

Cancer and Sexuality

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Reviews



Disclosures

**Consultant/Advisory Board: Apricus,
Emotional Brain, Exploramed,
Sprout, Strategic Science &
Technologies**

Speaker: Ascend, Shionogi

Research: Apricus, Neogyn

Learning objectives:

Identify the psychosocial and physiologic factors that can negatively impact a woman's sexual function following a cancer diagnosis and treatment

Apply a multidisciplinary treatment approach to female sexual dysfunction in the cancer survivor

Breast cancer survival rates by stage

The 5-year observed survival rate refers to the percentage of patients who live at least 5 years after being diagnosed with cancer

Many of these patients live much longer than 5 years after diagnosis

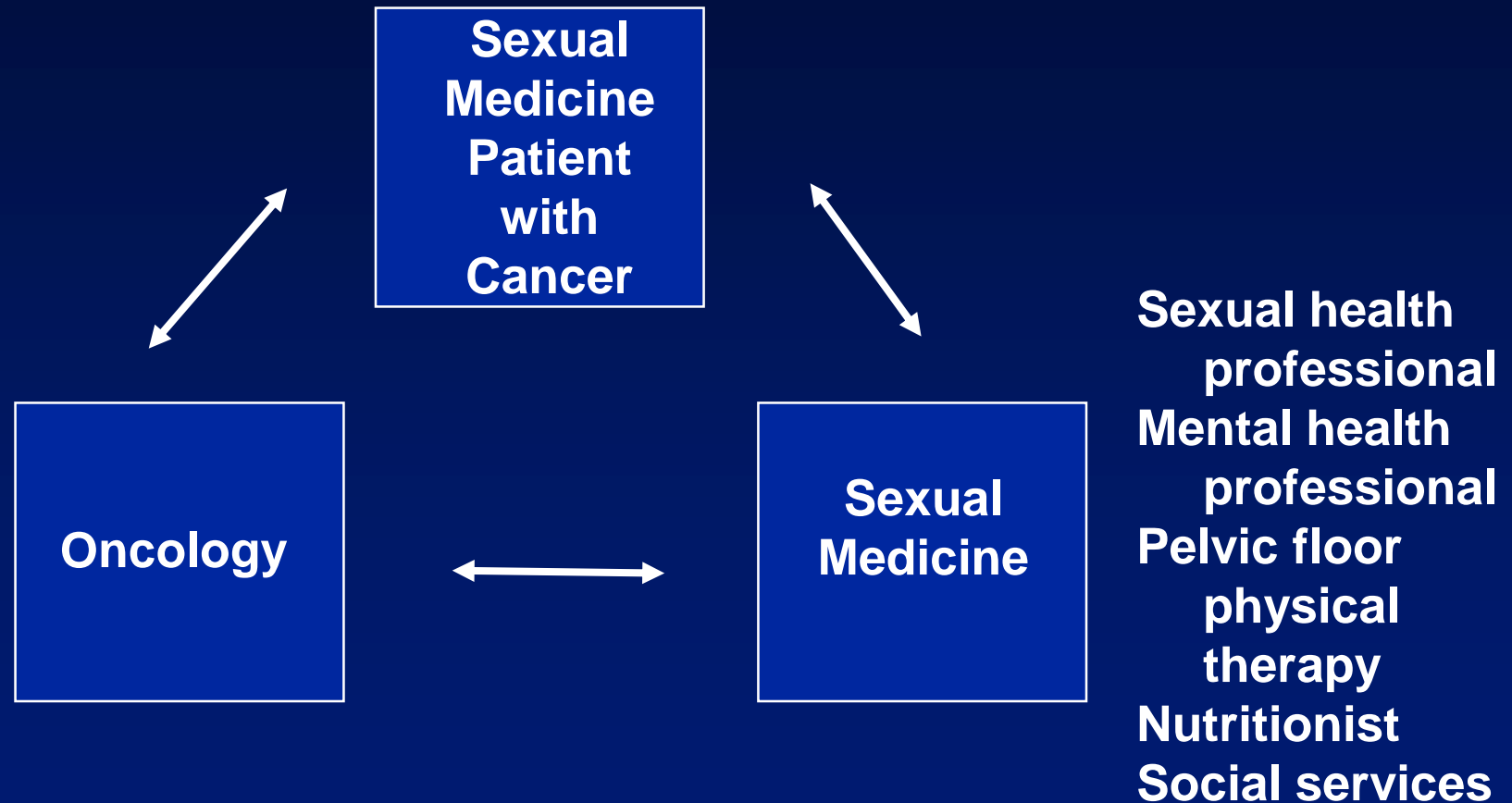
Improvements in treatment since then may result in a more favorable outlook for people now being diagnosed with breast cancer

Stage	5-year Relative Survival Rate
0	100%
I	100%
II	93%
III	72%
IV	22%

Last Medical Review: 09/25/2014

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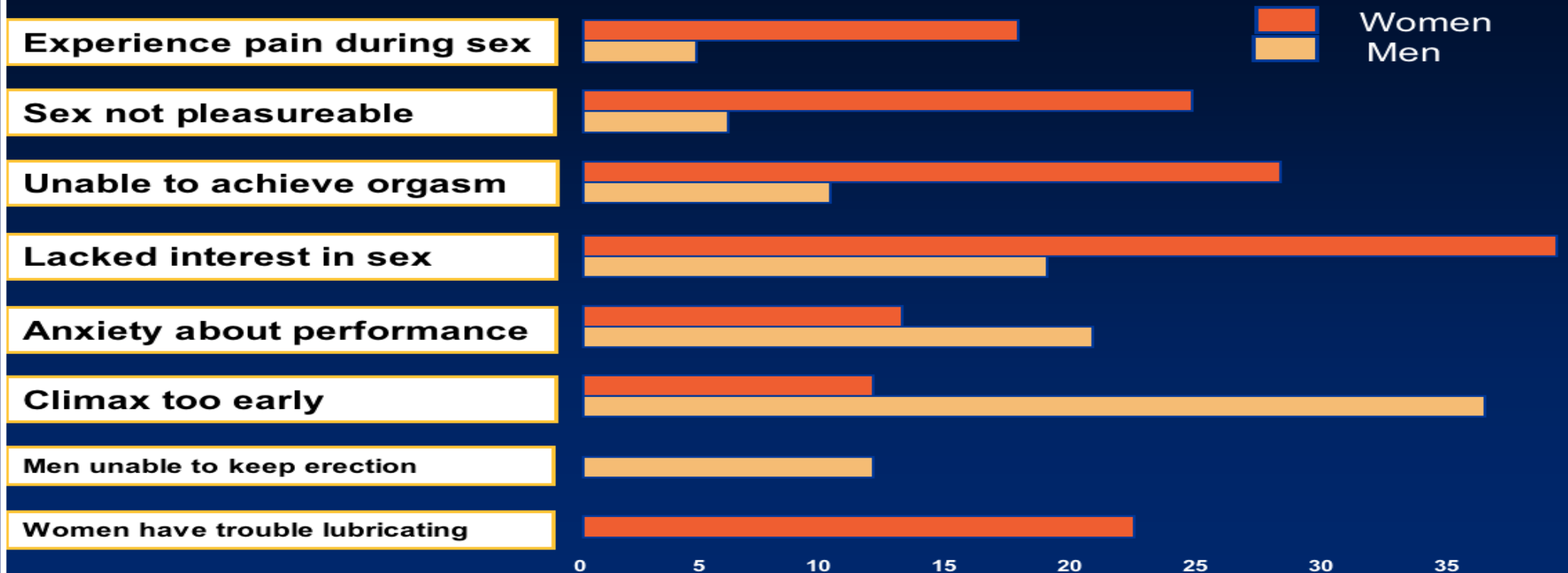
Ideal Management Paradigm of Woman with Cancer and Sexual Health Concerns



Cancer and Sexuality

Is Female Sexual Dysfunction common?

Prevalence of Male and Female Sexual Dysfunction - National Health and Social Life Survey (1994)



From: Laumann et al. (1994)

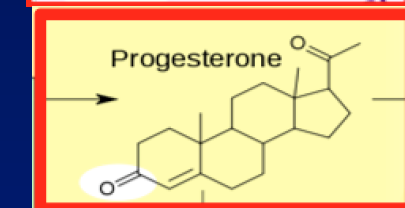
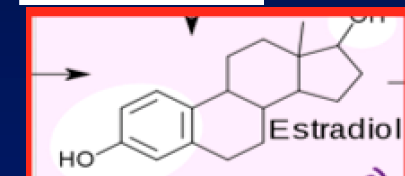
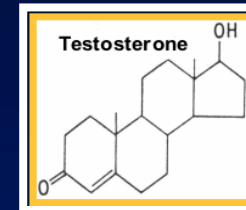
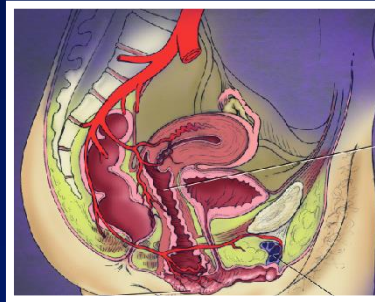
Cancer and Sexuality

Is Female Sexual Dysfunction associated with changes in quality of life?

Quality of Life Concomitants of Female Sexual Dysfunction (n = 1,486)

Type of Dysfunction	Low Physical Satisfaction Adjusted OR	Low Emotional Satisfaction Adjusted OR	Low General Happiness Adjusted OR
Low Desire	4.31*	3.52*	2.61*
Arousal Disorder	7.04*	4.28*	5.17*
Sexual Pain	2.39*	1.96*	2.62*

What pathophysiologies are involved in sexual dysfunction?

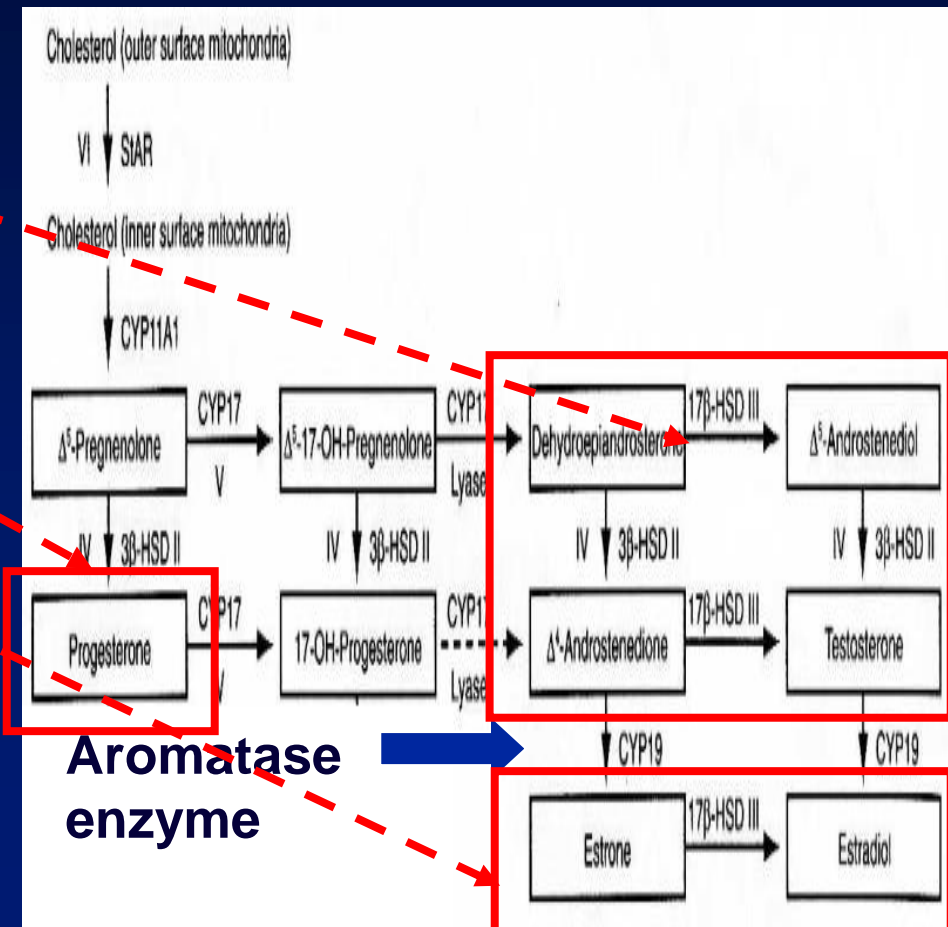
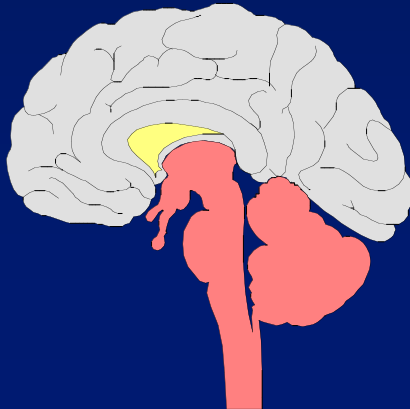


Stress, anxiety, rape/abuse, post-traumatic stress disorder, depression, fear, psychiatric conditions, behavior disorders, sleep disorders, relationship issues, financial concerns, employment concerns, body-image issues, eating disorders, drug dependency

Cancer and Sexuality

Psychologic and Biologic Female Sexual Dysfunction

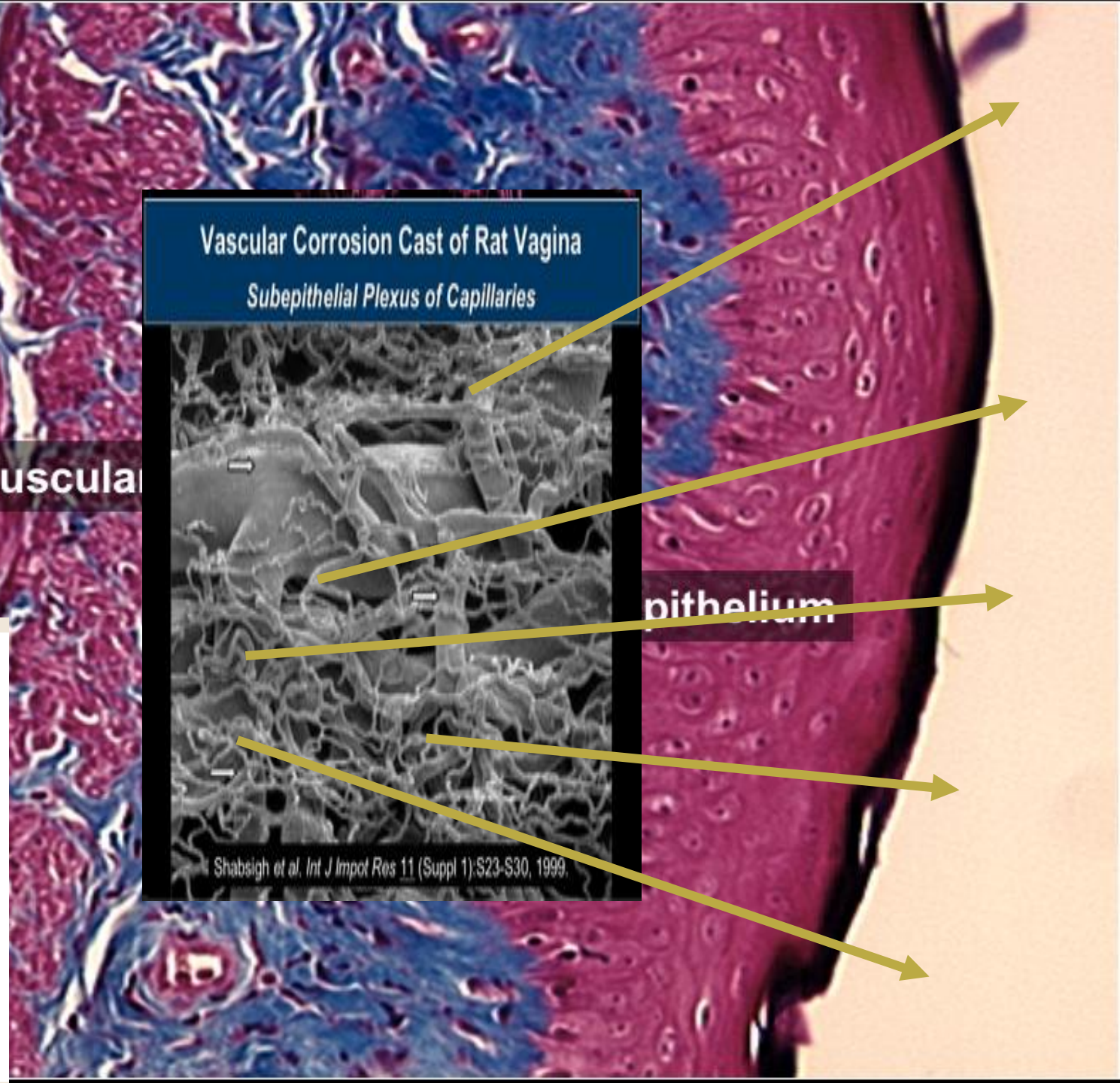
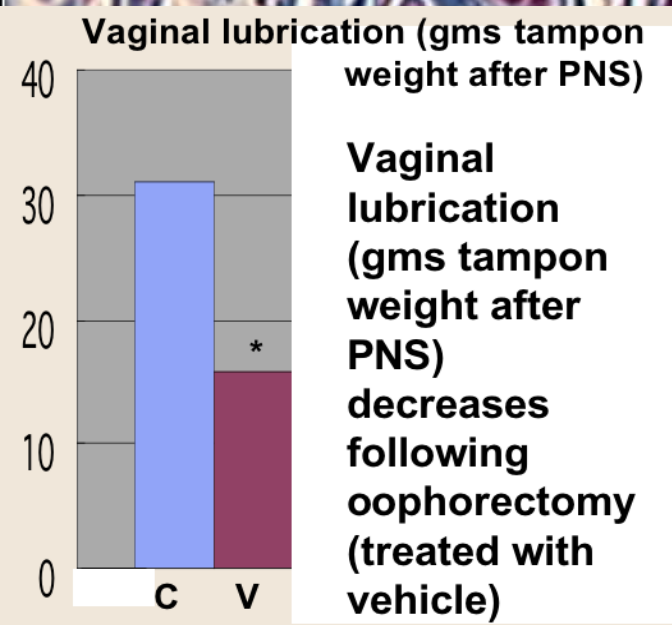
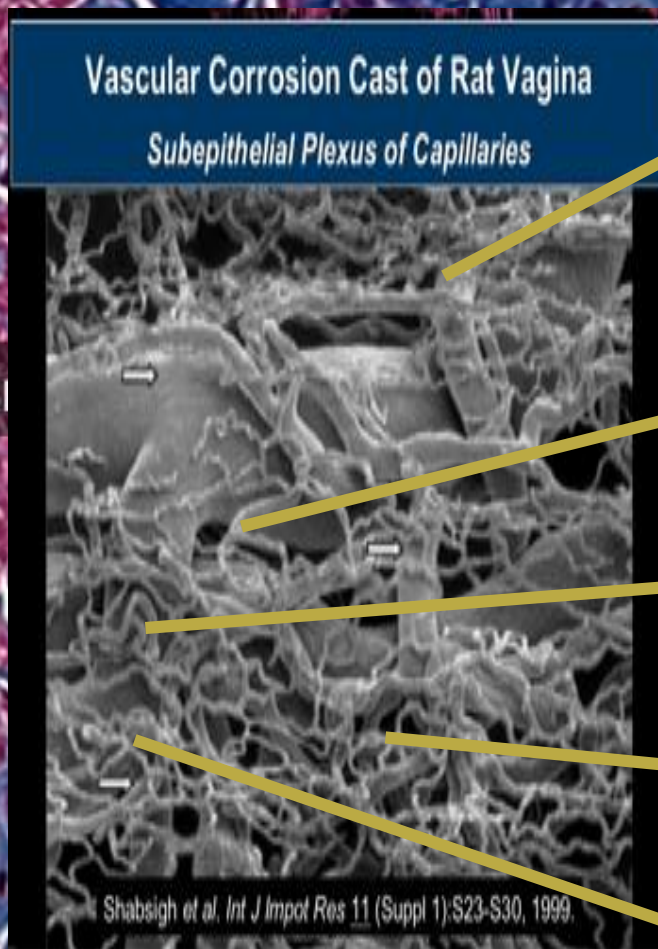
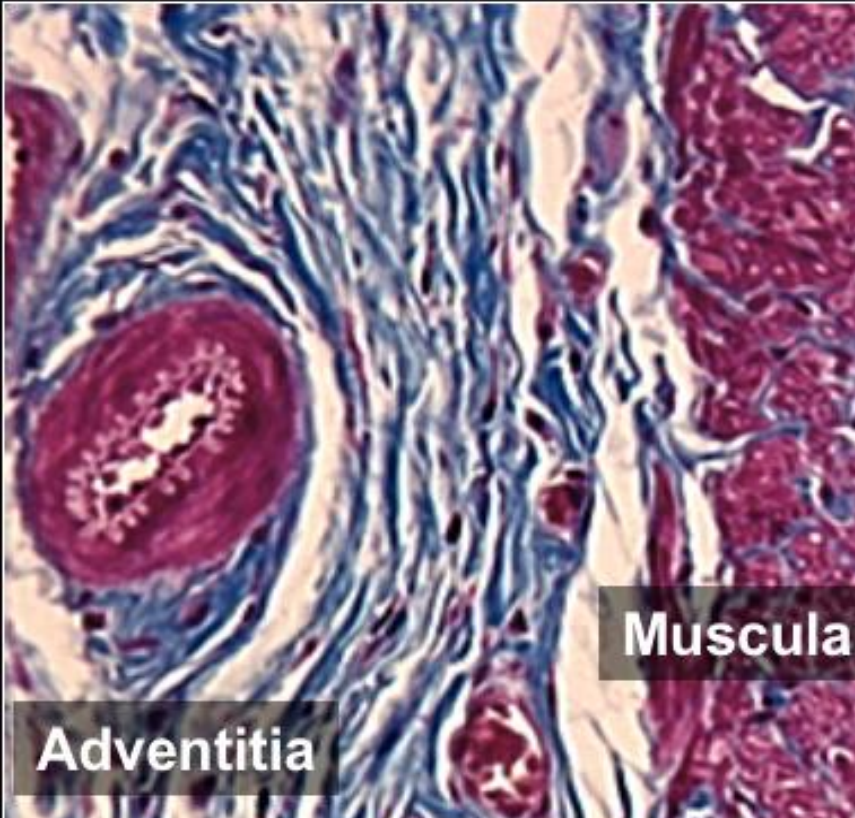
Sex steroid hormones (progesterone, androgen and estrogen) affect psychological health such as motivation, depression, well-being, sexual drive



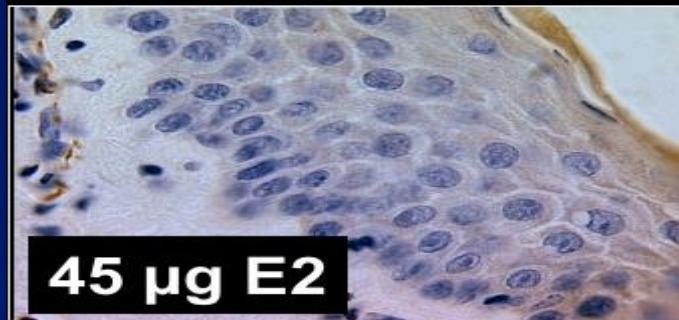
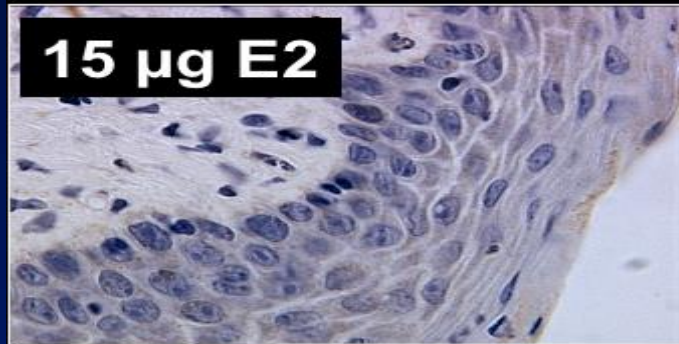
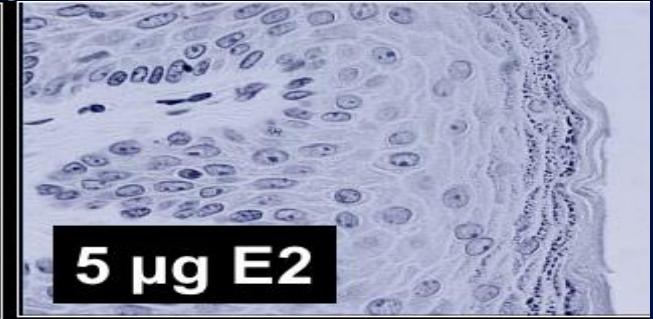
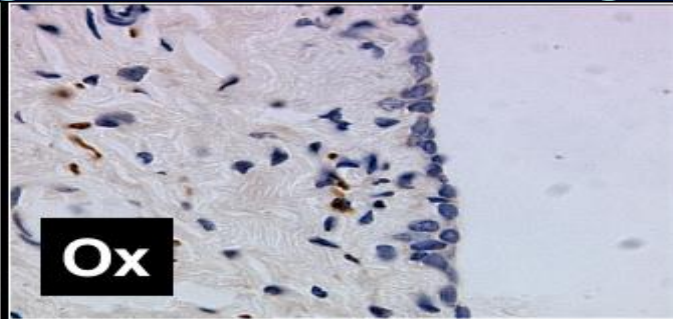
Psychologic and Biologic Female Sexual Dysfunction

Androgen insufficiency may be indicative of, or causally related to other **medical, psychiatric or psychosocial factors**

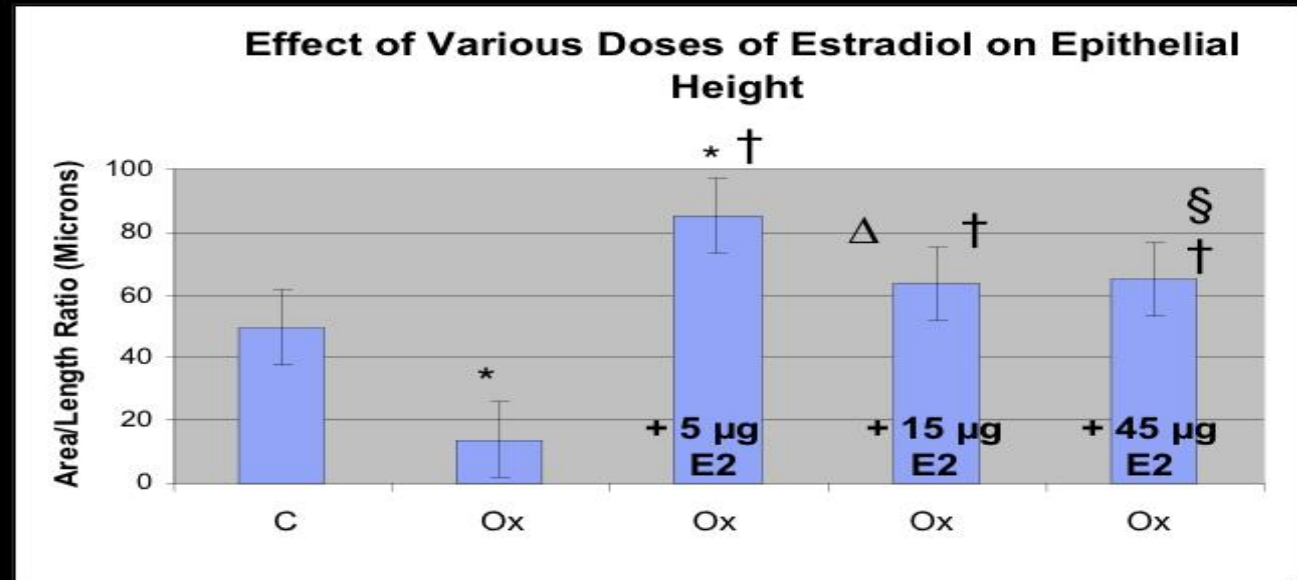
- (i) **major life stress or relationship conflicts**
- (ii) thyroid disease (i.e. hypo- or hyper-thyroidism)
- (iii) major metabolic/nutritional disorders (e.g., iron or vitamin D deficiency) or other causes of chronic fatigue (e.g., Lyme disease, chronic fatigue syndrome)
- (iv) **psychiatric disorders (e.g., major depressive disorder)**
- (v) other potential etiological conditions or pre-disposing factors have been implicated including: anorexia nervosa, various immunologic disorders, such as rheumatoid arthritis (RA), systemic lupus erythematosus (SLE) and HIV-AIDS, **cancer**



Differential Effects of Estradiol, Progesterone, and Testosterone on Vaginal Structural Integrity



Photographed at 400X
Gill's hematoxylin stain
Stereological Measurement:
Point Counting Grid



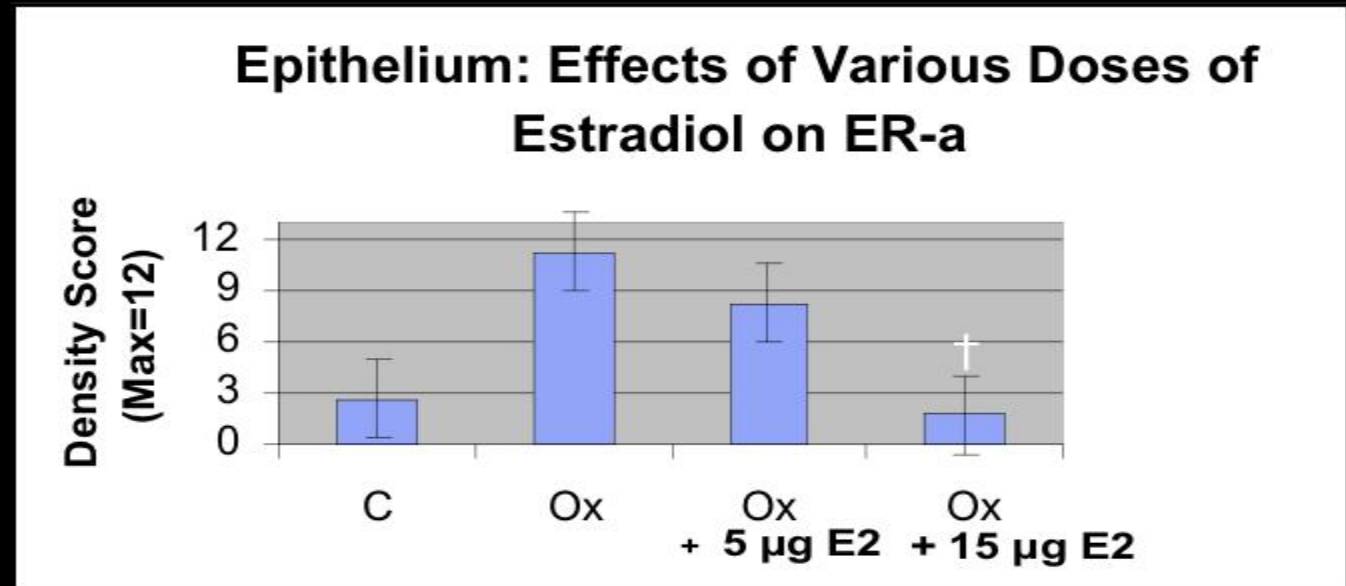
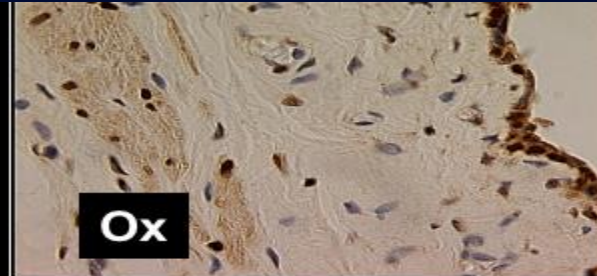
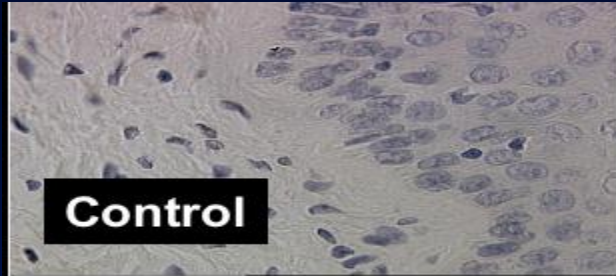
* $P < 0.001$ vs Control

Δ $p < 0.01$ versus 5µgE2

† $p < 0.001$ versus Ox

§ $p < 0.05$ versus 5µgE2

Differential Effects of Estradiol, Progesterone, and Testosterone on Vaginal Structural Integrity



* $P < 0.01$ vs Control

† $p < 0.01$ versus Ox

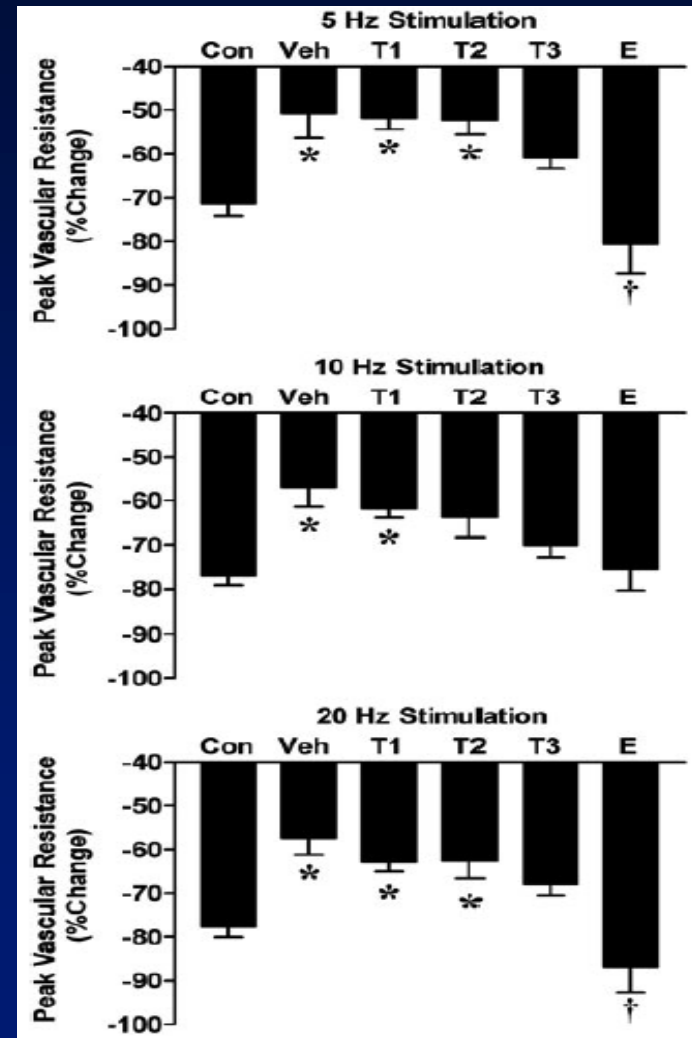
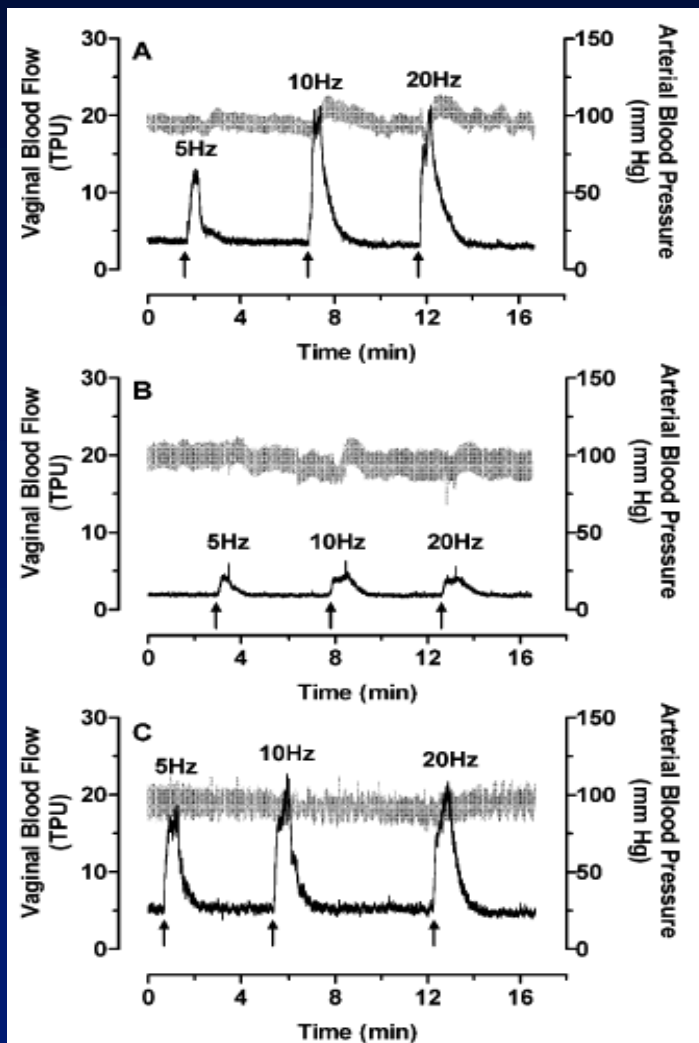
Slides immunostained for ER- α using ABC method with DAB. Slides photographed at 400X

Effects of estradiol on the proportion of ER- α immunoreactive cells in the epithelium

Testosterone Increases Blood Flow and Expression of Androgen and Estrogen Receptors In the Rat Vagina

J Sex Med 2007

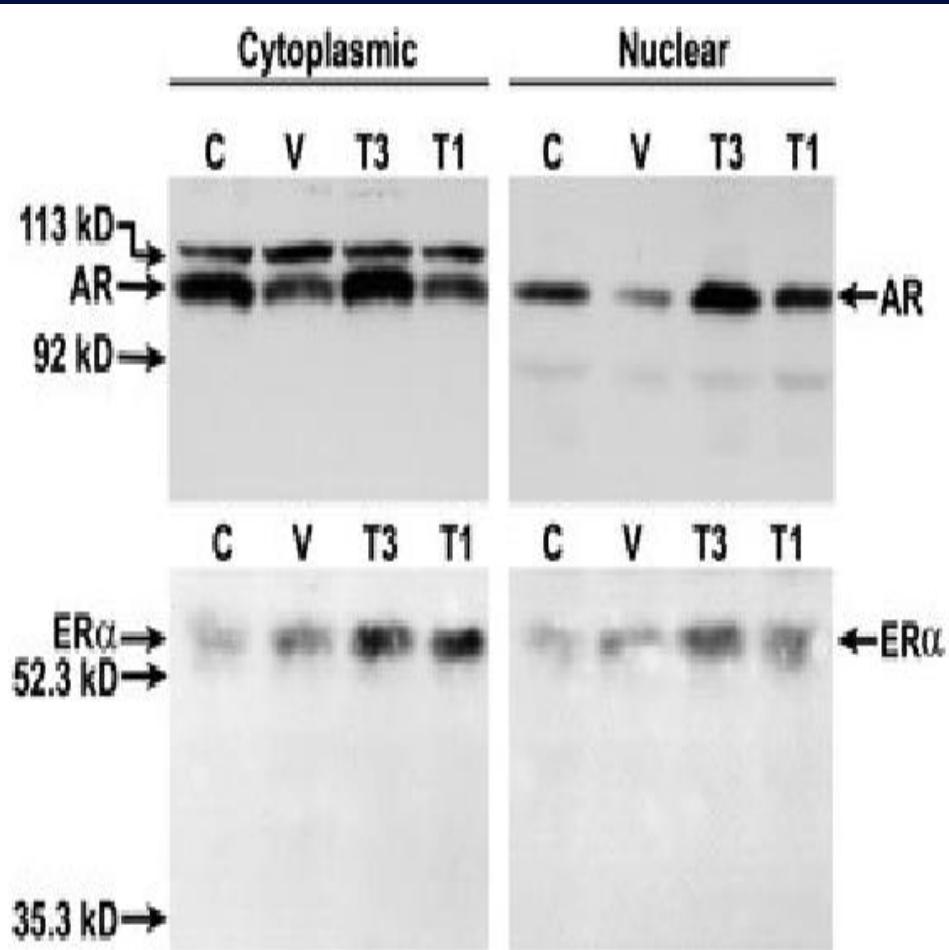
Abdulmageed Traish, PhD,* Soo Kim, MD, PhD,[†] Miljan Stankovic, MD, PhD,* Irwin Goldstein, MD,[‡] and Noel Kim, PhD*



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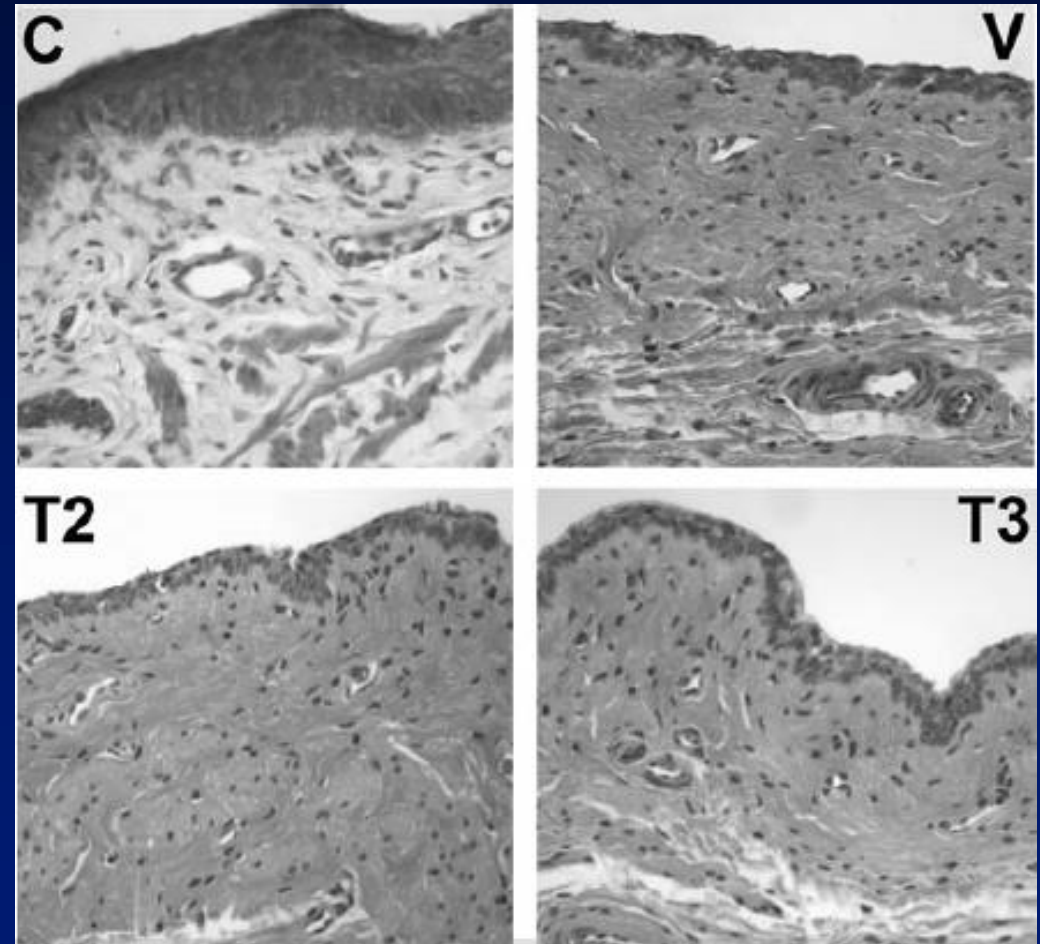
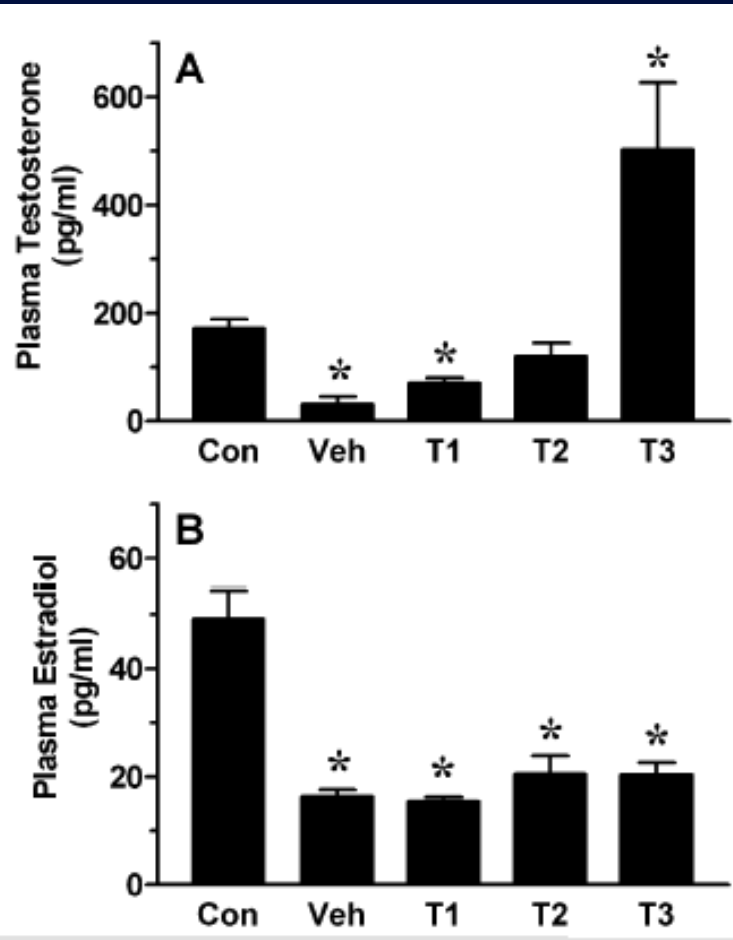
Testosterone regulates androgen and estrogen receptor protein expression in the vagina and enhances vaginal perfusion by an androgen-dependent mechanism

Testosterone plays an important role in modulating the physiology of the vagina and contributes to improvement of genital sexual arousal responses

Testosterone Increases Blood Flow and Expression of Androgen and Estrogen Receptors In the Rat Vagina

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Major depression after breast cancer: a review of epidemiology and treatment

Jesse R. Fann, M.D., M.P.H.^{a,b,d,e,*}, Anne M. Thomas-Rich, M.D.^a, Wayne J. Katon, M.D.^a, Deborah Cowley, M.D.^a, Mary Pepping, Ph.D.^b, Bonnie A. McGregor, Ph.D.^f, Julie Gralow, M.D.^c

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Major depression is a frequent but under-recognized and under-treated condition among breast cancer patients, which causes amplification of physical symptoms, increased functional impairment and poor treatment adherence

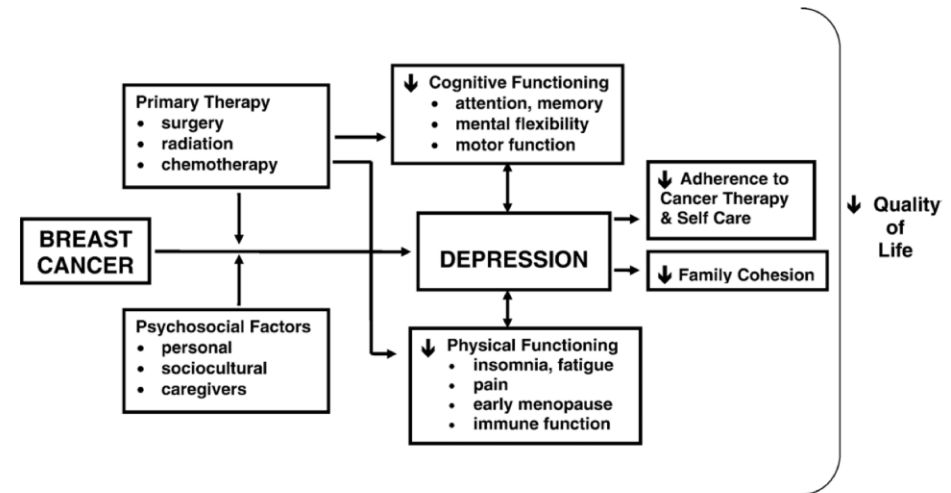


Fig. 1. Theoretical model of depression in women with breast cancer.

Major depression after breast cancer: a review of epidemiology and treatment

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Table 1

Studies examining rates of depression in women following surgery for breast cancer

Authors	Study design and depression measure	Study population	Rate and onset of depression
Dean [11]	RDC	122 T _{1,2} N _{0,1} patients assessed 3 and 12 months after mastectomy	3 Months postoperative: 9.7% major, 17.7% minor depression 12 months postoperative: 4.5% major, 18.2% minor depression
Fallowfield et al. [12]	PSE semistructured diagnostic interview at 3 times postoperatively	269 Stage I and II patients assessed 2 weeks, 3 months and 12 months after surgery	Postoperatively: 26% depressed 3 Months postoperative: 22% depressed 12 Months postoperative: 20% depressed
Hopwood et al. [13,14]	HADS depression scale, RSCL, diagnostic interview	214 Ambulatory advanced BCA patients, with 1–3-month follow-ups	18% Depressed at first time point by HADS (20% by diagnostic interview), 11% depressed at 1–3-month follow-up by HADS
Love et al. [15]	11-point depression scale at 3, 6, 12, 18, 24 months	Postmenopausal (mean years since menopause, 9.3) 70 on T, 70 on placebo	No difference between groups (baseline: 31–33% depressed, 12 Months: 30–45% 1 T patient with new onset depression 32% Depressed preoperatively, 24% at 6 months postoperative, 21% at 12 months postoperative
Goldberg et al. [16]	Modified RSCL at 6 and 12 months postoperatively	166 BCA patients	7% With case depression preoperatively, 7% at 3 months and 4% at 12 months
Lee et al. [17]	PSE preoperatively, 3 and 12 months postoperatively	197 BCA patients	Depressed: 15% on T (onset within 3–6 months after initial therapy and within first few weeks of starting T)
Cathcart et al. [46]	Clinical interview for depression at visits with oncologist × 12 months after initial therapy	155 on T (median age 59 years) -19 Premenopausal, 47 had chemotherapy 102 Not on T (age 44 years) -55 Premenopausal, 81 had chemotherapy	
Pinder et al. [18]	HADS depression scale	86 Hospitalized, 53 ambulatory (on endocrine or no systemic therapy) advanced BCA	12% Probable depression Similar rates of depression among patients with locoregional recurrence and metastatic disease
Pasacreta [63]	CES-D, DIS structured diagnostic interview between 3 and 7 months after diagnosis and surgery	79 Ambulatory patients, 75% Early stage, 47% received chemotherapy, 33% on T	24% With CES-D ≥16 6.3% Met MDD criteria based on DIS
Ganz et al. [19]	CES-D on cross-sectional mailed survey	864 Mean 3 years after Stage 0–II dx, completed adjuvant tx, disease-free on no cancer tx other than T (47%), no disabling medical or psychological condition	Current use of medication for depression: 12%; anxiety: 8.4%. CES-D ≥16 for <50 years old: 28.3%, 50–59 Years: 24.8%, ≥60 Years: 16.9%
Ganz et al. [2]	CES-D on cross-sectional mailed survey	1098 Mean 3 years after diagnosis, completed adjuvant tx at least 4 months ago, disease-free on no cancer tx other than T, no major disabling medical or psychological condition	CES-D ≥16 for No tx group: 24.8%, T only: 26.8%, chemotherapy only: 30.2%, T+chemotherapy: 24.9%
Green et al. [53]	SCID at 4–12 months post cancer treatment	160 Early-stage patients	11% With MDD
Epping-Jordan et al. [54]	SCL-90 Depression scale at dx and 3- and -month follow-up	90 Stage I–IV patients	Clinical depression: 34% at diagnosis, 29% at 3 months; 26% at 6 months
Wenzel et al. [20]	CES-D at recent treatment completion (<2 months)	304 Stages I, II and IIIA patients 161 ≤50 Years old, 143 >50 Years old	≤50 Years, 32% with CES-D ≥16 >50 Years, 20% with CES-D ≥16
Bower et al. [59]	CES-D Assessed between 1 and 5 years after diagnosis	1957 Stage 0–II patients	25% With clinically significant depression (CES-D ≥16)
Broeckel et al. [21]	CES-D on Cross-sectional mailed survey	61 With no current disease who completed adjuvant chemotherapy 3–36 (mean 16) months ago. 61% on T.	Mean CES-D score: 11.75 (26% ≥16) in former chemotherapy patients, 7.59 (14% ≥16) in noncancer controls
Crivellari et al. [22]	PACIS Mood item at 1, 3, 6, 12, 18 months after starting T	Postmenopausal, node-positive 306 on T alone 299 on T+CMF	Mood worse in first 3 months, worse for age <65 years and for T+CMF group at all time points)
Nystedt et al. [23]	HADS Depression scale at baseline, 3–4 months, 12 months	179 Premenopausal, node-negative 37 on no endocrine tx, 38 on goserelin alone, 39 on goserelin+T, 35 on T alone	No significant difference between groups Clinically significant HADS depression score (>8) in T only group at: baseline: 12%, 3–4 months: 13%, 12 months: 6%
Akechi et al. [24]	HADS Depression scale postoperatively	148 Patients not currently receiving active cancer treatment (other than hormone therapy)	23% With clinically significant depression (HADS ≥11)
Morasso et al. [25]	SCID at 1st follow-up after chemotherapy	184 Stage I–III patients	10% With MDD at follow-up

Anxiety and Depression in Breast Cancer Patients at Start of Adjuvant Radiotherapy: Relations to age and type of surgery

**Rauni Maraste, Lars Brandt, Håkan Olsson, and Brita Ryde-Brandt
1992, Vol. 31, No. 6 , Pages 641-643**

Eighteen patients (14%) had scores indicating morbid anxiety.

Severe anxiety was recorded for 10 out of 54 mastectomized patients (19%) and for 8 out of 79 patients treated with breast conserving surgery (10%).

In a subgroup aged 50-59 years, morbid anxiety was significantly more common among mastectomized patients than among patients operated conservatively, 4 out of 9 (44%) vs. 1 out of 23 (4%) ($p = 0.01$).

The results suggest that, at start of adjuvant radiotherapy, emotional distress is characterized by anxiety rather than depression and the risk of morbid anxiety is especially large for mastectomized women in their fifties.

Cancer and Sexuality

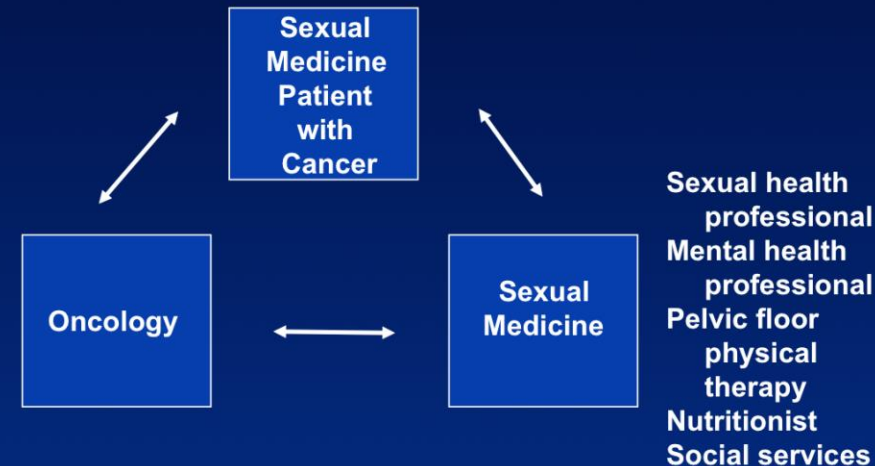
Adverse Effects of Breast Cancer Treatment

Many women with Breast Cancer will use radiation therapy: **Radiation therapy is used after breast-conserving surgery to reduce cancer recurrence in the breast or lymph nodes. Radiation may be used after mastectomy in patients either with a cancer larger than 5 cm, or when cancer is found in the lymph nodes. External beam radiotherapy or brachytherapy**

Such radiotherapy treatment frequently causes:

- Swelling / heaviness in breast**
- Skin changes - mild redness to blistering and peeling**
- Fatigue**
- Breast smaller and firmer**
- Brachial plexopathy - numbness, pain, and weakness in shoulder, arm and hand**

Ideal Management Paradigm of Woman with Cancer and Sexual Health Concerns



Cancer and Sexuality

Adverse Effects of Breast Cancer Treatment

Many women with Breast Cancer will use chemotherapy: **Common chemotherapy drugs used include: the anthracyclines ie doxorubicin; the taxanes ie docetaxel; in combination with fluorouracil, cyclophosphamide, and carboplatin. HER2 positive cancers, trastuzumab is often given with one of the taxanes. Pertuzumab can also be combined with docetaxel for HER2 positive cancers.**

Such chemotherapy treatment frequently causes:

Hair loss and nail changes

Mouth sores

Loss of appetite or increased appetite

Nausea and Vomiting

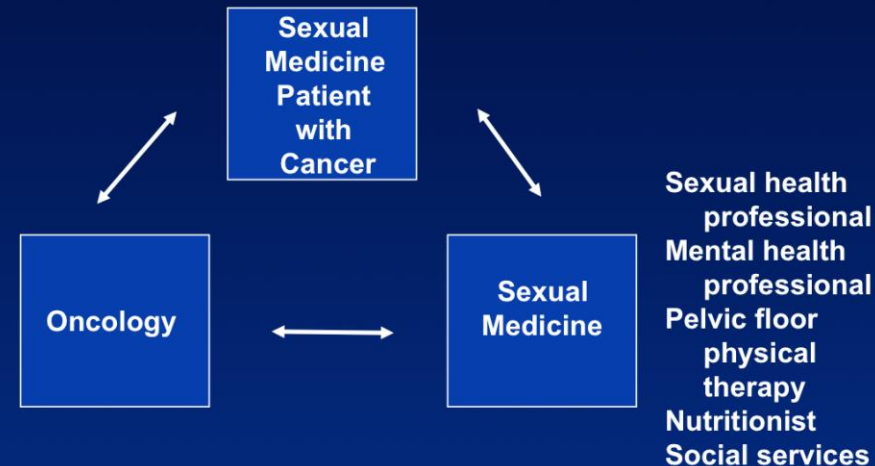
Low blood cell counts

Increased chance of infections ↓ WBC

Easy bruising or bleeding ↓ platelets

Fatigue ↓ RBC

Ideal Management Paradigm of Woman with Cancer and Sexual Health Concerns



Cancer and Sexuality

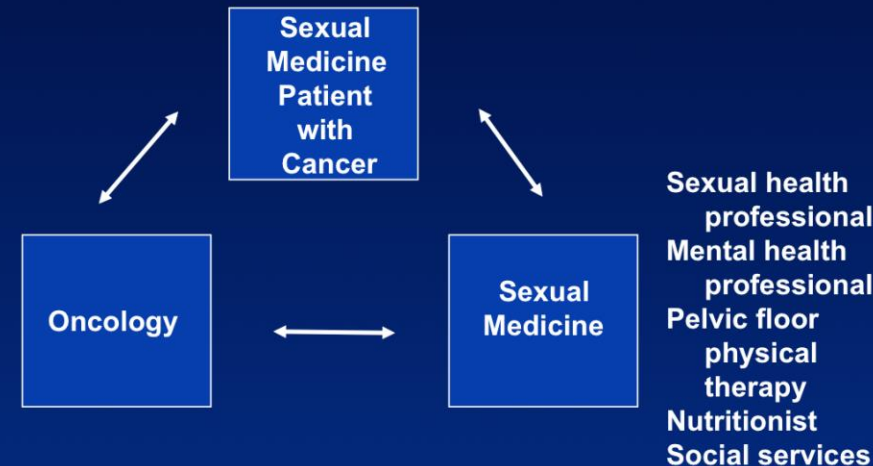
Adverse Effects of Breast Cancer Treatment

Many women with Breast Cancer will use hormone (deprivation) therapy: **Tamoxifen, Aromatase Inhibitors, Ovarian Ablation – surgical, LHRH analogs**

Such hormone deprivation treatment frequently causes:

Depression and altered self esteem – mood swings
Hot flashes, night sweats
Fatigue
Weight gain
Vaginal dryness
Sexual pain
Lowered libido

Ideal Management Paradigm of Woman with Cancer and Sexual Health Concerns



Cancer and Sexuality

Can survivors without physiologic integrity participate in sexual intercourse?

1. Do Women Need Nerve, Vascular and Hormone Physiology to have sexual activity?

NO, women do NOT need “healthy” nerve, vascular and hormone physiology to be physically able to have sexual activity and/or to have penetrative sex

2. Do Women Need Nerve, Vascular and Hormone Physiology to Achieve Sexual Desire, Arousal and/or Orgasm?

YES, women NEED “healthy” nerve, vascular and hormone physiology to have “*physical and emotional satisfaction*” with:

sexual desire, thoughts, fantasies

arousal, lubrication, throbbing, pulsing, tingling

orgasm release

absence of pain during penetration and during thrusting

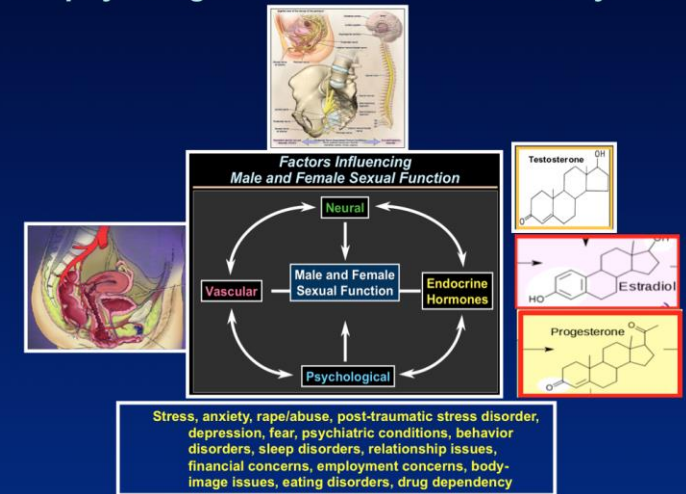
Cancer and Sexuality

What are common causes of biologic female sexual dysfunction?

Sexual dysfunction (desire, arousal, orgasm, pain):

breast cancer, gynecologic cancer, other cancers

What pathophysiologies are involved in sexual dysfunction?



Diagnosis and Treatment Algorithm for Sexual Dysfunction in Cancer Survivors

Identification of the sexual health problems



Education of the patient and the partner



Modification of reversible factors



Hormonal and non-hormonal pharmacologic therapies



Other

HISTORY OF PRESENT ILLNESS

JH is a 67 year-old woman currently married for 21 years with a history of breast cancer - left mastectomy (2009) and then right mastectomy (2011) - who first presented to San Diego Sexual Medicine on November 14, 2011

Prior to breast cancer, she had multiple lumpectomies from 1996-2008

JH was taking hormones for menopause until breast cancer diagnosis – no sexual dysfunction

JH finds intercourse difficult now since her breast cancer treatments

Her intercourse activity can be extremely painful at times, and her arousal is lost quickly when it is so painful to have intercourse

JH states she has intercourse success rates of only 50% since her breast cancer

Currently her interest is 80% that of previous capabilities

Currently her arousal is 70% that of previous capabilities

She has 5% orgasmic capabilities

HISTORY OF PRESENT ILLNESS

She does have sexual pain for the past 14 years described as tightness and ripping sensation at the entrance, dry patches internally, sometimes a sharp cervical pain located in the vaginal area and clitoris; triggered by fast penetration; made worse by not enough foreplay or changing sexual positions; and made better by more foreplay or lying on back

Judith believes her sexual problems are due to surgery, and not being given hormones since mastectomy.

She has had blunt trauma to the perineum - when she was 6-7 years she rode brothers bike and hit her pelvis.

Medications: Synthroid 0.5 mcg, arimidex 1mg

She has had previous diagnostic tests for this problem - consultations with GYN.

In the past she has not sought psychologic treatment.

She has sought medical treatment for her sexual problem - various pills and compounds.

VALIDATED OUTCOME SCALES

PHQ score: 4 /30

SDS-R score: 23/52

FSFI score: 18.5

Total Pain Domain: 2.4

Total Satisfaction Domain: 3.4

Total Orgasm Domain: 2.6

Total Lubrication Domain: 4.5

Total Arousal Domain: 4.8

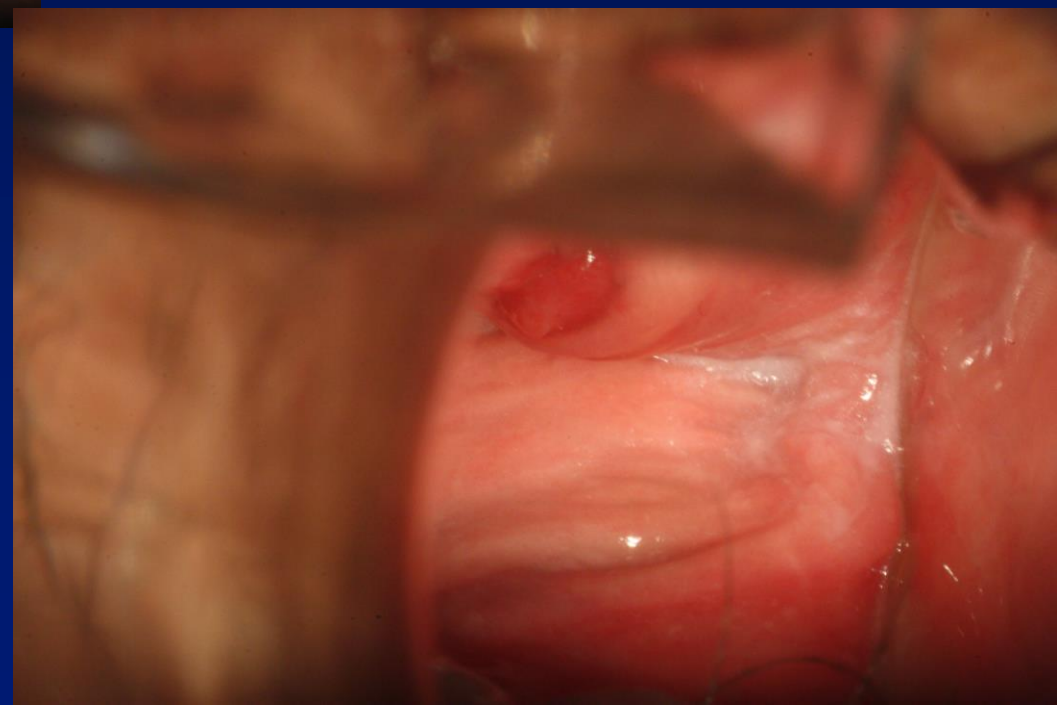
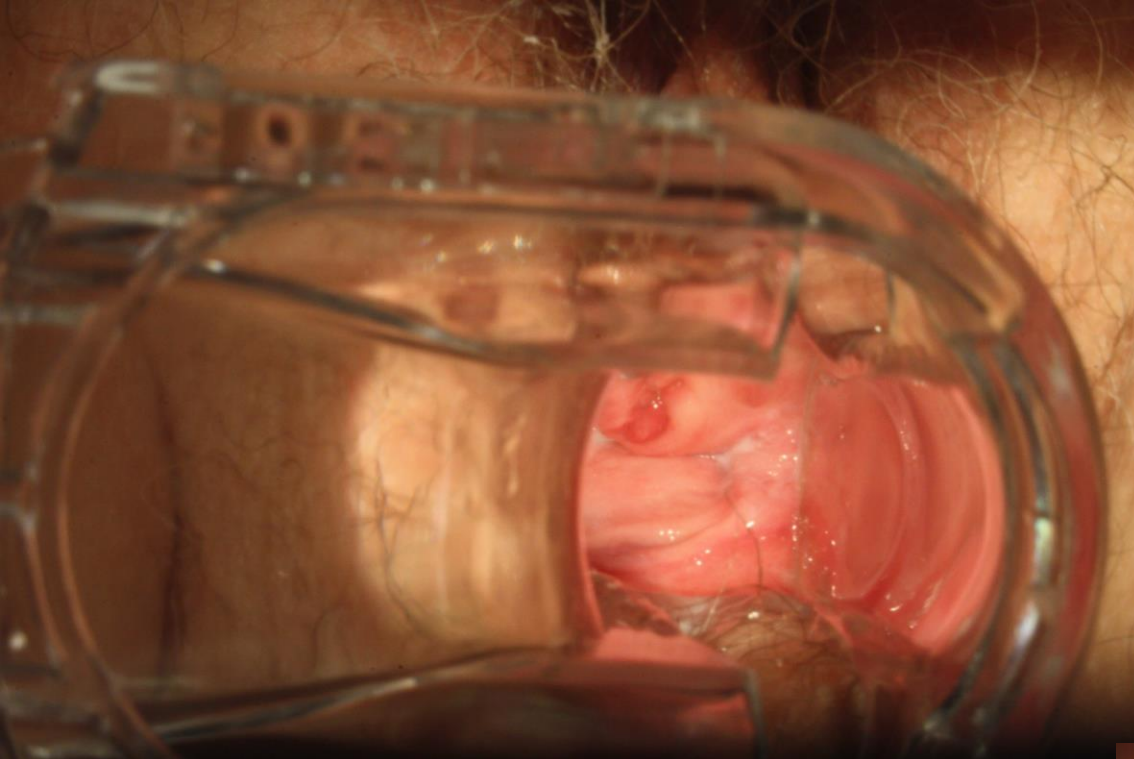
Total Desire Domain score: 3.8

Blood testing on 10/27/2011

**Testosterone 14 ng/dl (range 3 - 41 ng/dl),
Sex hormone binding globulin 48.6 nmol/L (range
17.3 - 125.0 nmol/L)
Calculated free testosterone 0.195 ng/dl (range
0.6 - 0.8 ng/dl)
Dihydrotestosterone 1.5 ng/dl (range 4 - 22 ng/dl),
TSH 1.670 mIU/L (range 0.450 - 4.500 mIU/L),
Prolactin 6.5 ng/ml (range 4.8 - 23.3 ng/ml),
LH 22.9 mIU/l
FSH 89.2 mIU/L,
Estradiol <6.0 pg/ml
Progesterone 0.1 ng/ml**

Vulvoscopy was performed. The clitoris was mildly atrophic. The urethral meatus was mildly abnormal with mild prolapse. The minor vulvar vestibular gland at 1 oclock revealed erythema and there was 2/10 discomfort to cotton swab testing. The minor vulvar vestibular gland at 3 oclock revealed erythema and there was 3/10 discomfort to cotton swab testing. The minor vulvar vestibular gland at 5 oclock revealed erythema and there was 6/10 discomfort to cotton swab testing. The posterior fourchette revealed erythema and there was 2/10 discomfort to cotton swab testing. The minor vulvar vestibular gland at 7 oclock revealed erythema and there was 8/10 discomfort to cotton swab testing. The minor vulvar vestibular gland at 9 oclock revealed erythema and there was 2 10 discomfort to cotton swab testing. The minor vulvar vestibular gland at 11 oclock revealed erythema and there was 7 /10 discomfort to cotton swab testing. Speculum examination was performed. Vaginoscopy revealed limited robiust peri-urethral tissue and limited rugae. The color of the vaginal wall was whitish. The epithelium was thin. There was minimal discharge. The vaginal pH was 7.5 as measured by pH paper. This study revealed mild clitoral atrophy, limited peri-urethral tissue, mild urethral meatal prolapse, significant vulvar vestibulitis syndrome, mild vaginal atrophy, and abnormal vaginal pH.





Three Testosterone-Dependent Organs in the Vestibule

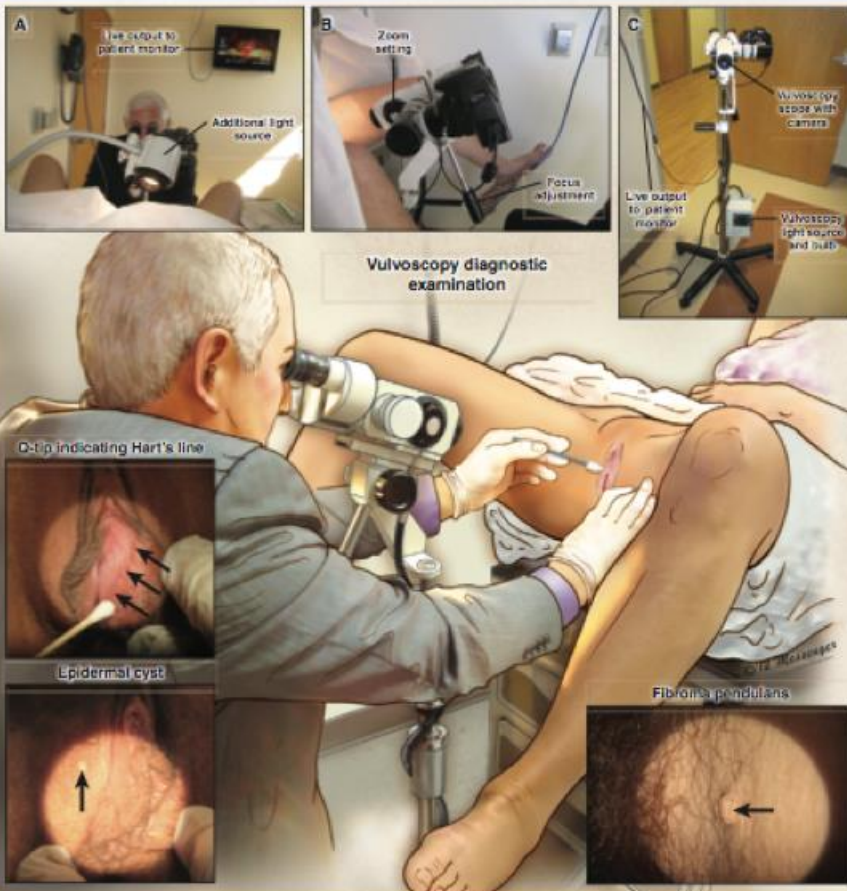
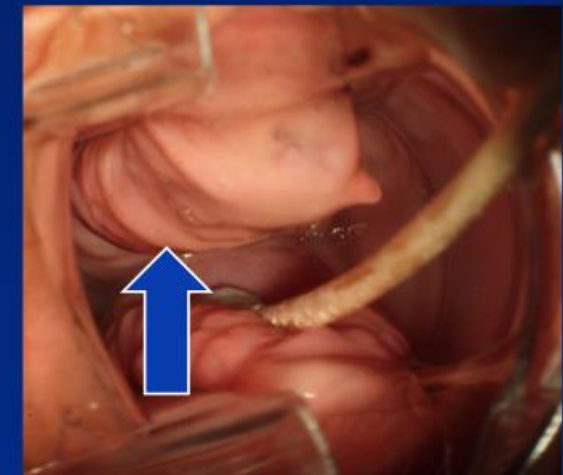
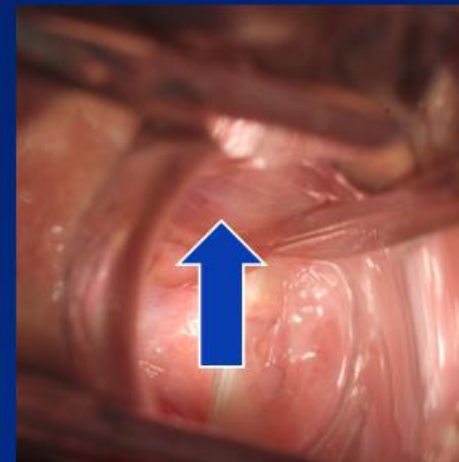
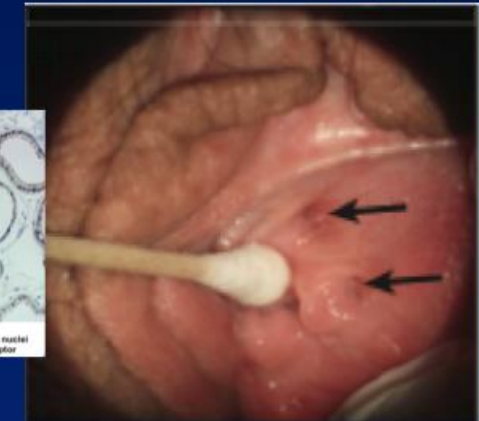
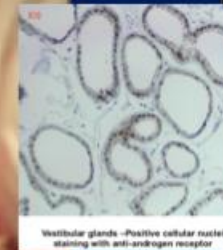
Glans clitoris

Minor Vestibular Glands

Peri-urethral tissue – G-spot

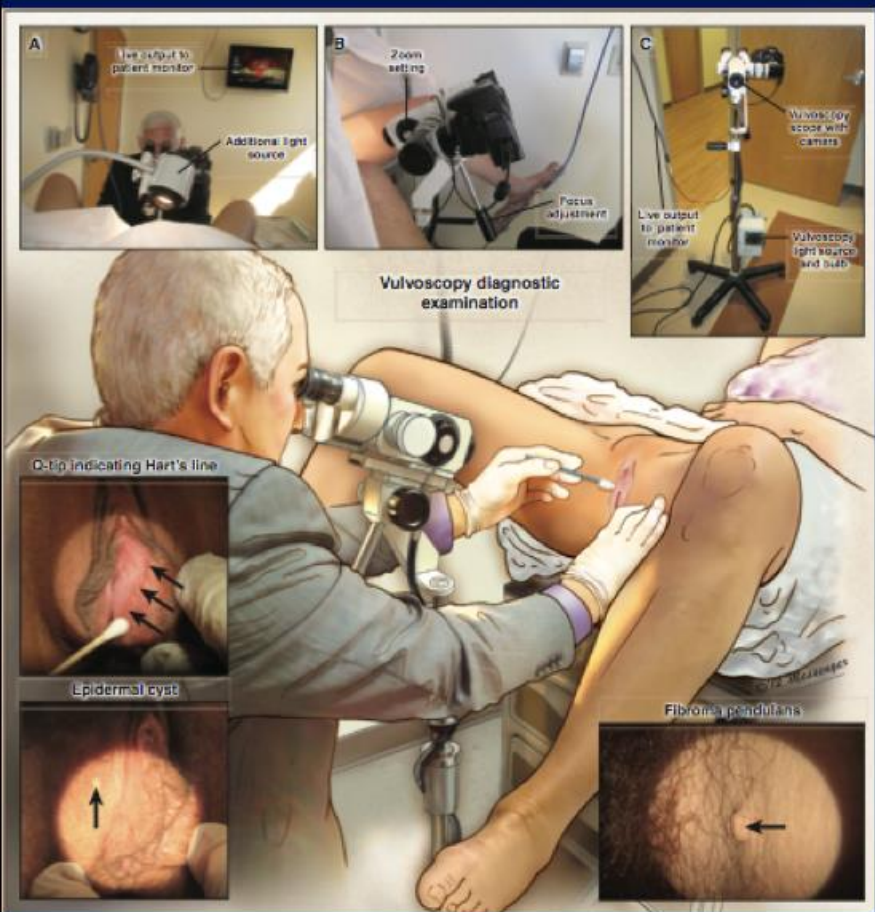
Pre-Testosterone Treatment

Post-Testosterone Treatment



Two Estradiol-Dependent Organs – During Vulvoscopy

Labia minora
Vagina



Low Estrogen State

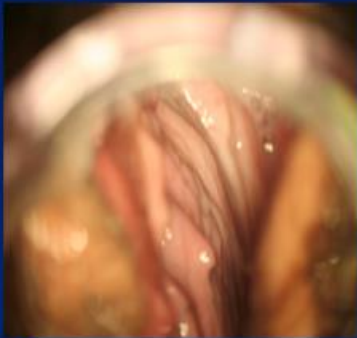
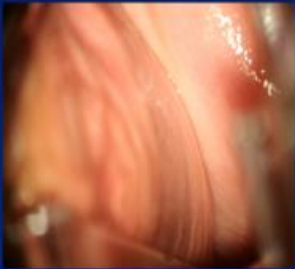


Robust Estrogen State



Labia Minora Normally Meet at
Posterior Fourchette

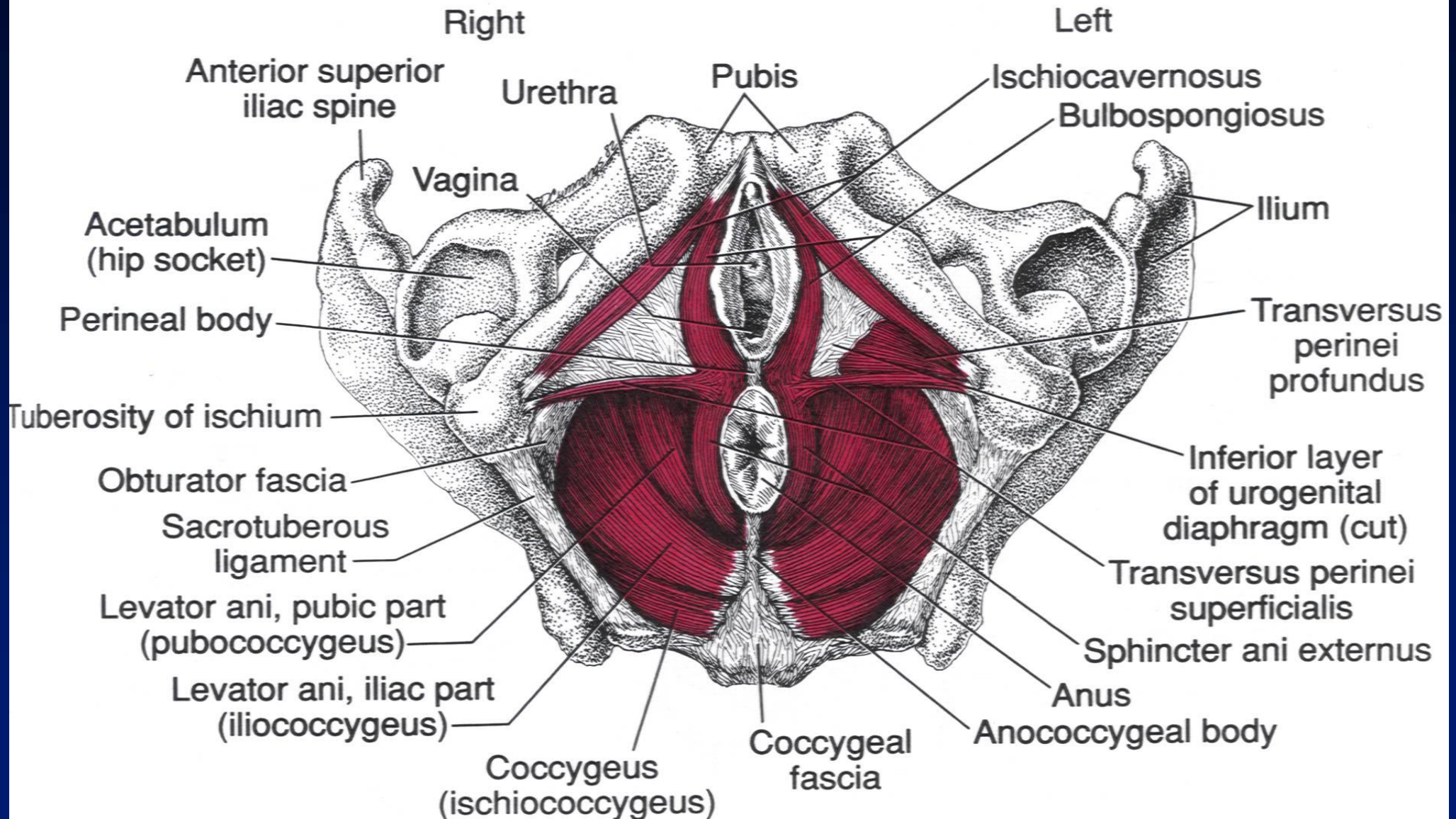
Resorption of Labia Minora



Reduced vaginal rugae, pH >5

Robust vaginal rugae, pH 4

Cancer and Sexuality



Diagnosis and Treatment Algorithm for Sexual Dysfunction in Cancer Survivors

Identification of the sexual health problems



Education of the patient and the partner



Modification of reversible factors



Hormonal and non-hormonal pharmacologic therapies



Other

Modification of Reversible Causes

Lifestyle modification

Exercise

Nutrition

Treat Soft Addictions

Cell phones, pagers, laptops, blackberries

Stress and time management

Structured tasks

Erotic reading

Self stimulation

Sensate Focusing

Cueing Exercise

Alternate forms of sexual expression

Coital positions that minimize deep penetration and empower women

Cancer and Sexuality

Modification of Reversible Causes Alternative Ways of Expressing Physical Love

Hugging

Fondling

Caressing

Cuddling

Kissing

Hand holding

Manual stimulation

Digital stimulation

Oral stimulation

**Intra thigh or intra mammary
intercourse**

Anal intercourse

Cancer and Sexuality

Modification of Reversible Causes Alternative Ways of Expressing Physical Love

Structured sexual tasks

Sensate focusing

Guided imagery

Relaxation exercise

Fantasy exploration

Skilled exercises

Tantra Sexual Awakening

Pain management

Sexual devices

Self-stimulator/vibrators

Dilator therapy

Sexy lingerie

Masturbation sleeve



Diagnosis and Treatment Algorithm for Sexual Dysfunction in Cancer Survivors

Identification of the sexual health problems



Education of the patient and the partner



Modification of reversible factors



Hormonal and non-hormonal pharmacologic therapies



Other

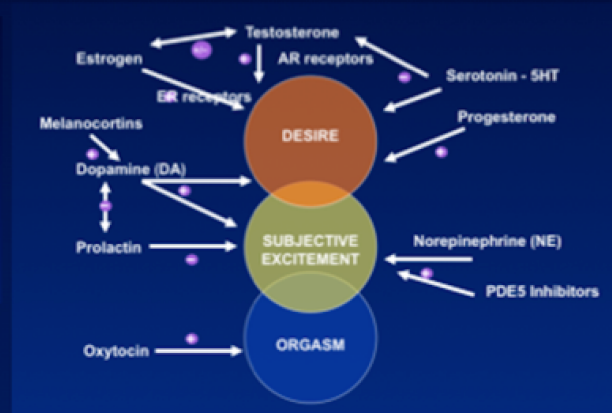
High Inhibition, Low Excitation Sexual Dysfunction

Dopamine Agonists

Bupropion 75 – 150 mg/day
Cabergoline 0.5 mg Q M/Th
Ropinirole 0.25 mg QD – TID
Rotigotine Transdermal System 1mg/day

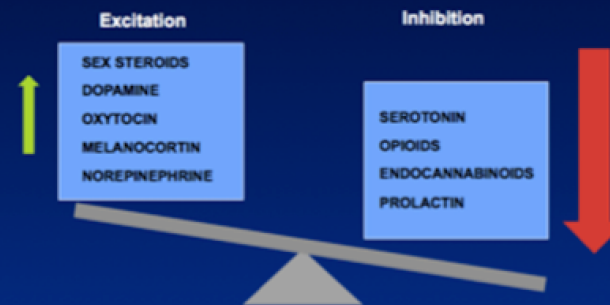
PDE 5 Inhibitors

Sildenafil 25 – 100 mg
Tadalafil 5 – 20 mg
Vardenafil 5 – 20 mg
Stendra 50 – 200 mg



Oxytocin (Pitocin)

Oxytocin Lozenge 250 U – one hour before sexual activity – may increase up to 3 at one time



Serotonin Antagonists

Buspirone 10 - 15 mg BID

Opioid Antagonists

Naltrexone 50 mg/day

Amphetamine

Phentermine has some similarity with amphetamine and stimulates release of norepinephrine and to much lesser extent dopamine

Phentermine 30 mg – 30 min prior to sexual activity

Amphetamine

Amphetamines are thought to block the reuptake of norepinephrine and dopamine into the presynaptic neuron and increase the release of these monoamines into the extraneuronal space

Amphetamine, dextroamphetamine mixed salts: 10 mg (2.5 mg – 20 mg) – take 30 min prior to sexual activity. If taken after 2:00 PM, difficulty with sleep should be considered

Progesterone

Progesterone can activate synthesis of allopregnanalone – may have antidepressant, anxiolytic, stress-reducing, rewarding, prosocial, antiaggressive, **prosexual**, sedative, pro-sleep, cognitive and memory-impairing, analgesic, anesthetic, anticonvulsant, neuroprotective, and neurogenic effects

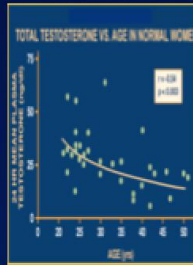
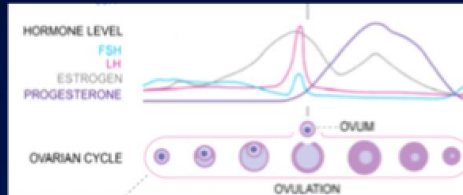
Micronized progesterone 200 - 1000 mg – 2 hours prior to sexual activity

MENOPAUSE MANAGEMENT – FIVE TREATMENTS

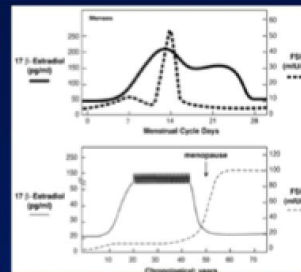
Testosterone Therapy

Use FDA-approved testosterone at 10% of male dose

1. Daily transdermal gel - 1/10th tube daily to calf/thigh
Daily transdermal solution (0.3 ml daily underarm)
2. Weekly IM injections - 0.1 ml - 50 mg/ml testosterone enanthate/cypionate - into vastus lateralis muscle – anterolateral mid-thigh; 27 gauge needle; 1 ml syringe
3. 4-6 month subcutaneous testosterone pellet



Zumoff et al JCEM 1995



Vestibular Hormonal Therapy

Compound estradiol 0.02%/testosterone 0.1% in hypoallergenic base (methylcellulose); apply pea-sized volume x 2 (right and left sides); directly onto entire vestibule; QD – BID

Estradiol Therapy

Consider FDA-approved biologically identical estradiol

1. Daily oral (↑ SHBG, ↑ VTE, ↑ lipids)
2. Daily transdermal gel, emulsion, spray
3. Twice weekly, weekly transdermal patch
4. Three month vaginal ring
5. Weekly IM injections - 0.1 ml – estradiol valerate 10 mg/ml; 5 ml bottle; vastus lateralis muscle – anterolateral mid-thigh - 27 gauge needle; 1 ml syringe



Intravaginal Hormonal Therapy

1. Daily compound estradiol 0.02%/testosterone 0.1% in hypoallergenic base (methylcellulose); apply pea-sized volume directly into vagina
2. Daily vaginal estradiol cream – pea-sized amount
3. Daily 10 mg DHEA tablet/1% DHEA suppository
4. Three month vaginal ring

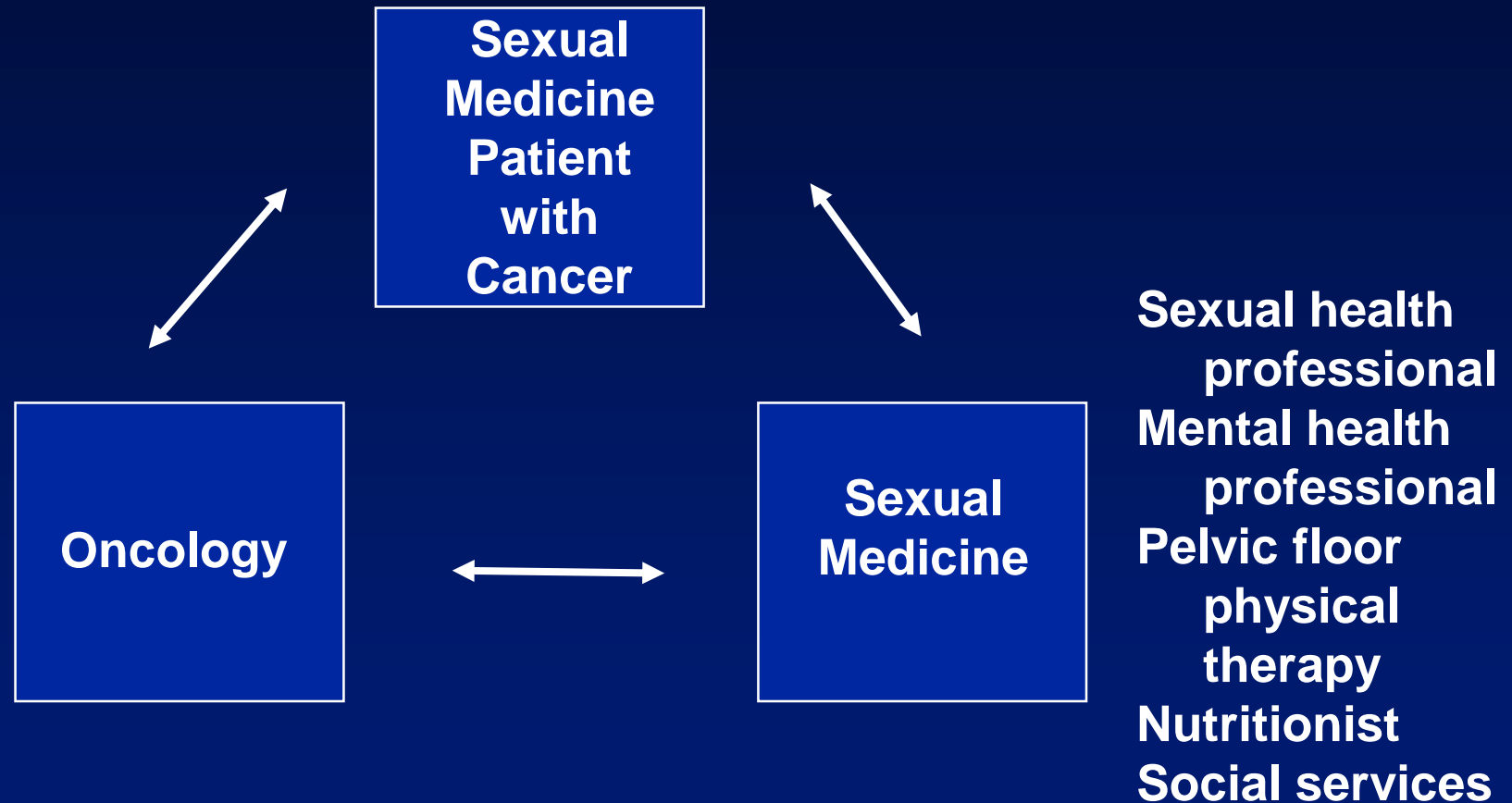
Progesterone Therapy

Consider FDA-approved biologically identical progesterone

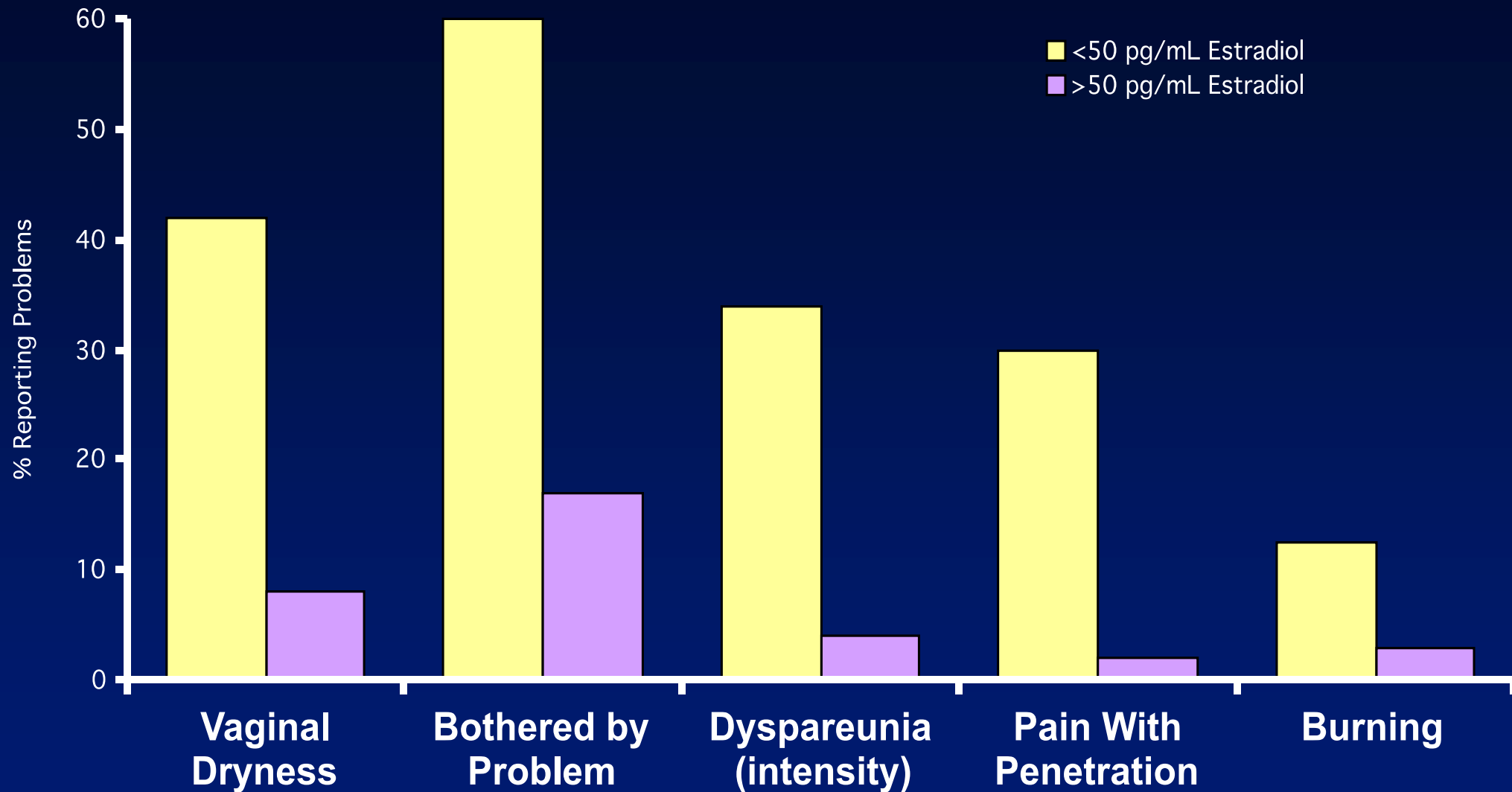
1. Oral micronized progesterone 100 mg q MWF (intact uterus, q MTh hysterectomy)
2. Vaginal progesterone suppository – 6 per month
3. Compound progesterone cream

Cancer and Sexuality

Ideal Management Paradigm of Woman with Cancer and Sexual Health Concerns



Cancer and Sexuality



n = 93; significance not reported.

Sarrel PM. *J Womens Health Gen Based Med.* 2000;9:S25-S32.

Adapted from Sarrel PM. *Obstet Gynecol.* 1990;75:26S-30S.

Endogenous estrogen, testosterone and progesterone levels in relation to breast cancer risk[☆]

Journal of Steroid Biochemistry & Molecular Biology 106 (2007) 24–30

Susan E. Hankinson^{a,b,*}, A. Heather Eliassen^{a,b}

Table 1
Circulating levels of estradiol and risk of breast cancer: prospective studies in postmenopausal and premenopausal women

RR (95% CI) by category of circulating hormone levels^a

Study	Cases/controls	1	2	3	4	5
Postmenopausal women						
EHBCCG ^b , 2002	663/1765	1.0	1.4 (1.0–2.0)	1.2 (0.9–1.7)	1.8 (1.3–2.4)	2.0 (1.5–2.7)
Zeleniuch-Jacquotte, 2004 ^c	297/563	1.0	1.6 (1.0–2.7)	1.2 (0.7–1.9)	1.7 (1.0–2.8)	2.5 (1.5–4.2)
Kaaks, 2005	677/1309	1.0	1.1 (0.8–1.5)	1.4 (1.0–2.0)	1.7 (1.2–2.4)	2.3 (1.6–3.2)
Missmer, 2004 ^d	322/643	1.0	1.3 (0.9–1.9)	1.1 (0.7–1.7)	2.1 (1.5–3.2)	
Manjer, 2003	173/438	1.0	1.7 (0.7–1.7)			
Premenopausal women						
Kaaks, 2005	285/555	1.0	1.0 (0.6–1.5)	1.0 (0.7–1.6)	1.0 (0.7–1.5)	
Eliassen, 2006	Follicular	185/368	1.0	2.0 (1.1–3.6)	1.7 (1.0–3.2)	2.1 (1.1–4.1)
	Luteal	175/349	1.0	1.2 (0.7–2.3)	1.8 (1.0–3.3)	1.0 (0.5–1.9)

^a Hormone data presented in quartiles or quintiles depending on the study, with the exception of estradiol in Manjer et al., where women in approximately the top 20% of estradiol levels were compared to women in the bottom 80% of levels.

^b Endogenous Hormones and Breast Cancer Collaborative Group.

^c Extension of study included in EHBCCG analysis; 168 new cases and 316 new controls included here.

^d Extension of study included in EHBCCG analysis; 167 new cases and 333 new controls included here.

Cancer and Sexuality



**Mammary gland and
Breast cancer proliferation**

Androgens inhibit breast cancer by two mechanisms:

- 1- Directly in the breast tissue on cell proliferation**
- 2- Indirectly by decreasing fat mass and estrogen formation**

Testosterone and Breast Cancer

Clinically, women with elevated androgen levels, either endogenous or exogenous, experience breast atrophy, consistent with the notion that androgens per se are antiproliferative for the breast

Cancer and Sexuality

**Gammon and Thompson,
Am. J. Epidemiol 134, 818-824, 1991**

**In polycystic ovarian syndrome,
a well known hyperandrogenic
situation, the age-adjusted odds ratio
for breast cancer is**

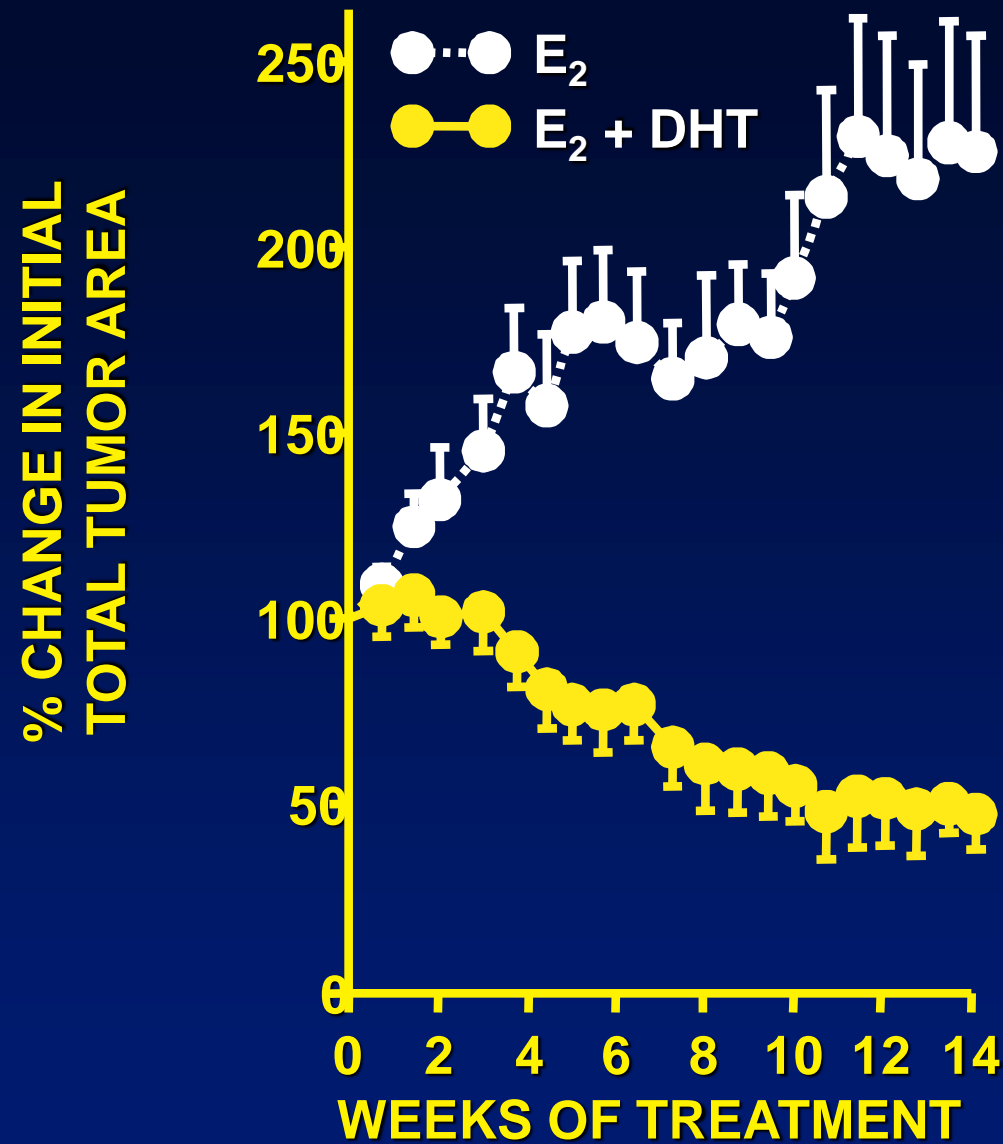
O.R. = 0.52 (0.32-0.87, 95% C.I.)

Histological Effects of Testosterone Therapy on the Breast

29 female to male transsexual mastectomy specimen compared to normals undergoing breast reduction

No significant differences in histology, progesterone receptor and estrogen receptor levels

Cancer and Sexuality



Cancer and Sexuality

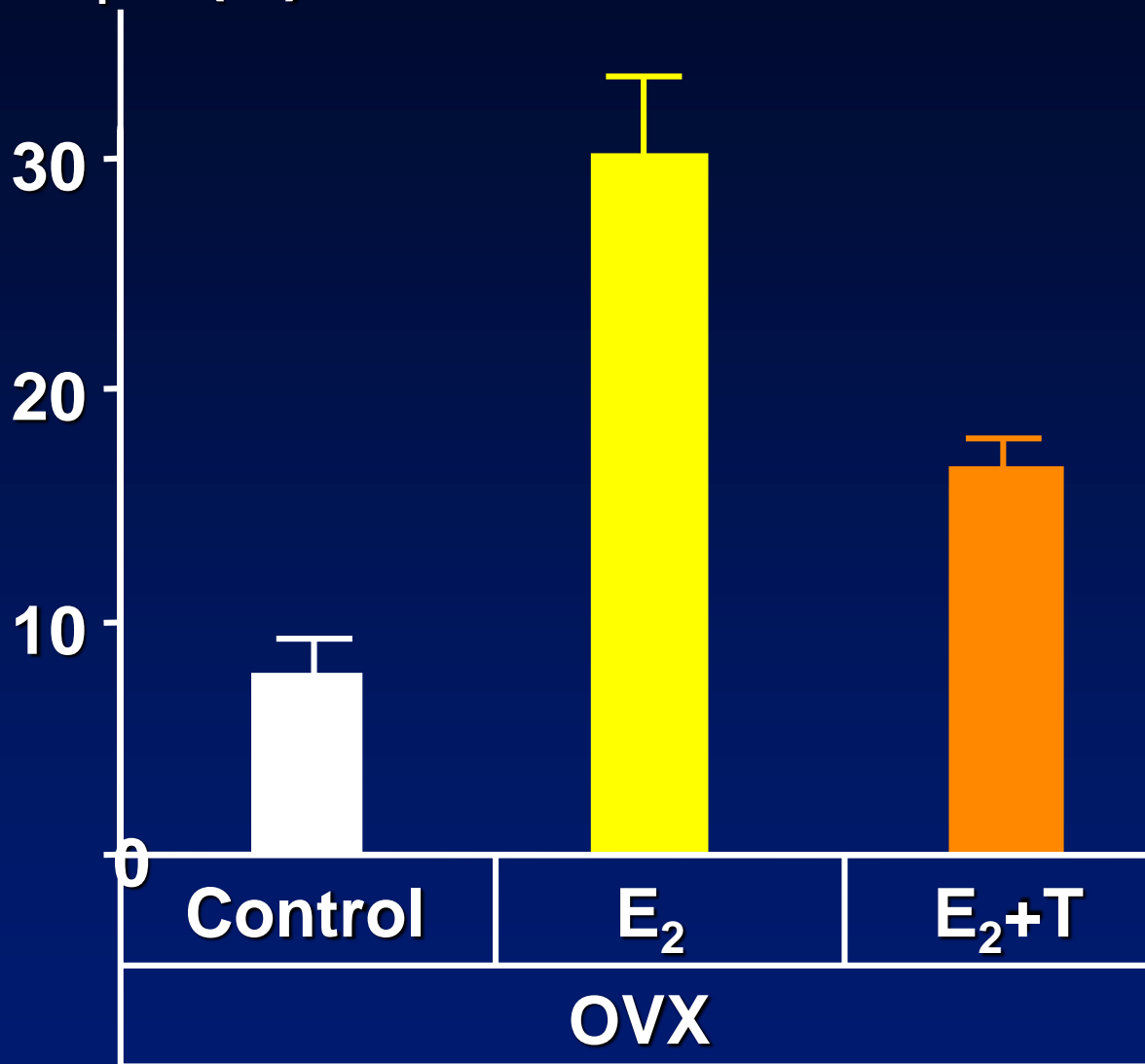
Breast Cancer Cases in Women Using **Estrogen and Testosterone** or **Estrogen and Progesterone and Testosterone** Compared with Major Studies

Study	Cases of Breast Cancer/100,000 women-years	Years observed
WHI (E/P)	380	5.2
Million women (E/P)	521	2.6
Adelaide (E/P/T)	293	5.9
Adelaide (E/T)	115	5.9

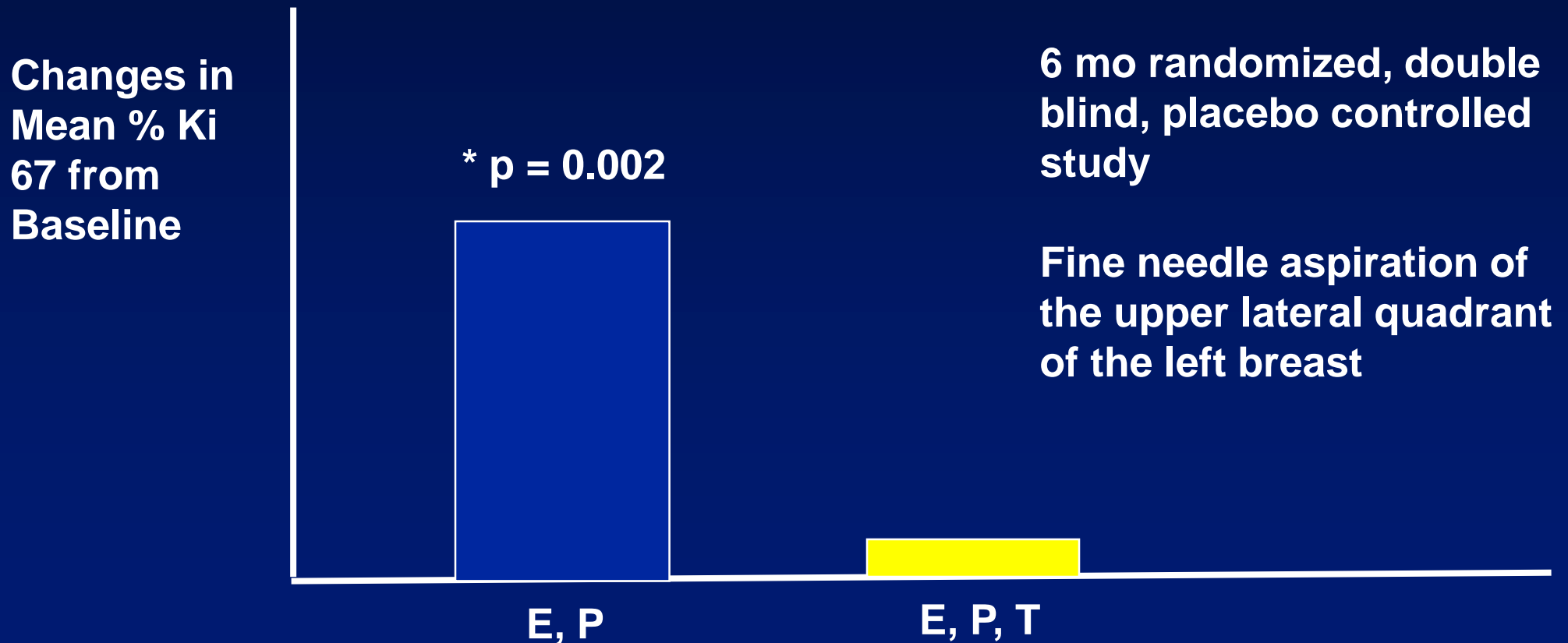
Cancer and Sexuality

Ki67 (%)

Index of
breast cell
proliferation



Effect on Breast Cell Proliferation (Stromal and Epithelial) Breast Biopsy Before and After Estrogen and Progesterone and Testosterone (n = 27) versus Estrogen and Progesterone and Placebo (n = 23)



Endogenous estrogen, testosterone and progesterone levels in relation to breast cancer risk[☆]

Journal of Steroid Biochemistry & Molecular Biology 106 (2007) 24–30

Susan E. Hankinson^{a,b,*}, A. Heather Eliassen^{a,b}

Table 2
Circulating levels of testosterone and risk of breast cancer: prospective studies in postmenopausal and premenopausal women

RR (95% CI) by category of circulating hormone levels^a

Study	Cases/controls	1	2	3	4	5
Postmenopausal women						
EBHCCG ^b , 2002	585/1574	1.0	1.3 (1.0–1.9)	1.6 (1.2–2.2)	1.6 (1.1–2.2)	2.2 (1.6–3.1)
Zeleniuch-Jacquotte, 2004 ^c	297/562	1.0	1.7 (1.0–2.8)	1.6 (0.9–2.6)	1.9 (1.2–3.2)	2.4 (1.4–4.0)
Kaaks, 2005	668/1280	1.0	1.1 (0.8–1.6)	1.3 (1.0–1.8)	1.6 (1.1–2.2)	1.9 (1.3–2.6)
Missmer, 2004 ^d	312/628	1.0	0.9 (0.6–1.4)	1.5 (1.0–2.2)	1.6 (1.0–2.4)	
Manjer, 2003	154/417	1.0	1.2 (0.7–2.2)	1.3 (0.7–2.3)	1.9 (1.1–3.3)	
Premenopausal women						
Micheli, 2004	40/108	1.0	1.1 (0.4–3.0)	2.2 (0.6–7.6)		
Kaaks, 2005	370/726	1.0	1.4 (1.0–2.1)	1.4 (0.9–2.0)	1.7 (1.2–2.6)	
Eliassen, 2006	Follicular	1.0	1.3 (0.8–2.2)	1.4 (0.8–2.3)	1.3 (0.8–2.4)	
	Luteal	1.0	1.3 (0.8–2.3)	1.4 (0.8–2.3)	1.6 (0.9–2.8)	

^a Hormone data are presented in quartiles or quintiles depending on the study.

^b Endogenous Hormones and Breast Cancer Collaborative Group.

^c Extension of study included in EBHCCG analysis; 168 new cases and 316 new controls included here.

^d Extension of study included in EBHCCG analysis; 167 new cases and 333 new controls included here.

Judith is a 64 year old female with dyspareunia.

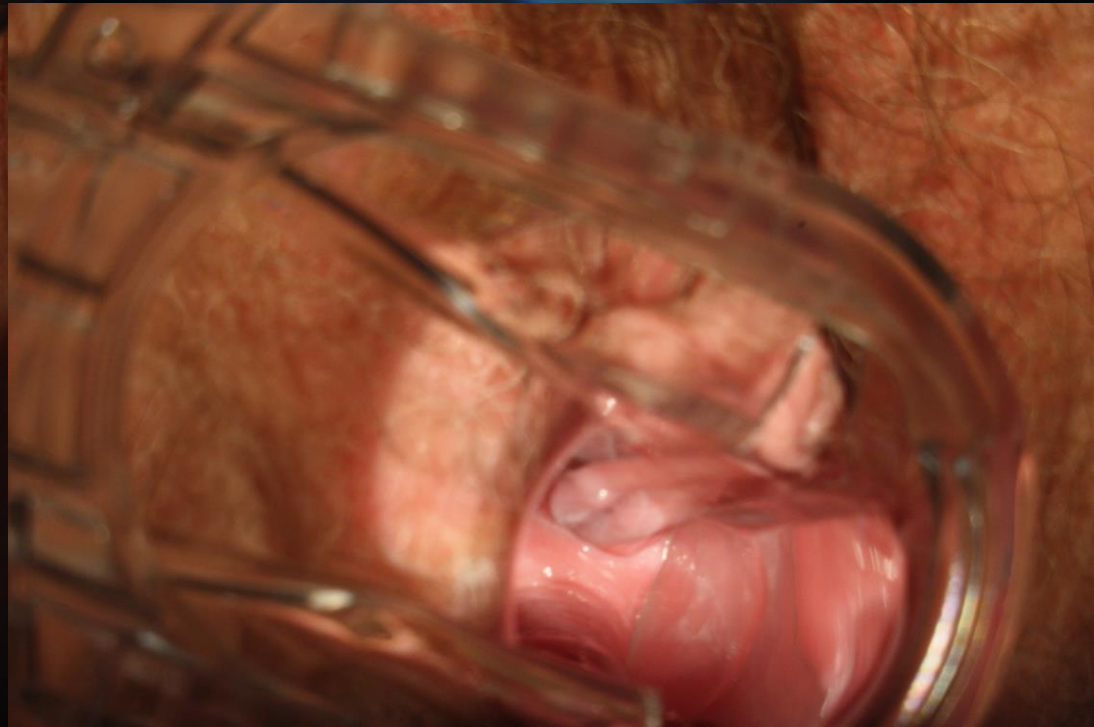
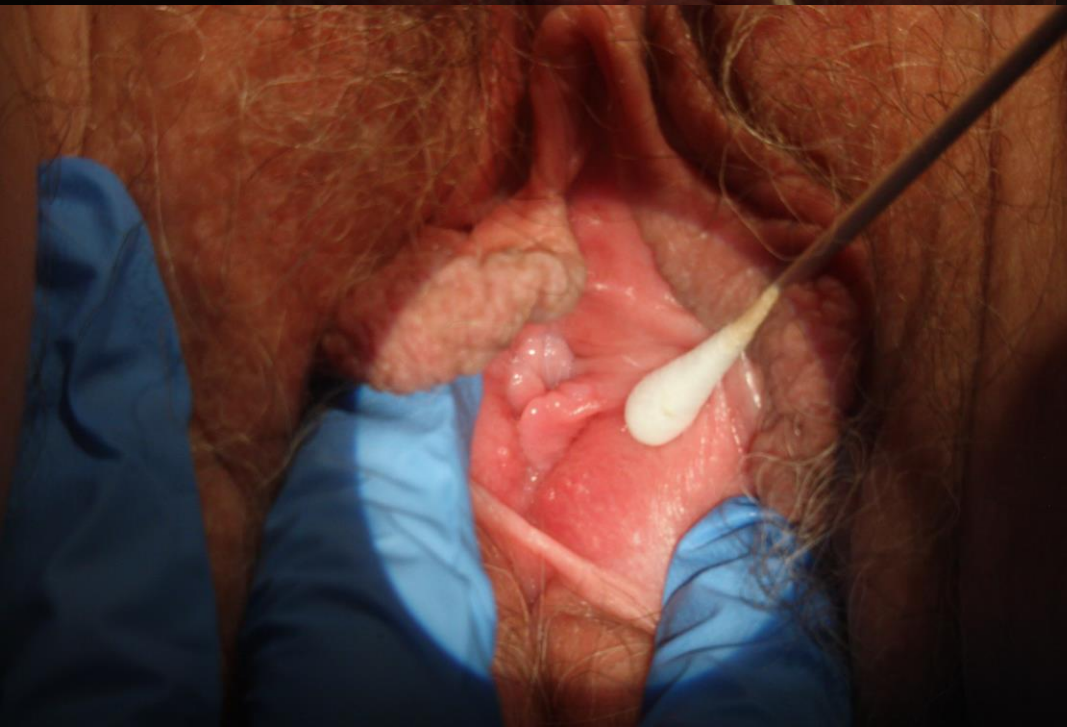
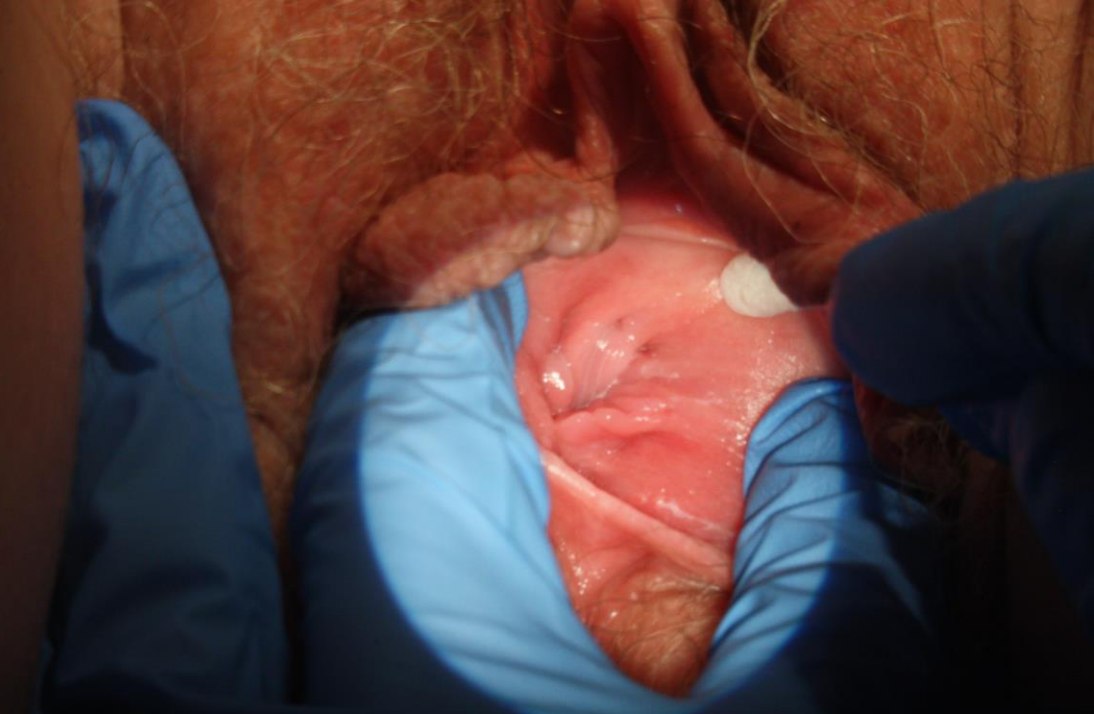
Judith measures out her topical hormones using a syringe.

She is currently using 0.4 ml of topical estradiol,

She is currently using 1.1ml of topical testosterone 1%

She is currently using arimidex daily. Judith is having hot flashes even though her estradiol level is at 80pg/ml. Judith is also having problems with acne.

The plan is for Judith to decrease her testim to 0.9ml/day and her estrogel to 0.3ml/day. Judith will get her labs done again in 4 weeks. If the hot flashes get worse with the decrease in estradiol levels Judith will go back up to the amount she is currently using. Judith will make a follow up phone call to discuss her labs after they are done.



Blood testing on 6/27/2014

**Testosterone 82 ng/dl (range 3 - 41 ng/dl),
Sex hormone binding globulin 88.2 nmol/L (range
17.3 - 125.0 nmol/L)**

**Calculated free testosterone 0.75 ng/dl (range
0.6 - 0.8 ng/dl)**

Dihydrotestosterone 23 ng/dl (range 4 - 22 ng/dl),

Estradiol 29.9 pg/ml

Progesterone 0.8 ng/ml

Hi Dr. G

I was at my oncologist last Friday and he shared that one of his patients was concerned with her desire level. He does have your card. I wanted to give you a heads up that he would be calling you.

I had my blood work done.

I have been trying 1/2 of the adderal p10 mg tab per day and it seems to help a bit.

VIDEO