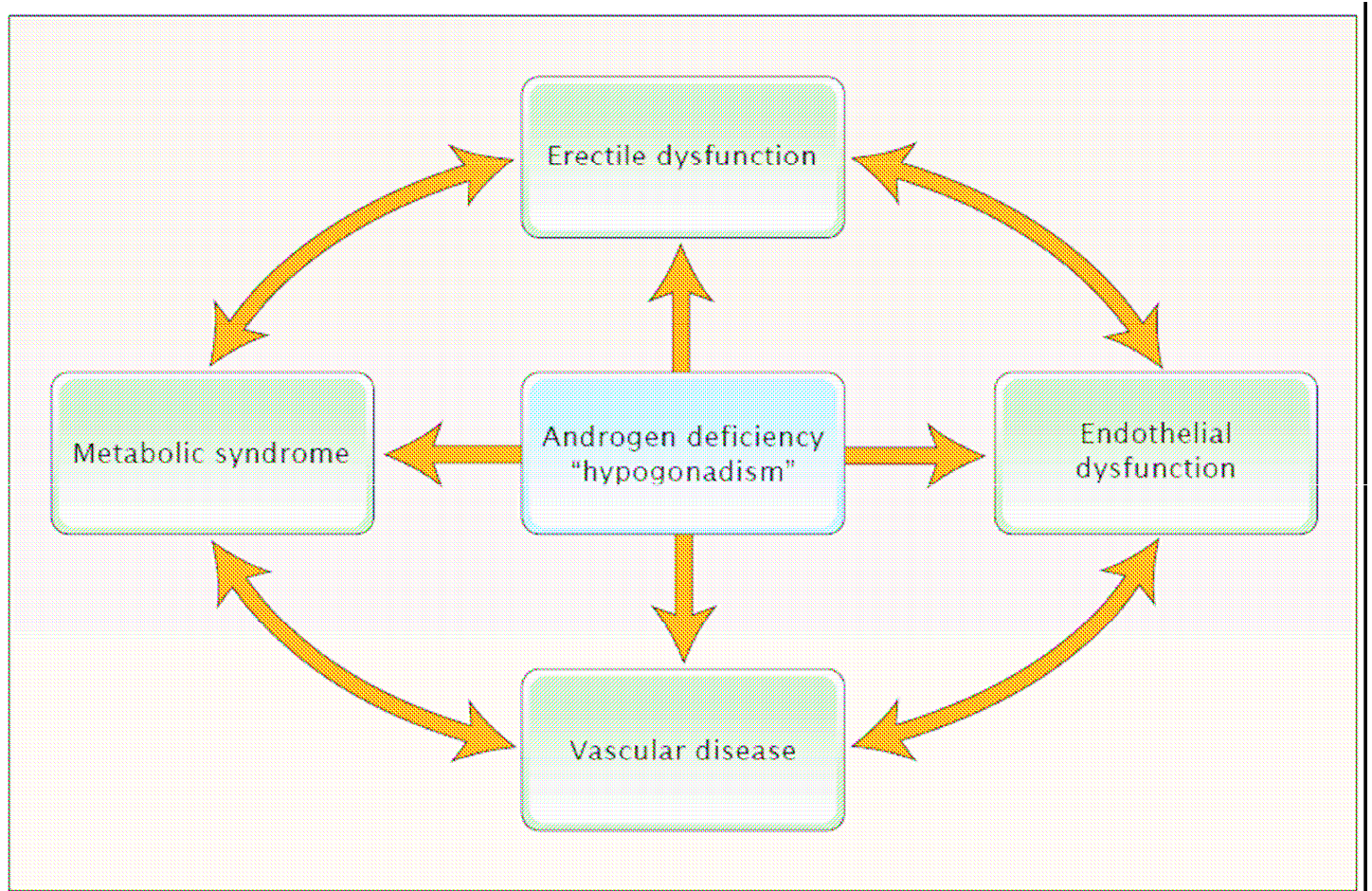
**Mittleman (2004)**



# Mechanism of erection

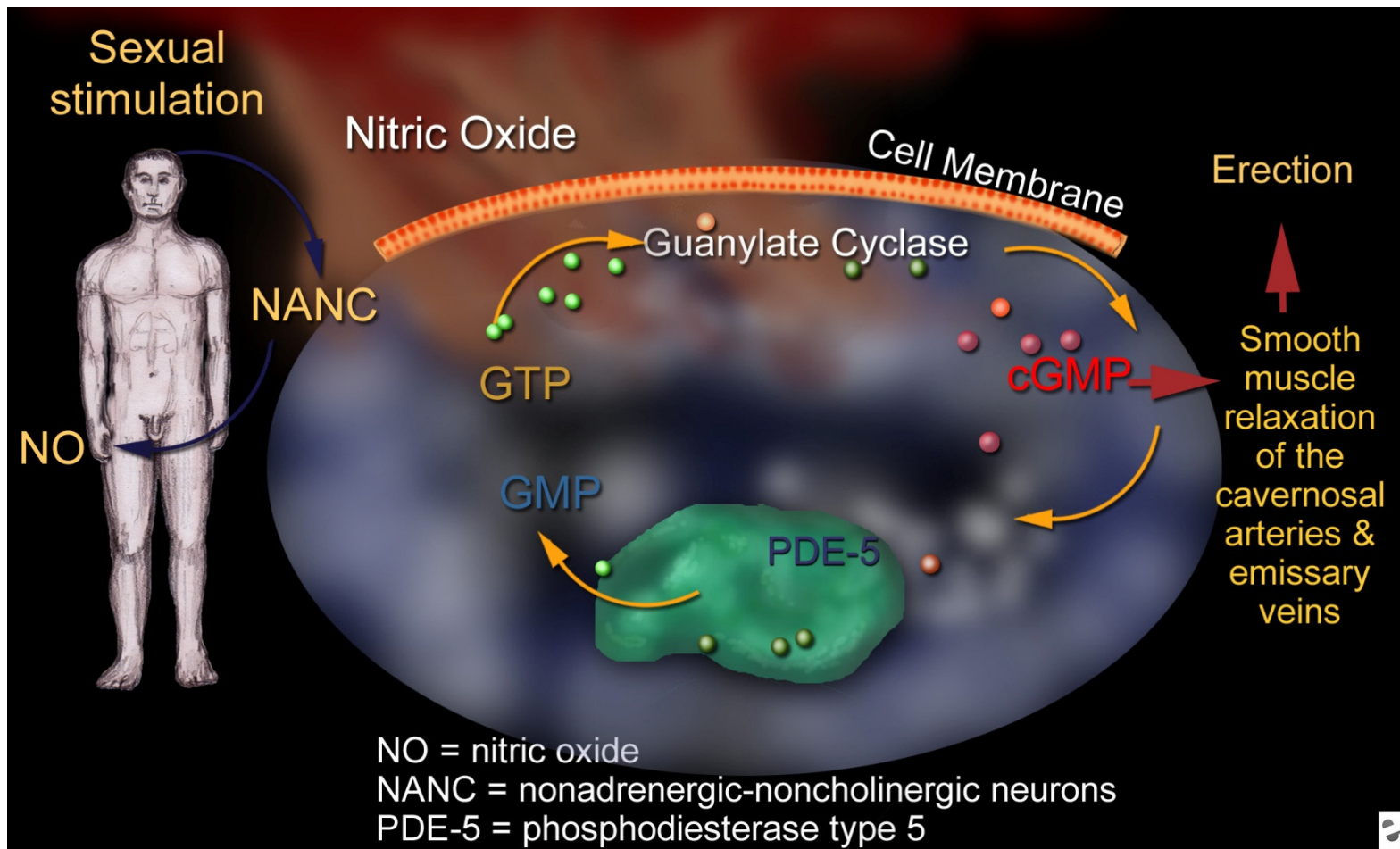


# The vicious cycle



Traish AM, et al: J Androl, 2008

# PDE5-inhibitors: mechanism of action



# PDE-5 inhibitors: efficacy

Efficacy parameter	Sildenafil		Tadalafil		Vardenafil	
	placebo	sildenafil	placebo	tadalafil	placebo	vardenafil
IIEF EF Domain	12.2	22.1	15.1	23.9	14.8	21.8
SEP2	50%	85%	48%	80%	49.1%	89.4%
SEP3	22%	69%	31%	70%	49%	79.1%
GAQ	25%	84%	35%	81%	28%	85%



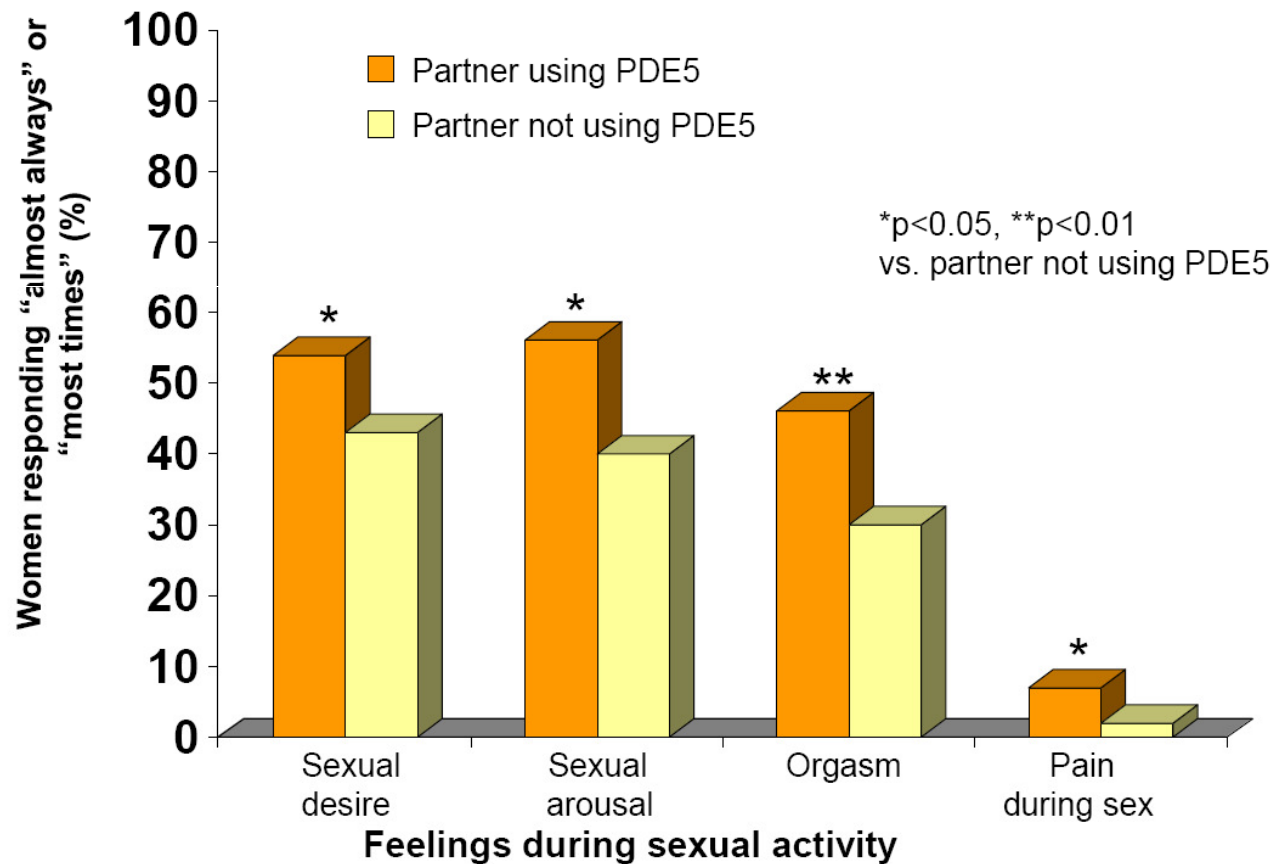
Hatzimouratidis K and Hatzichristou DG. Drugs 2005, 65:1621-1650

# PDE-5 inhibitors: side-effects

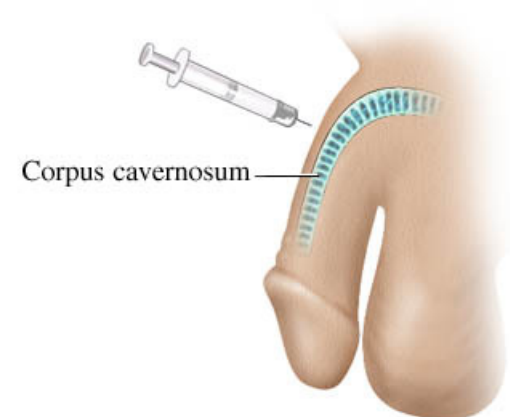
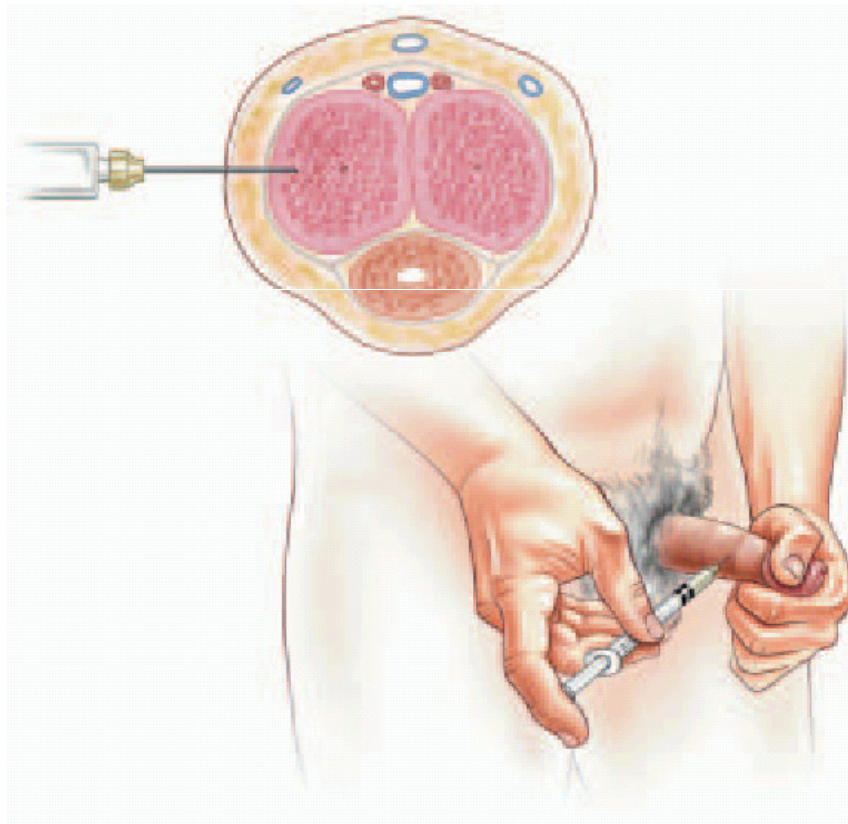
	placebo	sildenafil	placebo	tadalafil	placebo	vardenafile
Headache	5.6%	19%	6%	21%	6%	16%
Hot flashes	2%	14.2%	2%	5%	1%	12%
Dyspepsia	1.6%	8.7%	2%	17%	1%	4%
Rhinocongestion	1.5%	5.1%	4%	5%	4%	10%
Διαταραχές όρασης	0.7%	5.9%	-	-	0%	<2%
Οσφυαλγία	-	-	5%	9%	-	-
Μυαλγία	-	-	2%	7%	-	-



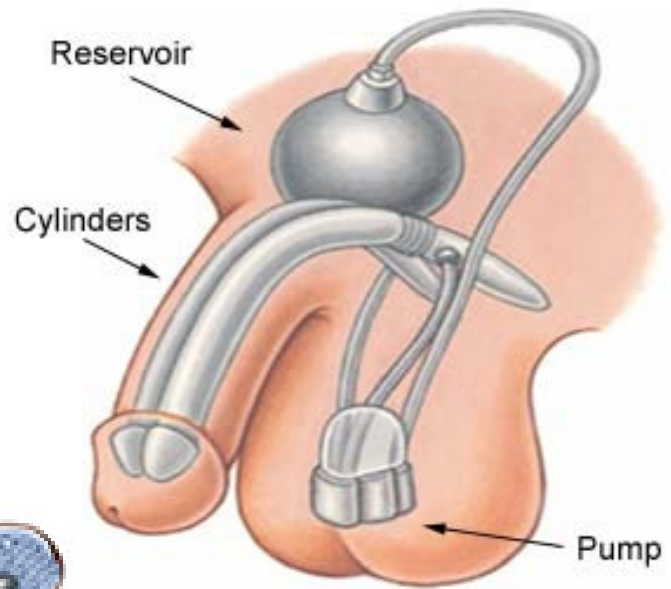
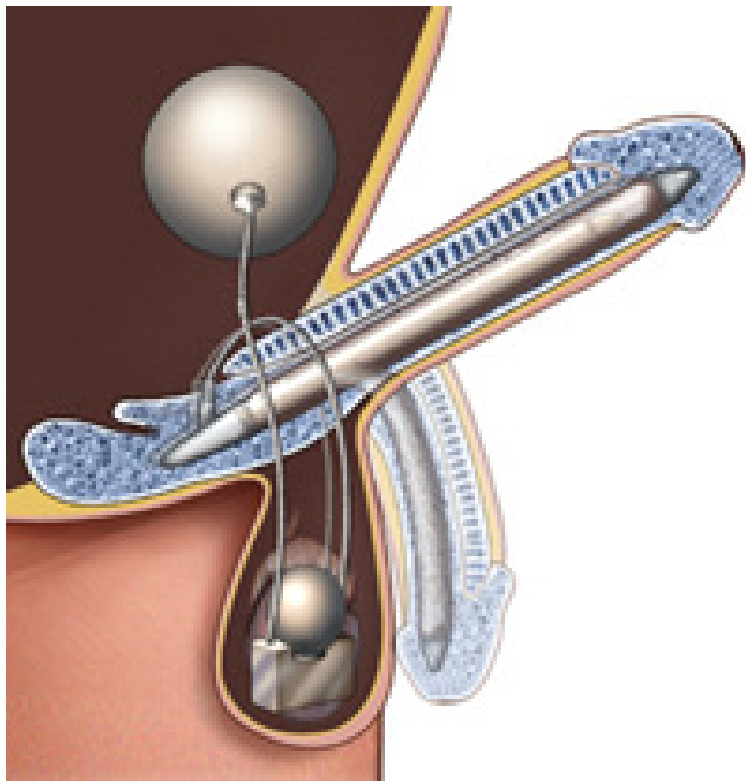
# PDE-5 inhibitors: women's satisfaction



# The intracavernosal injection therapy

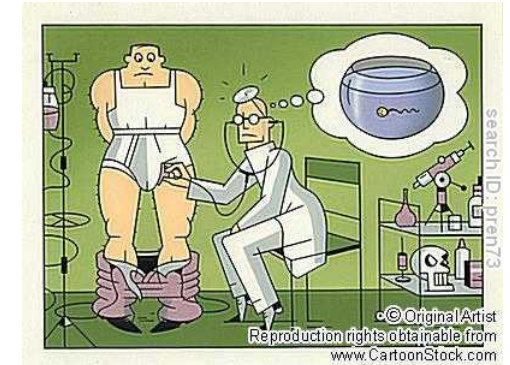


# Penile prosthesis





# FERTILITY & SEXUALITY



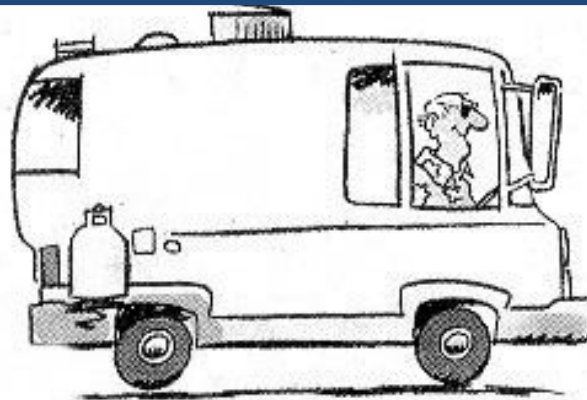
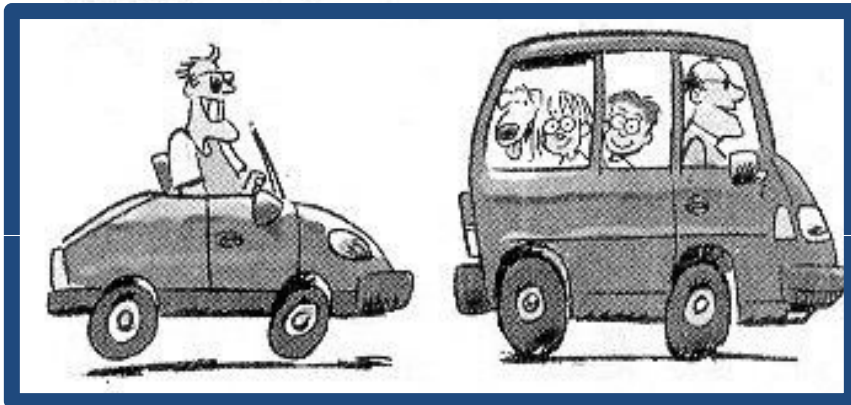
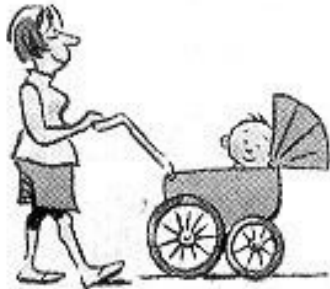
**Fertility and potency is particularly strong since the capacity to procreate is essential to the male identity**

*Nachtigall RD. et al, 1992; Woollett A., 1985*

**More pressure to men since, compared to women, men are not keen to initiate investigation for infertility**

*McGrade and Tolor, 1981*

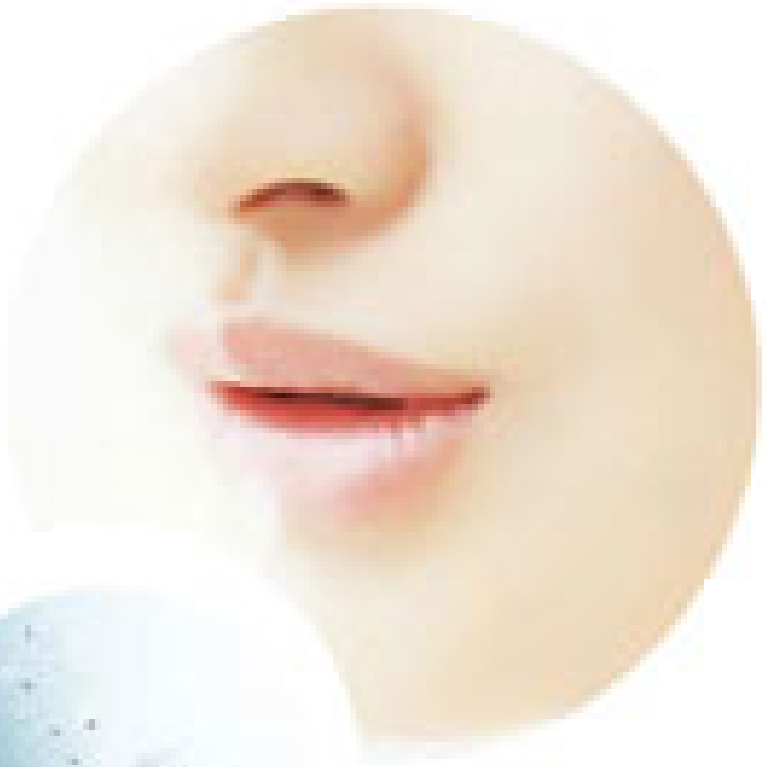
# The Wheels of Life



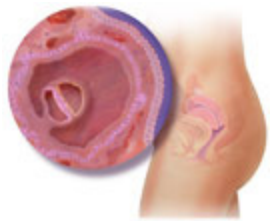
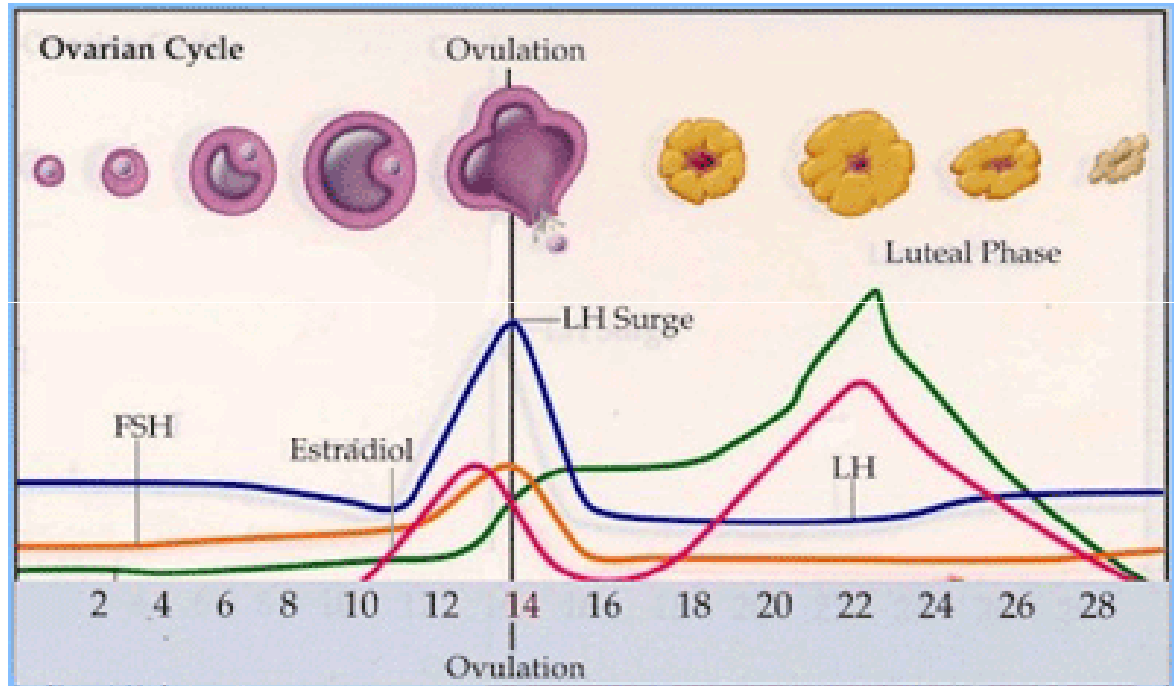
# Love story I



# Love story II



# The "NOW SEX" story !





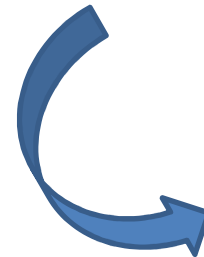
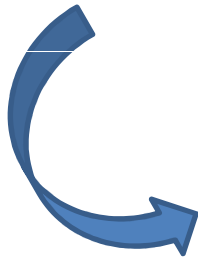


# “Sexual” myths

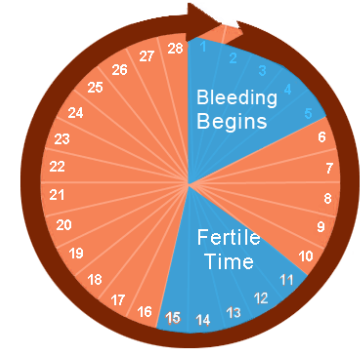


- A real man keeps any woman satisfied
- **A real man has sexual intercourse any time the situation raises**
- **A real man doesn't need much stimulation to get an erection**
- A successfully professional career implies control of sexual behavior
- **If I fail again, this will be the end!**

# Love story III



The Menstrual Cycle





# SEX AND RECREATION

When a couple has an infertility issue, problems with their sexual relationship may become more pronounced:

**The need to "perform" at specific times.**

Sexual activity: an activity restricted for **procreation** rather than **recreation**.

Sexual expression in a couple with infertility becomes "**mechanical and forced.**"

*Siebel MM, and Taymor ML, 1982*

The psychogenic nature of erectile dysfunction in these patients was also evident from its association with a **longer duration of infertility** and with **increased levels of anxiety**.

*Saleh et al., 2003*



# INFERTILITY FACTS

- Male factor infertility accounts for about 30-40% of all cases seeking fertility treatment.
- Compared to women little is known about the impact of **emotional stress on the male partner**
- The diagnosis of male infertility has been associated with a **loss of self-esteem** and an increase in **patient anxiety and somatic complaints**

*Kedem P. et al, 1990*



## INFERTILITY CRISIS

- An **emotional crisis** and a physical challenge interferes with one of the most fundamental human activities

*Mahlstedt PP,1985*

- From a list of 87 items of stressful life events, infertility has been ranked as **one of the most negative stressful situations**—akin to the death of a son or a spouse

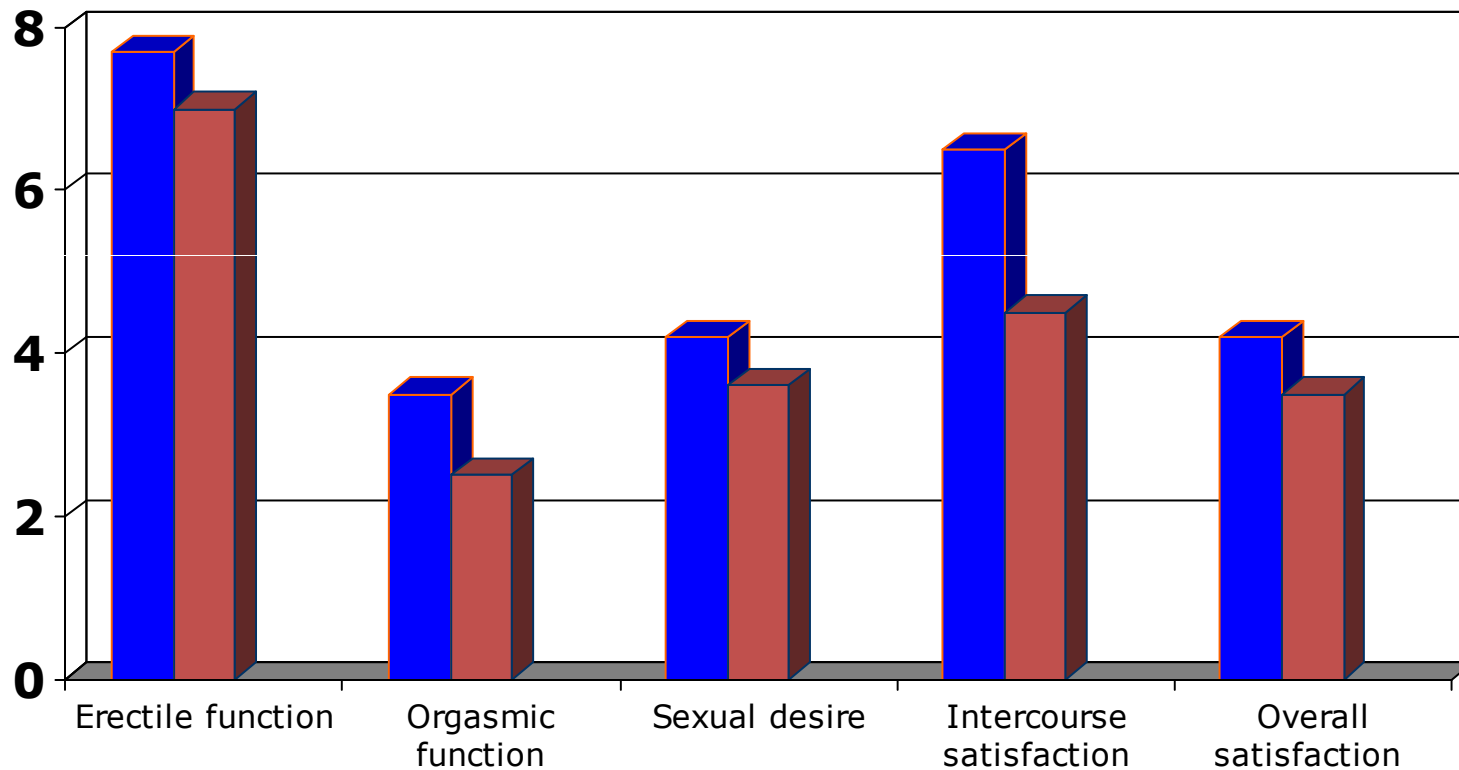
*Dohrenwend and Dohrenwend,1981*

- As it is a major source of life stress, infertility might be associated with sexual dysfunction (SD) through **the erosion of self-esteem and self-confidence, and by stimulating discord in a relationship.**



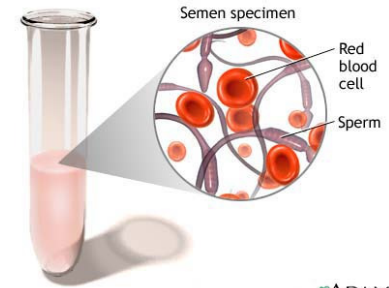


# Men from infertile relationships reported more sexual dysfunction compared with the control group



Monga et al., 2004

# Semen analysis



- Identification and classification of male infertility relies on the results of **semen analysis**.
- The standard procedure to obtain an ejaculate is by **masturbation** since it is the easiest and most practical method, cheap and hygienic, and also allows bacteriological testing if needed.
- In the majority of cases, requesting a masturbated sample is therefore **the unquestioned and preferred way** to obtain spermatozoa for all types of diagnostic and therapeutic purpose.(Gerris J., 1999)

# ERECTILE FUNCTION & EJACULATION



The inability to produce seminal specimens at the time of seminal evaluation may reflect difficulties with sexual drive and deficient spermatogenic parameters.

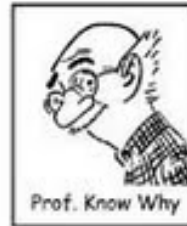
*Zavos et al, 1999*

# Sperm donation



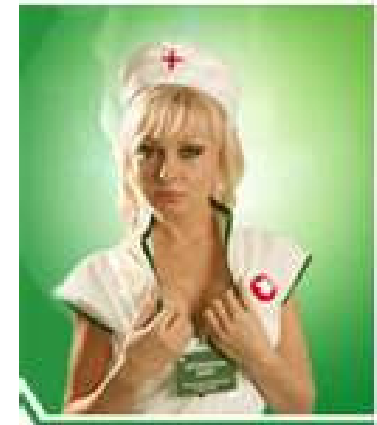


# Sperm analysis



Prof. Know Why

Men who masturbate regularly are at a reduced risk of developing prostate cancer.





# Masturbation



Egon Schiele



**masturbate-a-thon**

On May 2 people will gather at 1519 Mission St raising money from lovers and friends who've pledged donations for every minute they spend masturbating.

**BE THERE!**

**Sister Roma**  
Kirk Read  
APRIL FLORES  
TOM ORR

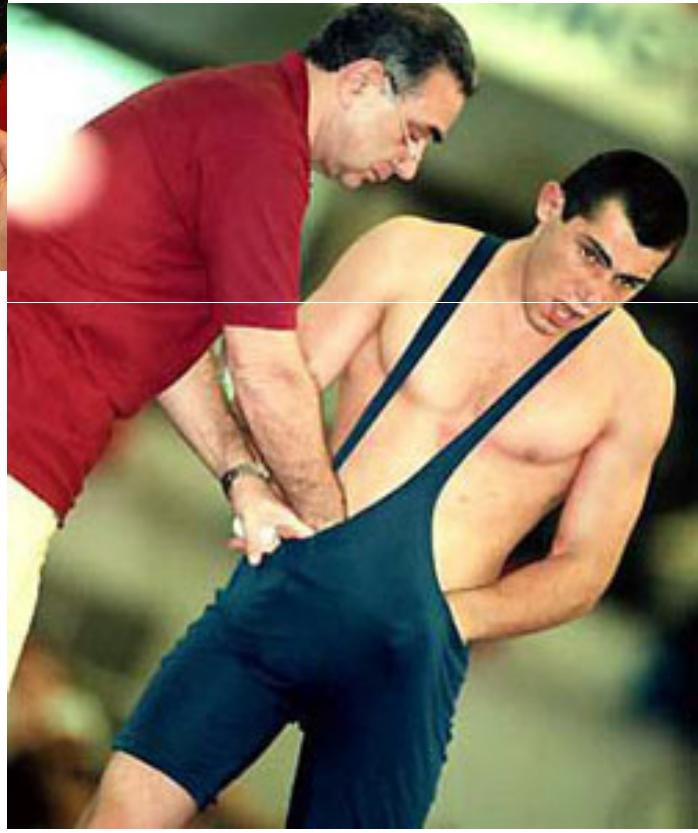
**NINA HARTLEY**  
watch Masanobu Sato defend his 2008 world record

**DR CAROL QUEEN**

download your pledge form at [masturbate-a-thon.com](http://masturbate-a-thon.com) or watch LIVE on-line

**CSC**  
CENTER FOR SEX & CULTURE

# Help!



# FAILURE TO VIBRATORY STIMULATION

	Men responded to vibratory stimulation	Men <b>did not</b> respond to vibratory stimulation	p value
Age (years)	29	32	0,39
Length of infertility (years)	2,5	1,9	0,19
Sperm concentration (M/ml)	<b>74</b>	<b>4</b>	0,04
Motility (%)	<b>58</b>	<b>35</b>	0,01
Normal morphology	<b>22</b>	<b>11</b>	0,05

Saleh et al. Fertil Steril 2003;79:909–12

# FAILURE TO COLLECT SPERM

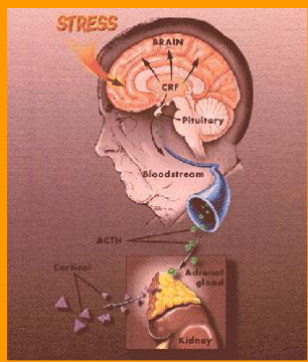
	Men <b>failed</b> to collect 2 <sup>nd</sup> sample	Men <b>able</b> to collect 2 <sup>nd</sup> sample	p value
Age (years)	32	30	0,17
Length of infertility (years)	2,2	1,3	0,02
Sperm concentration (M/ml)	<b>9</b>	<b>33</b>	0,06
Motility (%)	<b>41</b>	<b>48</b>	0,05
Normal morphology	<b>13</b>	<b>22</b>	0,08

Saleh et al. Fertil Steril 2003;79:909–12

Anxiety

Emotions

Sex



- Men have high levels of anxiety when providing a semen sample either **pre-treatment or on the day of oocyte retrieval** since the procedures involved in providing a specimen were relatively stressful (R.N.Clarke et al.,1999) even due to the clinic visits only (Reading and Gambone, 1998).
- **1/10 men undergoing infertility evaluation** experienced problems with erection or orgasm after detection of an abnormality in the results of their first semen analysis. Because these men had normal sexual functions before the infertility evaluation, it is speculated that erectile dysfunction in these cases was psychogenic in nature and was triggered by the abnormal results of semen analysis. (Saleh et al.,2003)



# ART solutions!





# Stress and ART in Men

## Relationship between psychological stress and semen quality among IVF patients

**Table I.** Changes in sperm parameters from a baseline analysis (T1) to the time of oocyte retrieval (T2)

<b>Sperm parameters</b>	<b>T1a</b>	<b>T2a</b>	<b>Change(%)</b>	<b>Pvalue</b>
Total sperm concentr (x10M/ml)	113.5±19.7	68.9±8.7	<b>-39</b>	0.034*
Motile sperm concentr (x10M/ml)	76.9±15.2	40.8±7.4	<b>-47</b>	0.006*
Total motile sperm (x10M)	210.0±46.8	111.7±24.9	<b>-48</b>	0.002*
Lateral head displacement (mm)	2.2±0.2	1.8±0.2	<b>-18</b>	0.006*
Semen volume (ml)	2.9±0.3	3.0±0.3	+3	0.743
Normal forms (%)	52.9±1.9	55.6±2.4	+4.8	0.474



# Stress and ART in Men

➤ High levels of anxiety when providing a semen sample either pre-treatment or on the day of oocyte retrieval since the procedures involved in providing a specimen were relatively stressful!

**Table II.** Changes in stress-related parameters from a baseline analysis (T1) to the time of oocyte retrieval (T2)

<b>Stress parameters</b>	<b>T1a</b>	<b>T2a</b>	<b>Pvalue</b>
Importance (incr scale 1-4)	3.2±0.2	3.8±0.1	<b>0.001*</b>
Anxiety (incr scale 1-4)	41.1±1.6	42.2±1.7	0.331
Stressfulness	2.1±0.2	2.1±0.2	0.836
Environmental distractions	15.7±0.9	15.3±0.9	0.260



# PDE-5 inhibitors saved ART!

“We describe **for first time** the use of sildenafil citrate for temporary ED in couples undergoing ART:

- Husband could not produce spermatozoa for the first IVF treatment after an exhausting trial for 12 h, without previous problems in providing sperm samples during previous IUI cycles.
- Using sildenafil enabled him to provide spermatozoa, but the delay in oocyte insemination resulted in no embryonic development.
- This prompted us to be **more alert** to this option and to suggest the use of Viagra to men who had a history of ED during previous ART cycles.
- In these cases, the use of Viagra was planned in advance and it **successfully solved** any unpredictable ED on the day of insemination. Such cases emphasize the need to think in advance of this potential use of Viagra during ART”.

**Tur-Kaspa I et al, Hum Reprod. 1999;14(7):1783-4**

# PDE-5 inhibitors: drugs for infertility!

- The use of PDE-5 inhibitors in male infertility diagnostic procedures or/and assisted reproduction programs could be an approach possibly **useful and able to diminish the stress** perceived by men and associated with these techniques when patients (and sperm donors) have to produce a semen sample in the uninviting surroundings of a fertility clinic.
- Furthermore, this treatment might **help in maximizing recovery of the best semen**, since a number of studies have indicated that stress has a negative impact on various parameters associated with semen quality, including sperm concentration, motility and morphology (Moghissi and Wallach, 1983; Bents, 1985; Giblin et al.,1988).
- The use of PDE-5 inhibitors in general, during medical reproduction management, **could be introduced in cases of male infertility**, providing a patient with a facilitative effect when the patient 'has to' produce a semen sample for analysis, breaking the vicious circle in which diagnostic procedures induce stress, and stressed partners are less fertile and less sexually active (Jannini et al. 2004).

# Sex is good for ART couples!

**Being sexually active during the IVF-treatment** period was found to be positively associated ( $p < .05$ ) with the likelihood of **conception and with adaptive coping strategies.**"

*Bar-Hava et al, 2001*

# Men's most frequently self-reported sexual concerns

	<b>Erectile problems N(%)</b>	<b>Premature ejaculation N(%)</b>	<b>Other ejaculation problems N(%)</b>	<b>Reduced sexual desire N(%)</b>	<b>Penile deformities N(%)</b>
<b>Age</b>					
<19	55 (1.1)	42 (2.4)	3 (1.0)	3 (1.5)	5 (2.7)
<b>20-29</b>	734 ( <b>14.2</b> )	471 ( <b>27.1</b> )	74 ( <b>24.8</b> )	21 ( <b>10.7</b> )	21 (11.5)
<b>30-39</b>	932 ( <b>18.0</b> )	<b>540 (31.0)</b>	<b>95 (31.9)</b>	46 ( <b>23.5</b> )	13 (7.1)
<b>40-49</b>	872 ( <b>16.9</b> )	404 ( <b>23.2</b> )	39 ( <b>13.1</b> )	44 ( <b>22.4</b> )	15 (8.2)
50-59	1044 (20.2)	166 (9.5)	34 (11.4)	<b>48</b> (24.5)	42 (23.0)
60-69	<b>1171</b> (22.7)	102 (5.9)	35 (11.7)	28 (14.3)	<b>68</b> (37.2)
70-79	330 (6.4)	13 (0.7)	15 (5.0)	6 (3.1)	19 (10.4)
> 80	26 (0.5)	3 (0.2)	3 (1.0)	-----	-----

Papaharitou S et al: Erectile dysfunction and premature ejaculation are the most frequently self-reported sexual concerns: profiles of 9,536 men calling a helpline. Eur Urol.;49(3):557-632006

# Health Promotion Models

## Upstream



## Midstream



## Downstream



McKinlay J, 1995



# Sexual and reproductive health: perceptions and attitudes of health professionals in Greece

**1. Patients' sexual health: a qualitative research approach on Greek nurses' perceptions.**

Nakopoulou E, Papaharitou S, Hatzichristou D.  
J Sex Med. 2009 Aug;6(8):2124-32

**2. Exploring sexual attitudes of students in health professions.**

Papaharitou S, Nakopoulou E, Moraitou M, Tsimtsiou Z, Konstantinidou E, Hatzichristou D.  
J Sex Med. 2008 Jun;5(6):1308-16.

**3. Reproductive health and midwives: does occupational status differentiate their attitudes on assisted reproduction technologies from those of the general population?**

Papaharitou S, Nakopoulou E, Moraitou M, Hatzimouratidis K, Hatzichristou D.  
Hum Reprod. 2007 Jul;22(7):2033-9.

**A conceptual framework for the evolution of sexual medicine and a model for the development of alternative sexual health services: 10-year experience of the center for sexual and reproductive health.**

**Kirana PS, Papaharitou S, Athanasiadis L, Nakopoulou E, Salpiggidis G, Moysidis K, Pipilaki C, Hatzimouratidis K, Tzotstzis V, Portseli A, Iraklidou M, Apostolidis A, Bekos A, Hatzichristou D.**

**J Sex Med. 2009 Sep;6(9):2405-16.**



# Asking about sexual health...

## 1. Sexual activity

- number and gender of a patient's sexual partners
- length of the relationship

## 2. Fertility status / contraception

- number of children / abortions
- prevention of pregnancy strategies
- infertility problems / therapies

## 3. STDs

- HIV
- HPV
- infections (gonorrhea, chlamydia , etc)

## 4. Sexual Practices

- patient and family attitudes
- sex beliefs / socio-cultural influences
- self stimulation / masturbation
- sex practices / variations

## 5. Sexual experiences

- sexual development / body image
- abuse / trauma

## 6. *Sexual problems and satisfaction*

- past (before problem if possible)
- present

### Finishing up question:

"Is there anything else about your sexual life that I need to know about to ensure you good sexual health care?"

Hatzichristou D et al. Recommendations for the clinical evaluation of men and women with sexual dysfunction. *Committee Consensus Report of the International Consultation in Sexual Medicine.* Journal of Sexual Medicine, Jan 2010.

# The ICSM-5

Hatzichristou D et al. JSM in press

Man/woman  
complaining  
of SD

Step 1

Basic Evaluation

Mandatory:  
1. Sexual history  
2. Medical history  
3. Psychosocial history

Highly recommended:  
1. Focused physical exam  
2. Lab tests

Step 2

Findings do not  
preclude treatment

Findings indicate  
further specific  
evaluation

Specialized tests  
and/or referral

Step 3

Patient / partner education  
Shared decision making

Step 4

Treatment

- Counseling / Life style modifications
- Psychological (cognitive/behavioral/sex therapy)
- Medical (pharmacotherapy, devices)
- Surgical

Step 5

Evaluation of  
sexual well-being

- ✓ Treatment outcome (sexual function/adherence)
- ✓ Patient / partner / relationship satisfaction
- ✓ Life satisfaction / QOL

Thank you!

