



**Reproductive System**

**Principles of Cancer**

Introduction

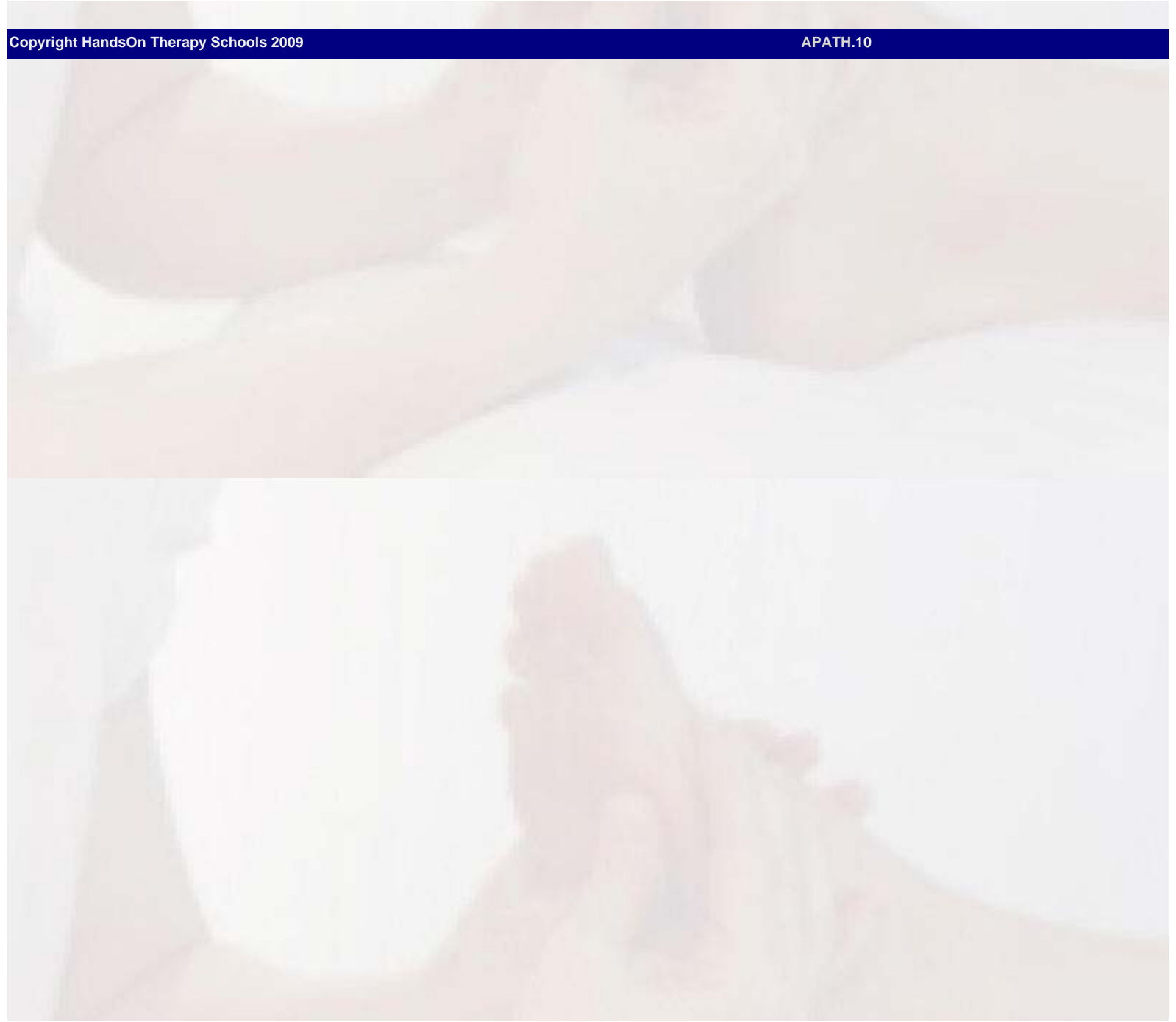
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Disorders of the Reproductive System



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# Reproductive System

Many reproductive system conditions or treatment options have repercussions for massage therapists.

Not all reproductive system *conditions* are *diseases*: pregnancy and menopause are perfectly normal and healthy—but they do change the way people function.

# Female Reproduction System

In healthy, nonpregnant women the ovaries are low in the pelvis

Attached to uterus via ovarian ligament

Ovaries produce hormones and eggs

Eggs enter fallopian tubes (oviducts, uterine tubes) to make 5-day journey to uterus

Fertilization takes place in oviducts

Uterus is lined with endometrium

If no fertilized egg attaches, endometrium is shed with menses

Hormone secretions from ovaries, pituitary determine menstrual cycle, pregnancy

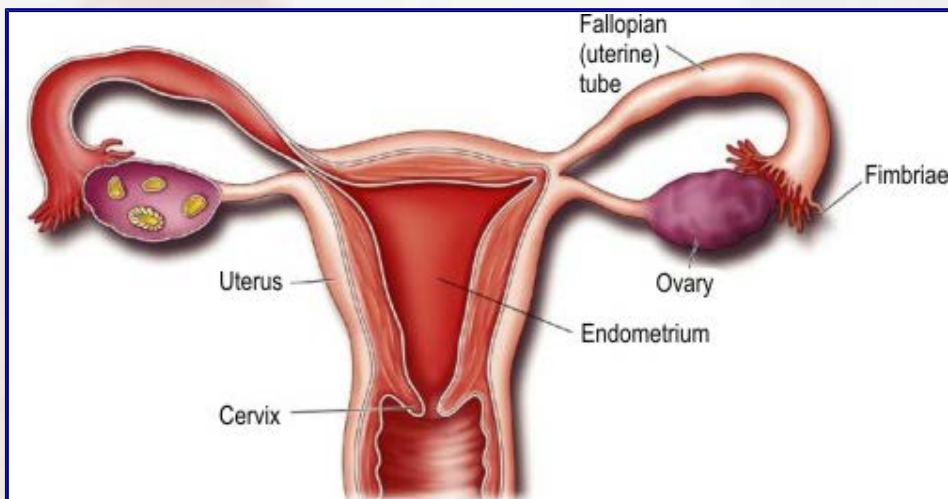
Birth control pills, patches, work by introducing hormones to mimic pregnancy

Suppresses ovulation

Relation between reproductive and endocrine system is extremely tight

Several conditions in this chapter could be listed as endocrine system conditions

A history of surgery, inflammation, scar tissue in the pelvis may allow the ovaries to move out of usual location: caution for deep abdominal massage



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# Male Reproduction System

Testes, epididymus, spermatic cord, other glands

Production of sperm, semen

Expelled through urethra through the penis

Sperm are smallest human cells; the only ones with flagella

Manufactured in testes, stored in epididymus

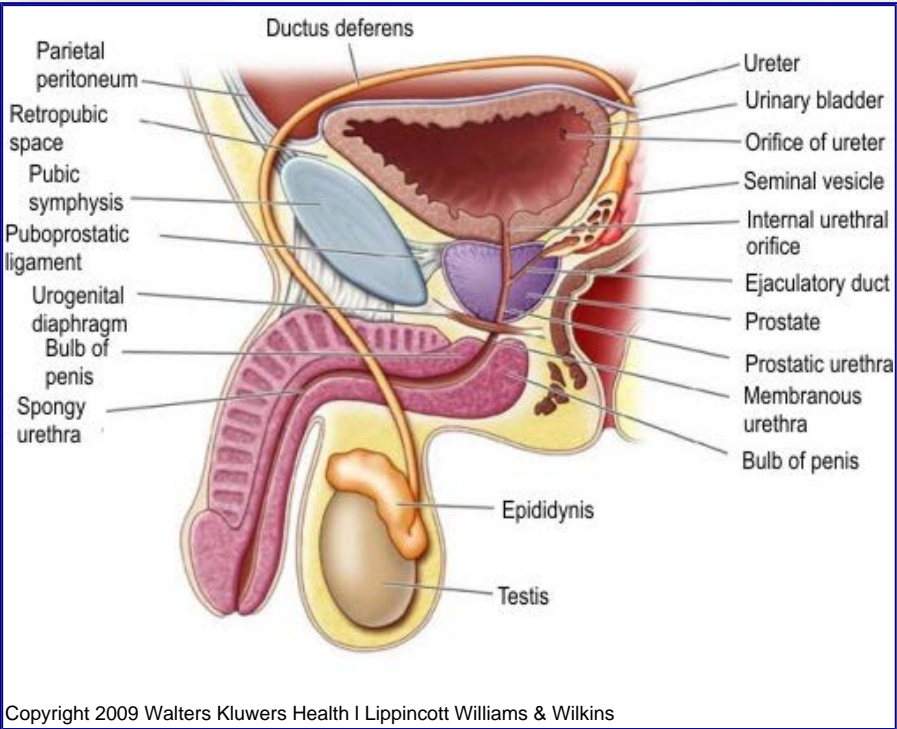
Leave via right or left vas deferens for pelvic cavity

Tube joins to form urethra (double-tasking tube)

Many male reproductive system conditions involve the prostate gland

Prostate massage is conducted through the wall of the rectum for diagnostic purposes; not usually considered within the scope of practice for massage

Massage may not have impact on conditions, but can improve quality of life of the person who lives with them



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# Disorders of the Uterus

Abortion, spontaneous and elective

Cervical cancer

Dysmenorrhea

Endometriosis

Fibroid tumors

Uterine cancer

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# Abortion, Spontaneous and Elective

Elective: intentional termination of pregnancy

Spontaneous: unintentional termination of pregnancy

## Etiology of Elective Abortion

Various techniques, depending on stage

Morning after pill

Vacuum suction

Dilation and curettage (D&C)

Inducing premature labor

## Etiology of Spontaneous Abortion

Can be difficult to tell why it happens

Factors

Smoking

Untreated infection of reproductive tract

Untreated diabetes or thyroid condition

Exposure to toxic chemicals

Progesterone deficiency in early weeks

Immune dysfunction

Structural problems in uterus (fibroids, weak cervix)

Multiple eggs fertilized

Age

Autoimmune disease

Immune system rejection of fetal tissue

Failure of fetus to implant

Fetus is missing key genetic information

Miscarriage usually happens within 14 weeks

After week 20 = stillbirth

## Types of miscarriages

*Inevitable* (uterine bleeding with dilation of cervix)

*Incomplete* (not all material is expelled)

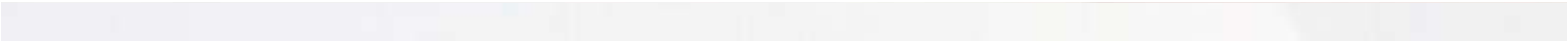
*Complete* (uterine bleeding, discharge, and pain)

*Missed* (nonviable fetus is retained without discharge; no material is expelled, but fetus died)

Up to 50% of fertilized eggs are lost before pregnancy is recognized  
25–30% of recognized pregnancies are lost

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# more Abortion

Signs and Symptoms	Complications	Treatment	Massage
Disruption of the uterine lining → pain, bleeding, cramping	Related to incomplete shedding of uterine lining  Damage to uterus, bladder, colon from surgical instruments  Hemorrhaging  Depression, anxiety	TLC  Treatment for infection if necessary  D&C or D&E (evacuation) if necessary	Contraindicates deep abdominal massage until bleeding has stopped  Be cautious about the risk of blood clots  Elsewhere massage is helpful





# Cervical Cancer

Growth of malignant cells in cervical lining ; Can be slow or fast, aggressive, invasive

## Etiology

Related to viral infection with some of human papillomavirus (HPV) group  
HPV can be silent  
6 million may be infected with some form each year  
Half of sexually active adults may be exposed at some point

Most HPV infections do *not* lead to cervical cancer  
Precancerous changes = dysplasia ;  
Stimulated by low-risk and high-risk HPV

With low-risk viruses no symptoms may ever develop  
With high-risk infection, cancerous cells can spread through uterus, vagina, pelvic cavity, etc.  
HPV is sexually transmitted disease (STD): skin-to-skin contact

Condoms can reduce risk of cervical cancer, but they don't prevent spread of HPV (more skin touches than is covered by condom)

## Risk Factors

Exposure to HPV  
Sexual activity at early age, especially with multiple partners  
Woman's partner has a history of multiple partners  
Smoking raises risk by 100%  
Also  
Being overweight; diet low in fruits and vegetables; diethylstilbestrol (DES) daughter; immunosuppression; coinfection with chlamydia, low socioeconomic standing

## Demographics

10,000 diagnoses of invasive cervical cancer/year in the United States  
4,000 deaths/year

Rates of cervical cancer and deaths are declining  
Median age at diagnosis = 48; can be much later



# more Cervical Cancer

Signs and Symptoms	Diagnosis	Treatment	Massage
No early symptoms Later: bleeding, spotting between periods or after menopause, vaginal discharge, abdominal pain	Pap smear, colposcopy, biopsy, tests for staging More precise tests are becoming available <b>Prevention</b> HPV vaccine now available Works only <i>before</i> any risk of exposure Prevents transmission of HPV types 6, 11, 16, 18 These cause 90% of genital warts and 70% of cervical cancers Still necessary to get cancer screening	Depends on stage Most are found in stage 0 or I Can go to surgery, even exenteration Radiation therapy and chemotherapy as necessary	Fine for cervical dysplasia For aggressive cervical cancer respect challenges of cancer and treatments



# Dysmenorrhea

Painful menstrual periods ; Limits activities > 1 day/month

## Etiology

Primary: starts within 3 years of menarche, no underlying cause

Secondary: a complication or symptom of underlying pathology

## Causes of primary dysmenorrhea

### Prostaglandins

Locally produced chemicals: smooth muscle contractions; pain sensation

Secretion increases at beginning of menstrual cycle

### Pain-spasm cycle

Uterus in contraction cannot receive enough oxygen; may be exacerbated by shortage of calcium

### Ligament irritation

Uterine ligament anchors uterus; may be pulled and irritated during spasm

Physical/emotional stress can make all symptoms worse: self-fulfilling prophecy

## Causes of Secondary Dysmenorrhea

Infection, fibroids, STDs, endometriosis, pelvic adhesions, scar tissue

## Demographics

Most women have dysmenorrhea at least once

Affects 45–95% of fertile women

Leading cause of lost school/work time for fertile women

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# more Dysmenorrhea

Signs and Symptoms	Treatment	Massage
Important to investigate to rule out serious underlying disorders Laparoscopy for endometriosis Ultrasound for fibroid tumors Cultures of secretions for infection	Painkillers inhibit production of prostaglandins; heat eases cramping Low-dose birth control suppresses ovulation Medication or surgery for structural problems Alternative methods  Nutritional analysis Reduce fats, animal proteins; increase fiber, calcium Exercise, stretching Vitamin K at acupressure sites	Deep abdominal work not welcome during cramps; other work is supportive and helpful



# Endometriosis

Endometrial tissue becomes established elsewhere in the body

## Etiology

First described in 1921

Implantation and growth of cells outside uterus, usually in pelvis

Hypotheses:

- Retrograde flow through uterine tubes

- Circulatory/lymph dissemination

90% of women have some endometrial cells in peritoneum during menstruation; not all have endometriosis

Differences between women with and without endometriosis

- Immune system activity: more inflammation and scar tissue

- High prostaglandins

- Possibly **metaplasia**: one type of tissue transforms into another (remnants of embryonic cells may become outposts of endometriotic cells later in life)

Growths establish on uterine tubes, broad ligaments, ovaries, bladder, colon

Rarely, growths are found outside pelvic cavity (lungs, brain)

Growths are sensitive to hormonal signals to proliferate

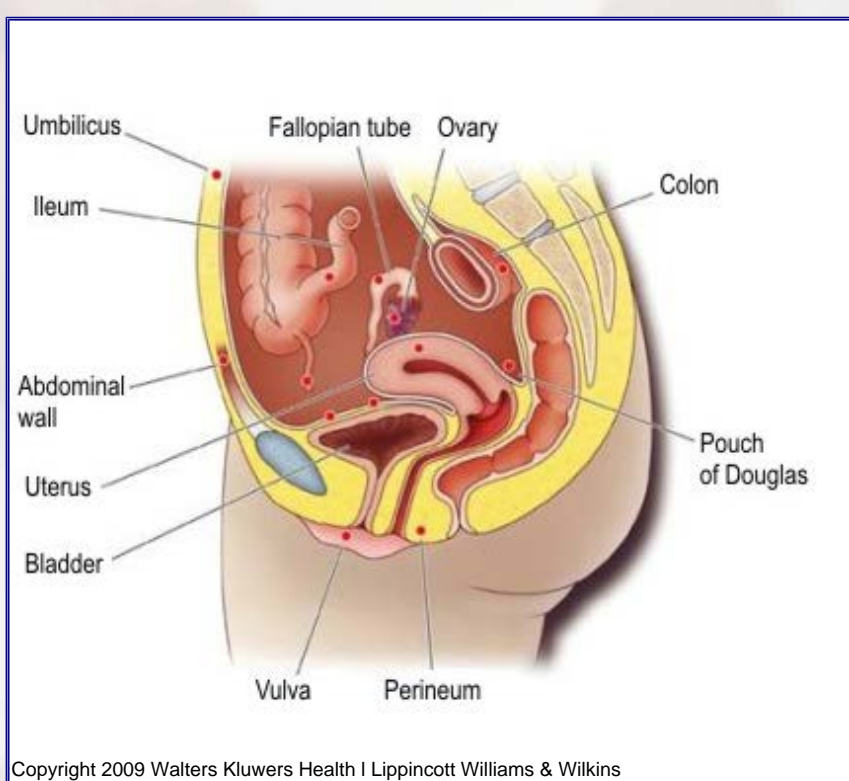
- Can't shed with normal menses, so body encapsulates them with connective tissue cysts

## Demographics

Difficult to determine; can only be confirmed by laparoscope

Affects an estimated 10–20% of fertile women = 13.6 million in the United States

5.5 million may be diagnosed



# more Endometriosis

Signs and Symptoms	Diagnosis	Treatment	Massage
<p>Infertility</p> <p>Menstrual irregularities, pain with cycle</p> <p>Symptoms do <i>not</i> indicate extent of growths</p> <p><b>Complications</b></p> <p>Adhesions, deposits of fibrous connective tissue</p> <p>Obstruction of uterine tubes: ectopic pregnancy</p> <p>Anemia</p> <p>Uterine hyperplasia</p>	<p>Laparoscopic surgery</p> <p>Others in development</p> <p>Magnetic resonance imaging (MRI), ultrasound not accurate</p>	<p>Four main goals</p> <p>Relieve pain</p> <p>Stop progression</p> <p>Prevent new growths</p> <p>Maintain/restore fertility (if desired)</p> <p>(Limit symptoms long enough for a successful pregnancy)</p> <p>Painkillers, hormone therapy</p> <p>Lasers, electrocauterization for ablation of growths, to remove adhesions</p>	<p>Can cause some displacement of pelvic organs with adhesions</p> <p>Deep abdominal massage should be conservative</p> <p>Otherwise, massage can help with stress, frustration, anxiety related to this condition</p>

# Fibroid Tumor

Also called **leiomyoma** ; Benign tumors in or around uterus ; Vary from microscopic to several pounds

## Etiology

Probably combination of genetics, environment, hormones

Classified by location

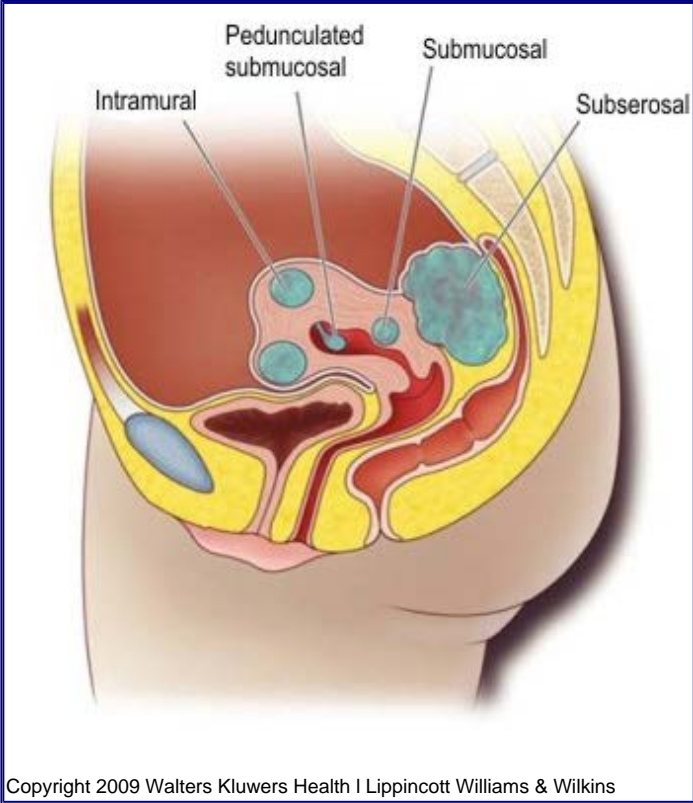
- Submucosal
- Intramural
- Subserosal

Extracellular matrix of tumors lacks a key protein; collagen is disorganized

- Same pattern found in keloid scar
- African Americans are more vulnerable to both

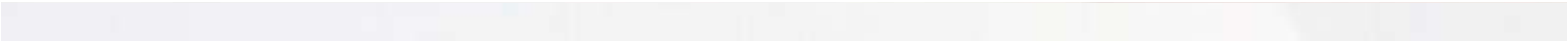
## Demographics

- Found in about 20% of fertile women
- Probably present in about 80%
- Stimulated by estrogen; they shrink post menopause
- African American women have higher rates than other groups



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# more Fibroid Tumors

Signs and Symptoms	Diagnosis	Treatment	Massage
<p>Often silent</p> <p>May put pressure on nerves, cause bladder or bowel symptoms, interfere with pregnancy</p> <p>Can cause heavy, painful periods</p> <p><b>Complications</b></p> <p>Not usually serious</p> <p>Can cause anemia (blood loss with heavy periods); infertility, failed pregnancy</p> <p>Pedunculate fibroids can twist</p> <p>Tumors may outgrow blood supply, become necrotic</p>	<p>Found during pelvic examination</p> <p>Confirmed by ultrasound, MRI</p> <p>Need to distinguish from cyst or cancerous growth</p> <p>Usually grow slowly; can become aggressive</p>	<p>May not be needed</p> <p>Hormone therapy can shrink them (they come back)</p> <p>Other procedures</p> <p>Cryomyolysis</p> <p>Artery embolization</p> <p>Laser ablation</p> <p>Myomectomy</p> <p>Full hysterectomy (180,000/year)</p>	<p>Local contraindication if they are diagnosed</p> <p>Generally not affected one way or the other: massage for quality of life</p>





# Uterine Cancer

Cancerous cells in the uterus ; Endometrial cancer ; Uterine sarcoma

## Etiology

Mutation in DNA of affected cells  
Endometrium, connective tissue, or muscle cells  
Trigger is estrogen exposure (endogenous or exogenous)  
Other factors: race, age, history of other cancers

## Types of uterine cancer

Two main classes

### Endometrial cancer

95% of diagnoses  
Also called adenocarcinoma

- Type 1: not aggressive
- Type 2: can be aggressive; two versions
- Papillary serous adenocarcinoma
- Clear cell adenocarcinoma
- Adenosquamous carcinomas: squamous cells with endometrial cells

### Uterine sarcoma

5% of diagnoses  
Nonglandular tissue

- Stromal sarcoma: connective tissue
- Leiomyosarcoma: muscle cells
- Malignant mixed mesodermal tumors: combine features of adenocarcinomas and sarcomas

New growth is fragile, easily disrupted → spotting, bleeding in postmenopausal women

## Demographics

410,000 diagnoses/year  
7,300 deaths/year (low mortality rate)  
500,000 survivors alive today  
Usually diagnosed at age 45–75  
Average age at diagnosis = 60  
When found in younger women, other risk factors are present  
Whites get it more than other groups; African Americans more likely to die

Unclear whether this is related to economic standing or other factors

Usually not aggressive, but four mechanisms to metastasize

- Direct contact with other organs
- Peritoneal fluid
- Lymphatic system
- Circulatory system

**Risk Factors**

Estrogen exposure

- Estrogen replacement therapy
- Obesity (fat cells produce estrogen)
- High-fat diet
- Never having children
- Early menarche, late menopause
- Polycystic ovarian syndrome or ovarian tumors
- Taking tamoxifen to lower risk of breast cancer

Also: race, age, genetic anomaly for colorectal cancer, type 2 diabetes

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# more Uterine Cancer

Signs and Symptoms	Diagnosis	Treatment	Massage
Vaginal spotting, bleeding post menopause Harder to identify in fertile women: spotting between periods Vaginal discharge, pelvic pain, pelvic mass, pain with sex, change in bladder/bowel habits, unintended weight loss	Endometrial biopsy, transvaginal ultrasound Chest radiography to look for metastasis	Hysterectomy, with ovaries and tubes Radiation therapy, hormone therapy Chemotherapy for sarcoma	Same guidelines as other types of cancer: accommodate for treatment challenges, stay within activity levels



# Disorders of Other Female Reproductive Structures

- Breast Cancer
- Ovarian Cancer
- Ovarian Cysts

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# Breast Cancer

Cancer cells in epithelial or connective tissue of the breast

## Etiology

### *Ductal carcinoma*

- 70–80% of diagnoses
- Starts in situ (DCIS), can become invasive

### *Lobular carcinoma*

- 5–10% of diagnoses
- Can be in situ (LCIS) but more likely to become invasive
- Frequently occurs bilaterally

### *Other types of breast cancer*

- 10–15% diagnoses collectively
- Inflammatory breast cancer
- Paget disease of the breast
- Medullary breast cancer

- Most types begin in situ; develop malignant characteristics later
- Can take several years to grow to palpable size
- Risk increases of spread through lymph system, then to bones, liver, lung, brain

## Risk Factors

- No dependable profile (no way to prevent it)
- Age (50+)
- Estrogen exposure (early menarche, late menopause, few or no pregnancies)
- 1+ drink/day
- History of chest radiation
- Breast cancer genes (BRCA1, BRCA2): accounts for 5–

## Demographics

- Second most frequently diagnosed cancer in women
- 211,000 diagnoses/year in women; 41,000 deaths
- 1700 diagnoses/year in men; 500 deaths
- Lifetime risk is 1:8
- Most diagnoses among women 50 years or older
- Diagnosis rates have dropped since 2003: changes

10% of diagnoses

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# more Breast Cancer

Signs and Symptoms	Diagnosis	Treatment	Massage
<p>Can be subtle; small tumors can hide in roomy tissues</p> <p>Later: asymmetrical growth, skin changes and discharge on affected side</p> <p>Complications with metastasis: bone weakness, spinal cord compression</p>	<p>Self-examination</p> <p>Mammogram, MRI</p> <p>Ultrasound</p> <p>Biopsy</p> <p>Staging: look for sentinel node first</p> <p><b>Prevention</b></p> <p>Not strictly preventable; efforts focus on early detection</p> <p>Self-examination; clinical examination, imaging (mammogram, MRI, ultrasound)</p> <p>Women with genetic predisposition need to be more vigilant than others</p>	<p><i>Surgery:</i> lumpectomy, partial mastectomy, total mastectomy, modified mastectomy</p> <p><i>Radiation:</i> external or internal</p> <p><i>Chemotherapy:</i> toxic drugs to shrink tumor for surgery or prevent new growth</p> <p><i>Hormone therapy:</i> to bind up receptor sites on tumor cells</p> <p><i>Biologic therapy:</i> to block cell division</p> <p><b>Complications of Treatment</b></p> <p>Surgery: lymphedema</p> <p>Radiation therapy: rashes, burns, ulcerations</p> <p>Chemotherapy: hair loss, nausea, mouth sores, immune suppression, bone marrow suppression</p> <p>Hormone therapy: increased risk of other cancer, blood clotting</p>	<p>Weigh benefits and risks; adjust to maximize benefits (improved sleep, better nutrition, less stress, being <i>touched</i> v. being <i>handled</i>, etc.)</p>

# Ovarian Cancer

Growth of malignant tumors on the ovaries ; Most begin in the epithelial lining of these organs ; Can grow quickly, metastasize to the peritoneum, other organs in the abdomen

## Demographics

Can be any age; mostly > 60 (median = 63)  
20,100 diagnoses/year (beginning to decline)  
15,000 deaths/ year (high mortality)  
Fifth leading cause of death for women  
About 172,000 survivors alive today

## Etiology

Three types of tumors:

Germ cells

Stromal cells

Epithelial cells (most common: adenocarcinomas = 90%)

Several categories of epithelial tumors

Can be hard to identify early

75% of diagnoses made at stage III or IV

Metastasis through direct extension or blood/lymph

Most common route is through peritoneal fluid

## Risk Factors

*Familial history:*

First-degree relative has 1 in 3 chance of developing OC

Second-degree relative also has increased risk

Genetic anomaly for breast or colorectal cancer increases risk

*Reproductive history*

No children, no birth control, or multiple miscarriages

(May be related to ovulation trauma: wear and tear on ovaries)

*Hormone replacement therapy*



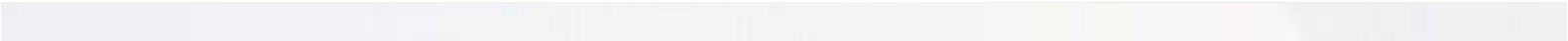
Women with a hysterectomy who took  
estrogen alone for 10 years +

*Other*

Exposure to radiation, asbestos, talcum  
powder on genitals, high-fat diet, age...

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# more Ovarian Cancer

Signs and Symptoms	Diagnosis	Treatment	Massage
None or subtle early  Feeling of heaviness in pelvis; bloating, nausea, diarrhea, constipation, urinary frequency, vaginal bleeding, change in cycle, weight gain/loss  This often happens during perimenopause: easy to miss  Later  Palpable mass, increased girth, ascites	Ultrasound shows masses; most are not cancerous  Transvaginal ultrasound, CT, MRI, barium enema, pyelogram  Blood test for CA-125 (tumor marker) is helpful but not definitive  Laparotomy for tissue sample	Surgery, chemotherapy for ovaries, uterine tubes	Respect challenges of cancer, cancer treatments  Work with health care team



# Ovarian Cysts

## Several types

This article: functional cysts ; Arise from normal ovaries, as result of hormonal imbalance/dysfunction

## Demographics

All females can get ovarian cysts

Most in women who are fertile

In premenarchal girls and postmenopausal women the risk of malignancy is much higher

## Etiology

At ovulation a single follicle ruptures, releasing an egg to uterine tubes

Sometimes the follicle doesn't rupture

Sometimes the follicle doesn't heal normally

## Types of cysts

### *Follicular cysts*

Most common type

Follicle doesn't rupture completely; blister forms at site

May be 2–3 inches, spontaneously resolve within two cycles

### *Corpus luteum cysts*

Blister forms over site of released ovum (corpus luteum)

Blocks hormones that should flow out

Creates pregnancy-resembling symptoms until resolution (2–3 months)

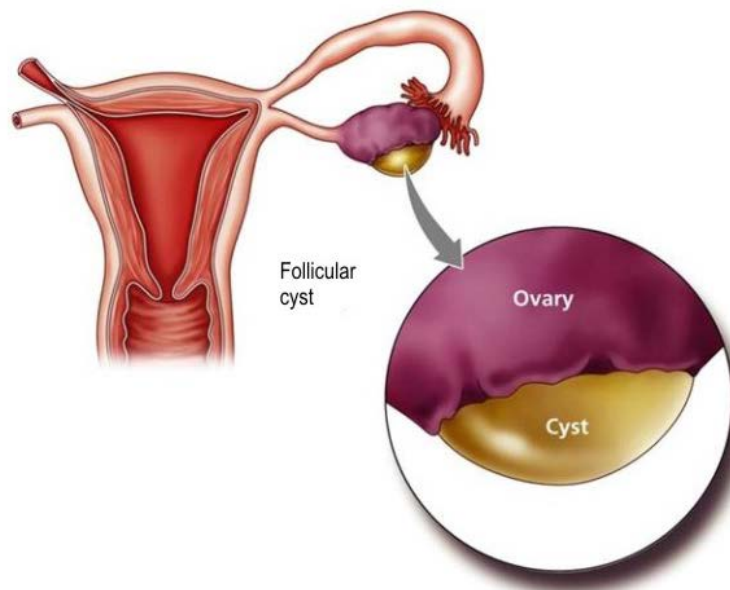
Can cause bleeding into peritoneum

### *Polycystic ovaries*

Also called *Stein-Leventhal syndrome*

Enlarged ovaries with multiple small cysts

Changes in hormone secretion



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→

Acne, hirsutism, loss of cycle

Can also impact metabolism →

Metabolic syndrome

*Others:*

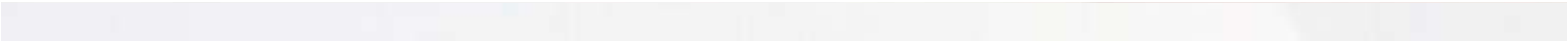
Endometriomas (from  
endometriosis)

Cystadenomas (usually benign  
but can change)

Dermoid cysts (teratomas—can  
contain

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# more Ovarian Cysts

Signs and Symptoms	Diagnosis	Treatment	Massage
<p>Often silent unless the cyst is injured</p> <p>May have dull ache, pain with intercourse</p> <p>Large cysts may → back pain, into legs</p> <p><b>Complications</b></p> <p>May be big enough to interfere with blood flow, rest on bladder</p> <p>Can be <i>really</i> big</p> <p>Medical emergencies: torsion, rupture of a large cyst</p> <p>Early signs mimic <i>advanced</i> ovarian cancer: always investigate</p>	<p>Swelling or mass found at pelvic examination</p> <p>Ultrasound can find mass but not identify what kind</p>	<p>Follicular and corpus luteum: oral contraceptives</p> <p>Aspiration, surgery if necessary</p>	<p>Local contraindication</p> <p>Ovaries may be out of usual location: vulnerable to compression</p> <p>Elsewhere massage is fine</p>



# Disorders of the Male Reproductive System

- Benign Prostatic Hypertrophy
- Prostate Cancer
- Prostatitis
- Testicular Cancer

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# Benign Prostatic Hypertrophy

Prostate of mature man becomes enlarged

## Etiology

Unclear why mature prostates grow

Dihydrotestosterone

Estrogen dominance

Enlargement → mechanical pressure on urethra

Affected tissue is usually periurethral (as opposed to prostate cancer, which is usually superficial)

Enlargement doesn't always correspond with pressure on urethra

Pressure → dysuria, UTI, pyelonephritis, bladder stones

## Demographics

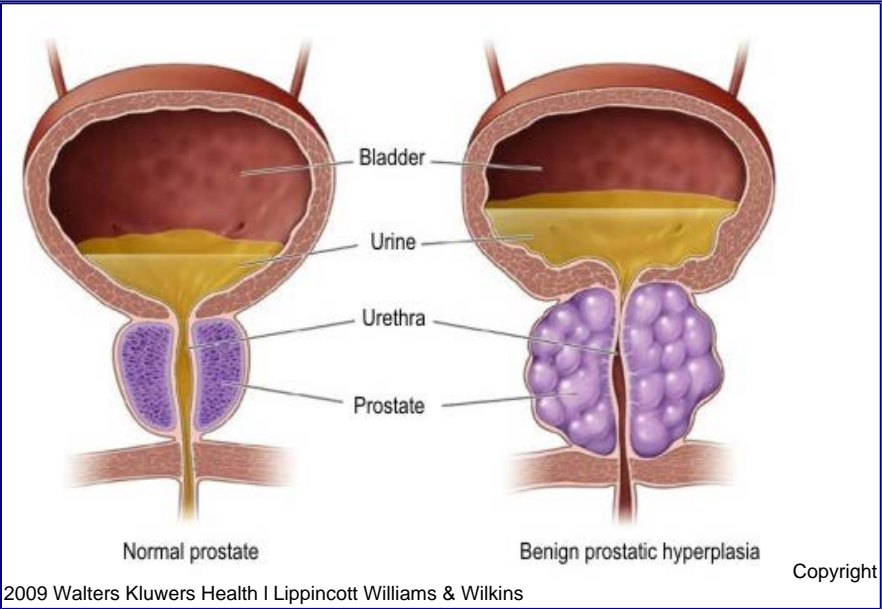
Most mature men have some enlargement

50% of men > 60

70% of men > 70, etc.

14 million men in the United States have been diagnosed with BPH; most have no significant symptoms

Only about 10% need treatment



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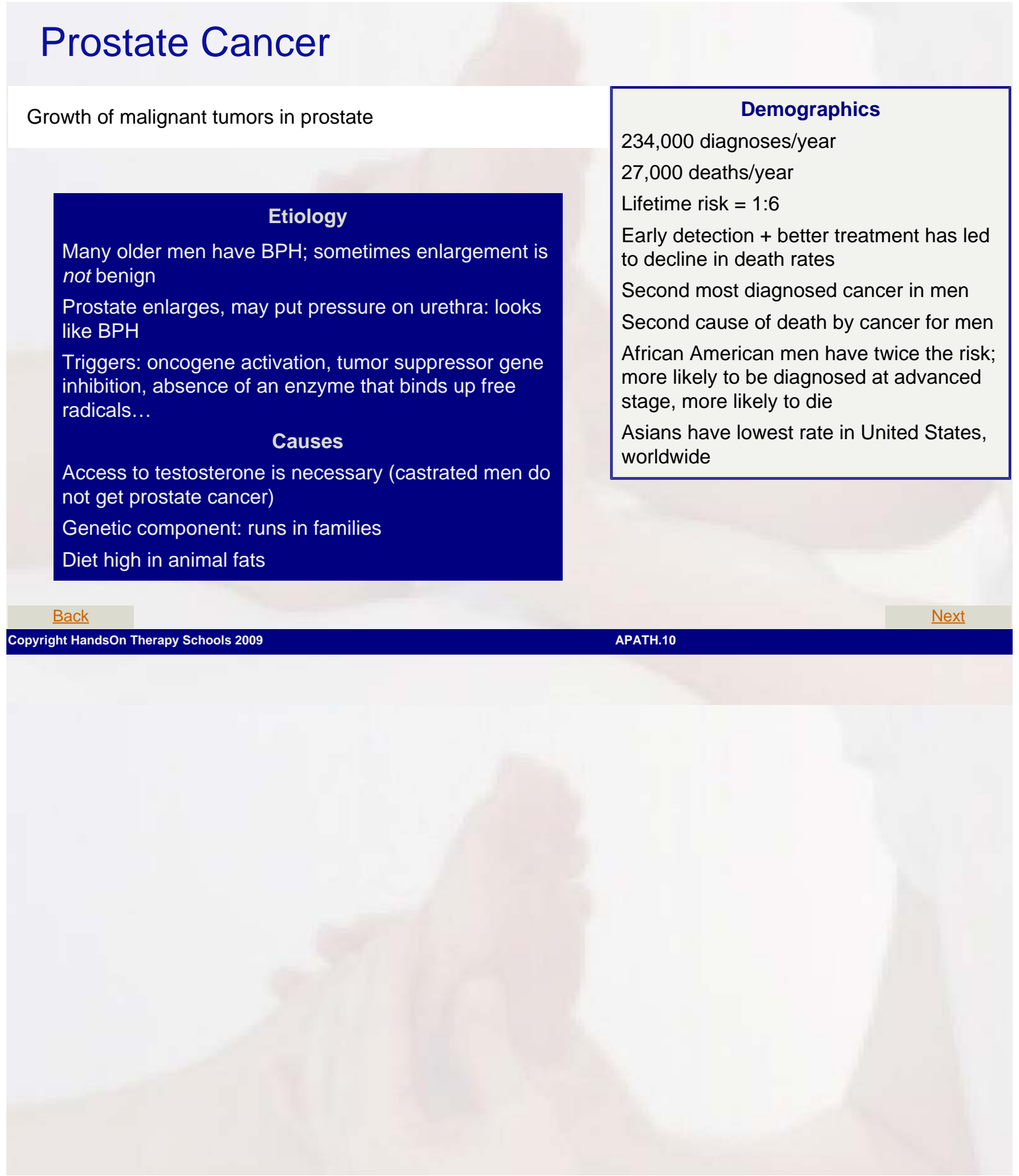
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# more Benign Prostatic Hypertrophy

Signs and Symptoms	Diagnosis	Treatment	Massage
Difficulties with urination Weak flow, frequency, incomplete emptying, leaking/dribbling Acute urinary retention: medical emergency	Palpation through rectum (digital rectal examination) Tests for urinary speed, force Prostate-specific antigen (PSA) blood test	Depends on severity Medication Lower dihydrotestosterone (DHT), alpha blockers (significant side effects) Surgery Cut away sections of prostate gland to relieve pressure Examine for signs of prostate cancer	Little (if any) effect on prostate growth Can improve quality of life Important to guide client to help for signs of UTI, other complications







# Prostate Cancer

Growth of malignant tumors in prostate

## Etiology

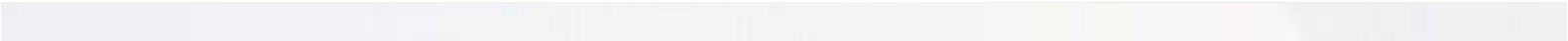
Many older men have BPH; sometimes enlargement is *not* benign  
Prostate enlarges, may put pressure on urethra: looks like BPH  
Triggers: oncogene activation, tumor suppressor gene inhibition, absence of an enzyme that binds up free radicals...

## Causes

Access to testosterone is necessary (castrated men do not get prostate cancer)  
Genetic component: runs in families  
Diet high in animal fats

## Demographics

234,000 diagnoses/year  
27,000 deaths/year  
Lifetime risk = 1:6  
Early detection + better treatment has led to decline in death rates  
Second most diagnosed cancer in men  
Second cause of death by cancer for men  
African American men have twice the risk; more likely to be diagnosed at advanced stage, more likely to die  
Asians have lowest rate in United States, worldwide



# more Prostate Cancer

Signs and Symptoms	Diagnosis	Treatment	Massage
Enlarged, hard prostate Obstruction of urethra Pain with urination, ejaculation Blood in urine Can't maintain an erection Low back pain and referral to legs: growths put pressure on pelvic nerves	Looks like BPH: easy to miss DRE: growths are usually on superficial surface of prostate, easy to palpate Blood test for PSA: indicator of risk, not definitive for disease Free PSA indicates BPH Attached PSA indicates prostate cancer Transrectal ultrasound Biopsy Early detection means 91% of cases are found in stage I or II	Watchful waiting (for slow-growing forms in elderly men) Radiation (internal or external) Surgery Chemotherapy	Know how client treats prostate cancer Work with health care team Respect challenges of cancer, treatments



# Prostatitis

Prostate is painful, possibly inflamed ; Pain throughout pelvis and groin (different from BPH, prostate cancer)

## Demographics

2 million doctor visits/year  
10–50% of men 20–74 years old will have symptoms at some time

## Etiology

Draining channels of prostate are on horizontal plane  
If material doesn't drain, it can become stagnant  
Bladder reflux can cause damage  
Prostatitis is umbrella term for four classes of problems:  
*Type 1: acute bacterial prostatitis*  
Acute infection, possibly with abscess  
*Type 2: chronic bacterial prostatitis*  
Recurrent infection  
*Type 3: Chronic nonbacterial prostatitis/chronic pelvic pain syndrome (CPPS)*

Prostate enlargement with no demonstrable infection

Also called **prostadynia**

Type 3A: Inflammatory chronic pelvic pain syndrome

White blood cells are found in the semen, expressed prostatic secretions, or urine

Type 3B: Noninflammatory chronic pelvic pain syndrome ; White cells are not found

*Type 4: Asymptomatic inflammatory prostatitis (AIP):*

No subjective symptoms, white blood cells are found

With infection, agents are usually *Escherichia coli*, *Klebsiella*, *Proteus mirabilis*

Type 3 is most common (90%)

May be an infection; not responsive to current antibiotics

Pain may be referred from trigger points in pelvic muscles



# more Prostatitis

Diagnosis	Treatment	Massage
<p>Bacterial looks like UTI: pain and burning on urination, etc., plus pain in pelvis, perineum, testes, discharge, fever; prostate is palpably hot</p> <p>CPPD has no fever or abnormal palpation</p> <p>Rule out BPH, prostate cancer</p> <p>Prostatitis can raise PSA levels</p> <p>Urinalysis from initial stream, midstream, after prostate massage</p> <p>Semen sample</p>	<p>Type 1 responds to antibiotics</p> <p>Type 2 does not: 6 weeks or more with frequent recurrence</p> <p>Remove prostate stones, if necessary</p> <p>Type 3 just-in-case antibiotics, alpha blockers, anti-inflammatories, frequent ejaculation, sitz baths, biofeedback, dietary supplements</p>	<p>No direct impact; avoid acute infection</p> <p>Can be useful</p>



# Testicular Cancer

Growth of malignant cells in the testicles

## Etiology

Few consistent risk factors

- Cryptorchidism
- Congenital abnormalities
- Age
- Race (mostly whites)
- History of testicular cancer
- HIV+

## Stromal cell tumors

- <5% of all testicular cancer
- Connective tissue cancer: Sertoli cell tumors, Leydig cell tumors

## Germ cell tumors

- In sperm- and hormone-producing cells
- Two types

## Seminomas

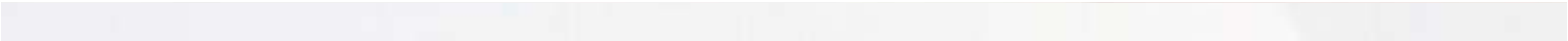
- Most common: 40–45% of all diagnoses
- Grow slowly, highly sensitive to radiation

## Nonseminomas

- Several types, some more aggressive than others
- Embryonic carcinomas; yolk sac tumors; teratomas; choriocarcinoma

## Demographics

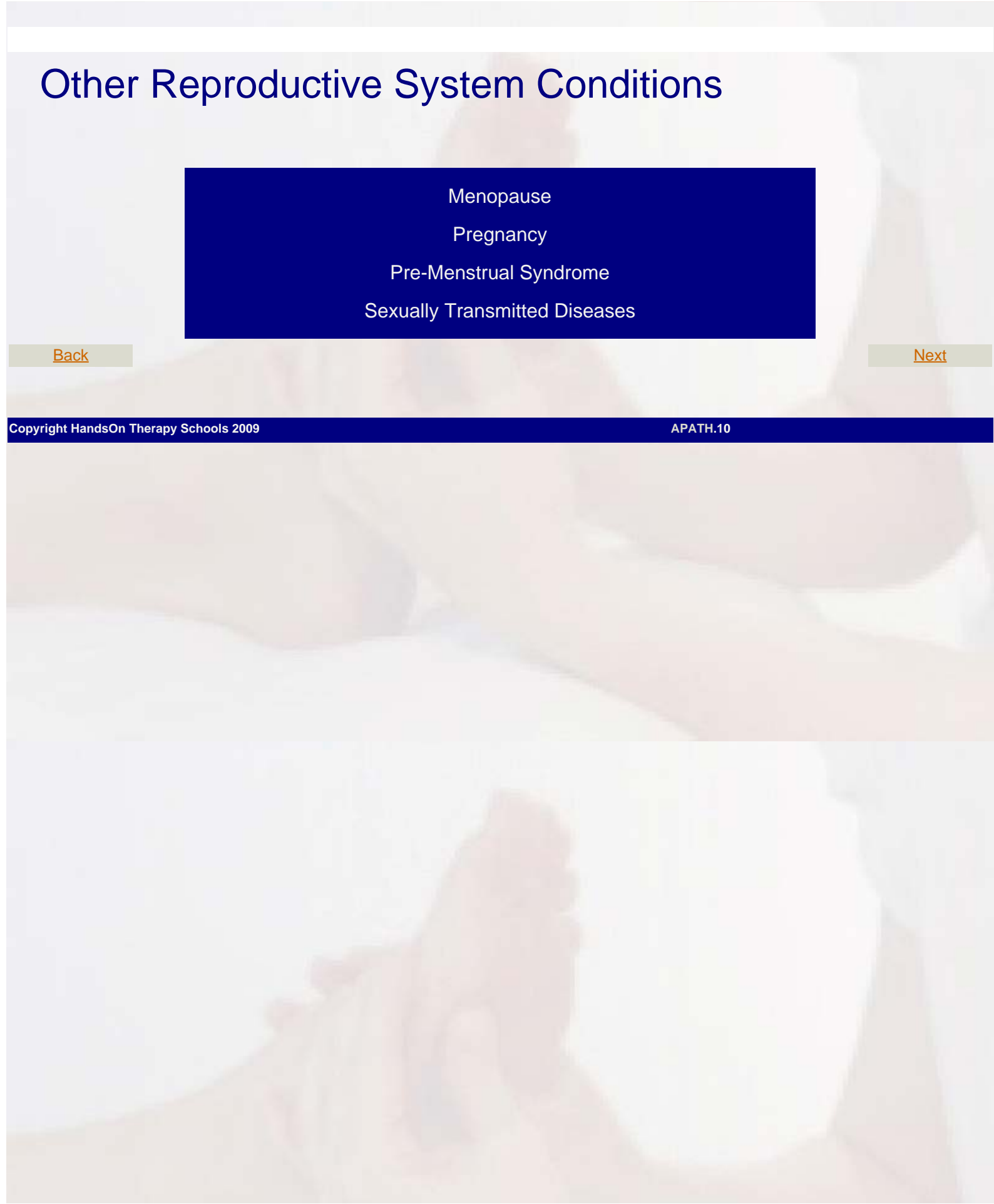
- 1% of male cancers (comparatively rare)
- May have doubled in past 40 years
- 8,200 diagnoses/year
- 370 deaths
- Usually targets young men: 15–35
- 140,000 survivors living today



# more Testicular Cancer

Signs and Symptoms	Diagnosis	Treatment	Massage
Painless lump on testicle Sensation of fullness, heaviness, fluid in scrotum Dull ache in pelvis or groin; breasts become enlarged, tender	Rule out infection, injury Ultrasound, blood tests, orchiectomy	Surgery to remove affected testicle, other growths Radiation therapy for seminomas Chemotherapy for nonseminomas Follow-up to look for missed growths, cancer in other testicle	Know how client treats testicular cancer Work with health care team Respect challenges of cancer, treatments





# Other Reproductive System Conditions

- Menopause
- Pregnancy
- Pre-Menstrual Syndrome
- Sexually Transmitted Diseases

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# Menopause

The moment the ovaries permanently stop secreting enough hormones to initiate a menstrual cycle ; Time leading up to this = perimenopause ; **Not a disease!**

## Etiology

As ovaries age, they become less sensitive to follicle-stimulating hormone (FSH) and leuteinizing hormone (LH)

They secrete less estrogen, progesterone

Because of age or surgery, cycle comes to a stop

Effects of hormonal shifts are still being explored

### *Bone density*

Estrogen inhibits osteoclast activity

Progesterone stimulates osteoblasts

With loss of both, women can lose 20% of bone density in first years of fluctuation

### *Cardiovascular Health*

Shift from high-density lipoprotein (HDL) to low-density lipoprotein (LDL) predominance

### *Protection from Some Types of Cancer*

Varies with subtypes of hormones, areas of cancer

### *Central Nervous System Functions*

Link to mood, cognitive function still being explored; hormone replacement does not affect major depressive disorder

In addition to reduced levels of estrogen and progesterone, change in balance between them: estrogen dominance

Short term

Hot flashes (power surges)

Night sweats

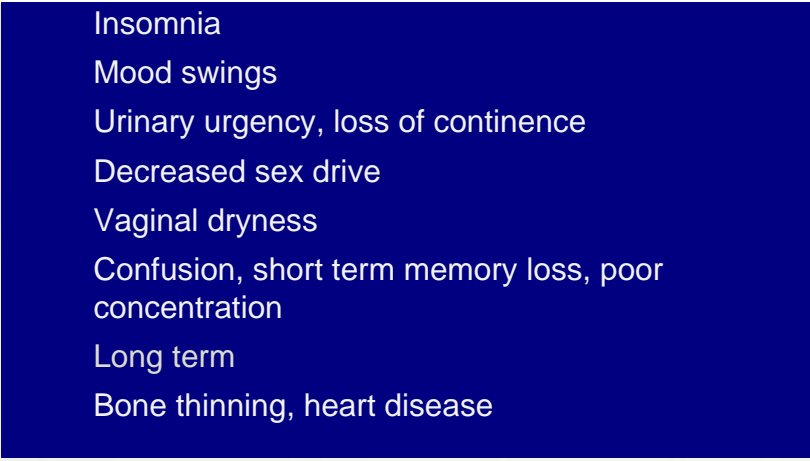
## Demographics

Perimenopause symptoms usually begin at about 47.5 years, complete at 51.4 years

Smoking, high altitude, autoimmune disease, genetics can lead to early symptoms

46 million women in United States are postmenopausal





- Insomnia
- Mood swings
- Urinary urgency, loss of continence
- Decreased sex drive
- Vaginal dryness
- Confusion, short term memory loss, poor concentration
- Long term
- Bone thinning, heart disease

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# more Menopause

Treatment	Massage
<p>Hormone replacement therapy</p> <p>Appropriate for some but not all women; carries risks</p> <p>Meds for bone density, heart disease</p> <p>Herbal preparations:</p> <p>Black cohosh, red clover, dong quai, ginseng, wild yam, kava (all have potential risks and interactions with other medications)</p>	<p>Indicated!</p> <p>Many benefits for self-perception</p>



# Pregnancy

Carrying a fetus

**Massage :** For uncomplicated pregnancies, indicated with caution by trimester

Special training available for this population

## Implications for massage

### *Loose ligaments*

Starts early in pregnancy, can lead to unstable joints and muscle spasm

### *Fatigue*

Combination of carrying extra weight and hormones that demand rest

### *Shifting proprioception*

Rapid changes in size, shape, weight: clumsiness, vulnerability to injury

## Complications

Of many, four have special implications for massage

### *Thromboembolism*

Deep vein thrombosis (DVT) and pulmonary embolism

Four times risk for blood clots, highest a few days after birth

### *Gestational diabetes*

4% of all pregnancies: 135,000 women/year

Risks to baby and mother: macrosomia (large baby), respiratory distress syndrome, hypoglycemia, later obesity, type 2 diabetes

### *Pregnancy-induced hypertension (PIH)*

Can start slowly, quickly become threatening

5% of pregnancies

Three categories

Hypertension

Preeclampsia (hypertension and proteinuria with systemic edema)

Eclampsia: preeclampsia and convulsions

Usually happens with first pregnancy  
Treated with hypertension medication, bedrest, cesarean delivery  
PIH complication: HELLP syndrome

- Hemolysis
- Elevated liver enzymes
- Low platelets

*Ectopic pregnancy*

A fertilized egg implants outside the uterus  
Usually uterine tubes  
Peritoneum, on ovaries, on cervix  
1–2% of pregnancies

# more Pregnancy

**Massage :** For uncomplicated pregnancies, indicated with caution by trimester

Special training available for this population

## 1st trimester

Avoid deep abdominal work

Eastern approaches also recommend avoiding heels, Achilles tendons, hoku point of thumb

## 2nd trimester

Bolsters, other support may become necessary

Client may not want to lie prone

## 3rd trimester

No prone without cushions, no supine (side work may be appropriate)

Limited blood return from legs, risk of varicose veins, clotting

Watch for fever, dizziness, headache, nausea: preeclampsia

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# Pre-Menstrual Syndrome

Signs and symptoms that interfere with function during luteal phase of menstrual cycle (between ovulation and menstruation)

## Demographics

75% of women between menarche and menopause have PMS symptoms sometime

Mostly 20s–40s

## Etiology

### *Hormonal imbalance*

Just before period starts estrogen and progesterone levels drop  
Estrogen dominance puts balance off even more

### *Nutritional deficiencies*

Calcium, B<sub>6</sub>, some essential fatty acids

### *Neurotransmitter imbalance*

Serotonin, opioid peptides (which influence mood) are low

### *Other factors*

Genetic predisposition, cultural expectations, general stress, anxiety

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# more Pre-Menstrual Syndrome

Signs and Symptoms	Diagnosis	Treatment	Massage
<p>150+ identified; sometimes separated into <i>physical</i> versus <i>emotional</i></p> <p><i>Physical symptoms</i></p> <p>Bloating, breast tenderness, acne, salt and sugar cravings (along with binge eating), headaches, backaches, insomnia, and digestive upset: diarrhea and/or constipation</p> <p>More rarely: sinus problems, heart palpitations, dizziness, asthma, seizures</p> <p><i>Emotional symptoms</i></p> <p>Confusion, depression, anxiety, panic attacks, mood swings, general irritability</p> <p><i>Premenstrual dysphoric disorder</i> (PMDD) = PMS plus depression/anxiety</p>	<p>PMS diary to track symptoms with cycle</p> <p>Rule out</p> <p>Diabetes, hypothyroidism, eating disorders, depression, chronic fatigue syndrome, irritable bowel syndrome</p>	<p>Treated by symptom</p> <p>Low-dose birth control pills</p> <p>Diuretics</p> <p>Antidepressants</p> <p>Get good sleep</p> <p>Alternative recommendations:</p> <p>Low-fat vegetarian diet, avoid salt, sugar, caffeine, alcohol</p> <p>Borage, evening primrose, black cohosh, dong quai</p>	<p>Indicated, can help with depression, anxiety, fluid retention, etc.</p>

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# Sexually Transmitted Diseases

Contagious conditions spread through intimate contact

Usually:

Vaginal, oral, anal sex

Mother can give to fetus through blood, direct contact, breast milk

## Demographics

Most diagnoses among adolescents, young adults

15- to 25-year-olds = half of new infections

Early sexual activity, multiple partners raises risk

United States has highest rate among industrialized countries

19 million infections diagnosed/year

## Types of STDs

Other STDs discussed in this text: herpes simplex, HIV/AIDS, and hepatitis B and C

This discussion

Chlamydia, gonorrhea, and syphilis

A few others briefly

## Chlamydia trachomatis (Chlamydia)

### Demographics

Asymptomatic in women, so hard to gather statistics

Centers for Disease Control: diagnosed in 976,000/year; probably causes 3 million infections/year

### Etiology

Bacteria thrive around columnar mucus-producing cells: reproductive tract, mouth, throat, anus

Can invade uterus, uterine tubes, leading to infertility (a type of pelvic inflammatory disease [PID])

### Signs and Symptoms

Usually silent

May cause discharge, painful urination, painful intercourse

Acute PID: fever, abdominal pain, inflamed lymph nodes

### Complications

Risk of ectopic pregnancy or infertility

Baby may develop conjunctivitis, pneumonia

Increases rate of HIV transmission

### Diagnosis and treatment

## Prevention

Abstinence, sex only with uninfected partner

Barrier methods of birth control can protect from some but not all skin-to-skin contact

## Massage

Open lesions contraindicate massage

They are not always on genitalia

Encourage clients to treat infections fully



Culture from cervix or penis  
Antibiotics are effective  
No immunity: each infection requires treatment  
**Neisseria gonorrhoeae (Gonorrhea)**

*Demographics*

Gonorrhea is reported about 339,000/year; may cause 600,000 new infections

*Etiology*

Intimate contact: invades throat, vagina, rectum  
Mother → child infection is rare  
Can spread to other tissues (arthritis)

*Signs and Symptoms*

Usually silent, especially in women  
Vaginal discharge, urinary pain, painful intercourse  
Oral infection: sores in mouth, throat  
In men: painful urination, discharge, orchitis

*Complications*

Risk of PID  
Joint infection  
Increased risk of HIV transmission

*Diagnosis and treatment*

Culture of mucus from rectum, cervix, throat, penis  
Responds to antibiotics

**Treponema pallidum (syphilis)**

*Demographics*

8700 diagnoses/year (may infect 35,000)

*Etiology*

Spread through sexual contact, mother → child  
Fragile outside a host  
Travels through blood to affect joints, bones, blood vessels, CNS

*Signs and Symptoms*

Primary

10 days – 3 months after exposure: chancre (open ulcer)  
Highly contagious  
Heals in 3–6 weeks

Secondary

Rash of brownish sores, often on soles,

palms  
Highly contagious  
Comes and goes 1–2 years  
May become latent, but 1 in 3 go on to tertiary stage

Tertiary

Bacteria invade other systems  
No longer contagious  
Bones, joints, blood vessels, CNS:  
blindness, loss of hearing, stroke...

*Complications*

Increases risk of HIV transmission  
Mother → child transmission

*Diagnosis and treatment*

Easy to diagnose, treat: responsive to antibiotics (one dose of penicillin)  
Long-term damage to organs is irreversible

**Other STDs**

*Nongonococcal urethritis (NGU)*: bacterial infection; treatable with antibiotics

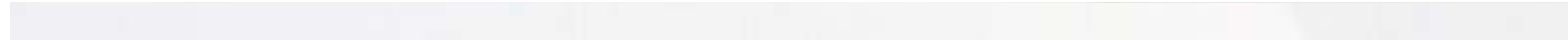
*Trichomoniasis*: protozoan infection; treatable with medication

*Molluscum contagiosum virus (MCV)*: viral infection, not always sexually transmitted; treated with topical chemicals or cryotherapy

*Genital warts (human papilloma virus, or HPV)*: also called *condylomata acuminata*; associated with a risk of cervical cancer

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# Principles of Cancer

100+ different diseases ; Normal cells mutate, replicate

From epithelium = **carcinoma**  
From muscle, connective tissue = **sarcoma**



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# Cancer Statistics

## Cancer Stastitics

Half of men, one-third of women in the United States will develop some form of cancer

1.4 million diagnoses/year

560,000 deaths/year (1,500/day)

Number 2 cause of death in the United States

Survival rates improving

“Five-year survival rate” is arbitrary

10.1 million in the United States have had cancer

Half of new diagnoses could be prevented with lifestyle changes, early screening

Skin cancer is most common diagnosis

Lung cancer is most common cause of death by cancer

Other leading causes of death

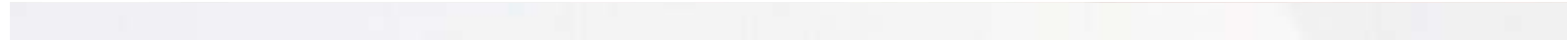
- Breast and ovarian cancer for women

- Prostate cancer for men

- Cancer of the colon, rectum, and pancreas for both genders

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# Steps in Metastasis

- Oncogene activation (along with tumor suppression gene inhibition)**
- Proliferation**
- Angiogenesis**
- Invasion**
- Migration**
- Colonization**



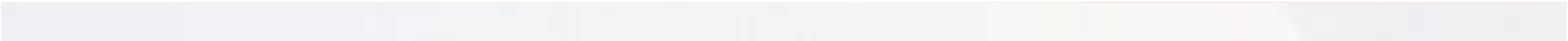
# Causes

## Internal Factors

- Inhibition of apoptosis
- Inherited factors
- Hormonal activity
- Immune system function

## External Factors

- 246 substances listed as carcinogens:
- Hydrocarbons in cigarette smoke; compounds produced when meats are grilled over high heat; several substances found in dyes, inks, and paint; radiation, radon gas, gamma rays, excessive x-rays; asbestos, benzene, nickel, cadmium, uranium, vinyl chloride



# more Causes

Can be a combination of external and internal factors

Exposure to carcinogens in combinations ; Years may pass between exposure and development of tumors ; Cause and effect hard to demonstrate

**Pathogens**

Viruses

- HTLV-1 (human T-lymphotrophic virus)
- Human papillomavirus
- Human herpesvirus 8
- HIV
- Epstein-Barr virus
- Hepatitis virus B, C

Bacteria

*Helicobacter pylori*

Others. *Borrelia burgdorferi*, *Campylobacter jejuni*

Animal parasites

Liver flukes

*Schistosomiasis haematobium*

# Signs and Symptoms

- Vary, depending on site
- Painless until advanced (doesn't stimulate an aggressive immune system response)
- A change in bowel or bladder habits
- A sore that does not heal or that comes and goes in the same place
- Unusual bleeding or drainage
- Thickening or lump in the breast or elsewhere
- Indigestion or swallowing difficulty
- A change in a wart or mole
- Persistent cough or hoarseness
- Unexplained weight loss
- Fatigue, anemia
- Fever
- Skin changes, including darkening, yellowing, reddening, or sudden hair growth

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# Diagnosis

- Self or clinical examination
- Breast, cervical, colorectal, prostate cancer
- Imaging
  - Radiography, computed tomography, magnetic resonance imaging, endoscopy, ultrasound, barium swallow/enema
- Screening recommendations vary by type of cancer, risk factors, genetic history
- Not all screening protocols are accurate or reliable; all have some risks
- Biopsy of suspicious changes
- Followed by staging to rate progression

# Staging

Based on growth pattern, risk of metastasis  
TNM (tumor, node, metastasis), translated into stages 0–IV  
Cells may be rated by grade: describes appearance, aggressiveness of cancer cells

# TNM System: T

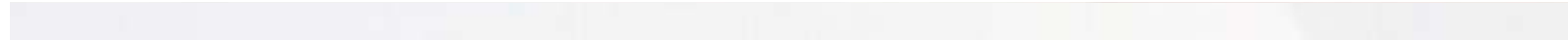
Tumor	Definition
<b>Tx</b>	Tumor cannot be evaluated
<b>T0</b>	No evidence of a primary tumor
<b>Tis</b>	In situ: tumor has not spread to nearby tissue
<b>T1, T2, T3, T4</b>	Refer to size and extent of primary tumor

# TNM System: N

Node	Definition
Nx	Node involvement cannot be evaluated
N0	No cancer found in nearby nodes
N1, N2, N3	Refer to number and extent of regional lymph nodes invaded by cancer cells

# TNM System: M

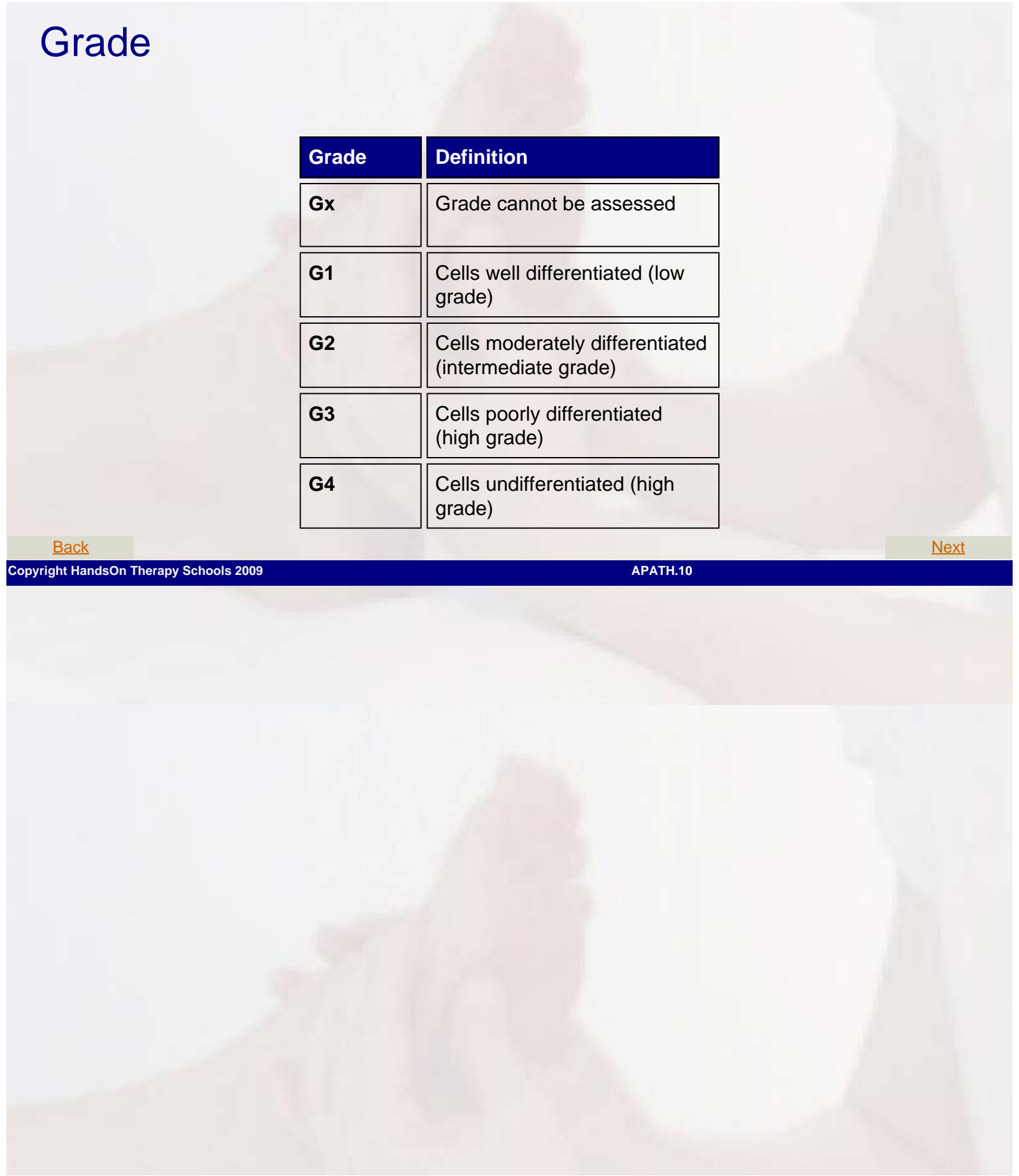
Metastasis	Definition
Mx	Metastasis cannot be evaluated
M0	No distant metastasis found
M1	Distant metastasis found



# Stage 0-IV System

Stage	Definition
0	Cancer in situ: cells have not penetrated beyond original layers of affected tissue
I,II,III	Refer to size and extent of tumors, nodal involvement, and invasion of adjacent tissues
IV	Indicates spread to another organ. By convention stage IV often means metastasis to other side of diaphragm or into central nervous system





# Grade

Grade	Definition
Gx	Grade cannot be assessed
G1	Cells well differentiated (low grade)
G2	Cells moderately differentiated (intermediate grade)
G3	Cells poorly differentiated (high grade)
G4	Cells undifferentiated (high grade)

# Treatment

- Surgery: cancerous tissue, lymph nodes (sentinel node when possible)
- Radiofrequency thermal ablation
- Chemotherapy
- Autologous, allogenic bone marrow transplant
- Radiation
- Hormones
- Hypothermia
- Hyperthermia
- Biologic therapy
- Stem cell implantation



# Prevention

- Eat more fruit, vegetables, and whole grains; control dietary fat
- Exercise regularly; control weight
- Use sunscreen or clothing to protect skin from ultraviolet radiation
- Stop smoking and other tobacco use
- Use alcohol moderately
- Practice safe sex
- Use early cancer screening methods

# Massage

Inappropriate to rub on tumor or undiagnosed growth; otherwise massage may be appropriate with some cautions

Big 5 symptoms: pain, anxiety, nausea, fatigue, and depression

Also: constipation, poor body image, poor-quality sleep

Massage can address all these

Nurturing caring touch during a challenging process

General guidelines: cancer cautions v. cancer treatment cautions

## Cautions

Tumor sites

Bone involvement

Vital organ involvement

Deep vein thrombosis

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# To Test

Access Code: 4J8TW

*Please write down code. You will be asked for it*

Once you have successfully passed the test (70% correct), please email Kim Jackson at [kim\\_hotschool@yahoo.com](mailto:kim_hotschool@yahoo.com). We will email you your CE certificate within 7 business days.