The Menopause Blueprint: Powered by The Q-Spot™

A Comprehensive Study Guide

The Exam Format: 100 Multiple Choice Questions | 3 Answer Choices | 2-Hour Time Limit

1. PHYSIOLOGY/PATHOPHYSIOLOGY OF MENOPAUSE TRANSITION

A. DEFINITIONS AND DEMOGRAPHICS

Key Age Cutoffs

- **Mean age menopause**: 51.4 years (median 52)
- **Early menopause**: FMP before age 45
- **Late menopause**: FMP after age 54
- **POI**: Menopause before age 40 (affects 1% of women)

Critical Definitions

Term	Definition
Natural Menopause	12 consecutive months amenorrhea after FMP
Perimenopause	Cycle irregularities ±7 days to 12 months post-FMP
Menopause Transition	Variable cycles to FMP (shorter than perimenopause)
Climacteric	All endocrine/somatic/psychological changes (= perimenopause)
Induced Menopause	Bilateral oophorectomy, chemo, radiation

Demographics to Know

- 40% of women's lives spent in postmenopause
- 67.2% probability of survival from age 50-80
- By 2060: 90 million US women aged 50+

B. STRAW+10 STAGES (4%)

Reproductive Stages

Stage	Characteristics	Hormones
-5 (Early)	Menarche to regular cycles	Variable to regular
-4 (Peak)	Regular menses 21-35 days	Normal FSH
-3b (Late)	Fecundability ↓, regular menses	Normal FSH, ↓AMH/AFC/Inhibin B
-3a (Late)	Subtle cycle changes, shorter cycles	Variable FSH, ↓AMH/AFC/Inhibin B

Menopause Transition

Stage	Key Features	Duration	Hormones
-2 (Early)	7+ day cycle difference OR skipped period <60 days	Variable	↑Variable FSH, ↓AMH/AFC/Inhibin B
-1 (Late)	60+ days amenorrhea	1-3 years	FSH >25 IU/L, VMS likely

Postmenopause Stages

Stage	Timeframe	Key Features
+1a	0-12 months	VMS most likely, high variable FSH
+1b	2nd year	FSH/estradiol begin stabilizing
+1c	3-6 years	Hormones stabilize
+2	5-8+ years	Genitourinary symptoms ↑, FSH >20, E2: 10-25 pg/mL

C. PHYSIOLOGY

LOOP Events (Luteal Out-of-Phase)

- **Frequency**: 1/4 cycles (early transition) → 1/3 cycles (late transition)

- **Mechanism**: Elevated FSH recruits 2nd follicle during luteal phase
- **Result**: Short cycles (<21 days) OR long cycles (>36 days)
- **Symptoms**: Mastalgia, migraine, menorrhagia, fibroid growth, endometrial hyperplasia

Hormone Changes Through Transition

FSH: ↑ elevated and variable → consistently >20 postmenopause **Estradiol**: Variable transition → low stable (10-25 pg/mL) postmenopause **Progesterone**: ↓ anovulatory cycles → absent postmenopause **Testosterone**: Conflicting data; may ↓ then return to normal by age 70 **SHBG**: ↓ 40% drop → Free androgen index ↑ 80%

Ethnic Differences

- **Asian women**: Lower estradiol levels
- **Black women**: Higher FSH levels
- **White women**: Higher AMH than Black/Hispanic women

Adrenal Function

Adrenal Cortex:

- Glucocorticoids (cortisol, corticosterone)
- Mineralocorticoids (aldosterone)
- Sex steroids (DHEA, DHEA-S, androstenedione)

Adrenal Medulla: Catecholamines (epinephrine, norepinephrine, dopamine)

Key Points:

- DHEA-S ↓ with age, transient ↑ in late transition
- Local vaginal DHEA improves dyspareunia
- "Adrenal fatigue" lacks evidence

Ovarian Reserve Testing

Test	Best Use	Limitations
Day 3 FSH	Most common	Variable by cycle, suppressed by ↑E2

Test	Best Use	Limitations
AMH	Superior marker	↓ 30-50% on hormonal contraception
AFC	Available follicles	Operator dependent

D. POI AND SURGICAL MENOPAUSE

POI Diagnosis

Criteria:

- Amenorrhea/oligomenorrhea ≥4 months
- FSH >25 on two occasions ≥4 weeks apart
- Age <40

Workup for POI:

- Labs: Prolactin, FSH, estradiol, TSH
- Karyotype + Fragile X testing
- Consider adrenal antibodies

POI Causes

Genetic (1/3 familial):

- **Turner syndrome** (most common identifiable cause)
- **Fragile X** (1:200 women carry; 20% develop POI)
- FOXL2, galactosemia, 17α-hydroxylase deficiency

Autoimmune:

- Hypothyroidism, adrenal insufficiency, T1DM
- RA, SLE, myasthenia gravis

Iatrogenic:

- Chemotherapy (alkylating agents)
- Radiation, oophorectomy

Turner Syndrome Details

- Incidence: 1:2,500-3,000 births
- Features: Short stature, webbed neck, cardiac/renal anomalies
- Treatment: Start estrogen at age 12, transdermal estradiol gradually ↑ to 100 µg
- Monitoring: CVD, fractures, glucose intolerance, celiac, hypothyroidism

POI Management

HT Dosing:

- 100 µg transdermal estradiol OR 1.25 mg CEE OR 2 mg oral estradiol
- If uterus present: Cyclic progestin 12 days/month
- Use until natural menopause age (≈52)

Fertility:

- 25% spontaneous return of function
- 5-10% pregnancy rate overall
- Avoid bisphosphonates (teratogenic)

Surgical Menopause

- 1 in 8 US women have ovaries removed before natural menopause
- Elective oophorectomy <45 years → ↑ mortality, CHD, bone loss, cognitive issues
- More severe symptoms than natural menopause
- Consider HT until natural menopause age

2. SYMPTOMS AND CONCERNS

A. WEIGHT ISSUES

Epidemiology

- **US women obesity**: 40.4%
- **Morbid obesity**: 9.9%
- **Central obesity**: 64.7% (associated with comorbidities)

Menopause-Related Changes

- Shift from subcutaneous → visceral fat
- ↓ lean body mass with age
- ↑ trunk-to-leg fat ratio → ↑ BP, glucose, abnormal lipids
- Weight gain likely aging + lifestyle, NOT menopause itself

VMS Relationship

- **Perimenopausal**: Higher BMI → more frequent/severe VMS
- **Postmenopausal**: Higher BMI → fewer VMS
- **Obese postmenopausal**: Higher estradiol levels

Weight Management

Targets:

- 3% loss → improved glucose control, ↓ T2DM risk
- 5-10% loss → improved BP, lipids, liver function

Strategy:

- 500-750 cal/day reduction = 1-1.5 lbs/week loss
- Average intake: 1,200-1,500 cal/day
- Combined aerobic + resistance exercise
- Multiple counseling sessions

Pharmacotherapy (BMI ≥30 OR ≥27 + comorbidity)

Drug	Mechanism	Key AEs	Notes
Orlistat	Lipase inhibitor	Diarrhea, fat-soluble vitamin deficiency	Take MVI separately

Drug	Mechanism	Key AEs	Notes
Liraglutide	GLP-1 agonist	Nausea, GI issues	CI: medullary thyroid CA, MEN2
Contrave	Bupropion + naltrexone	Nausea, headache	CI: seizures, uncontrolled HTN
Qsymia	Phentermine + topiramate	Paresthesias, teratogenic	Pregnancy testing required

HAIR CHANGES

Female Pattern Hair Loss (FPHL)

Pattern: Crown thinning, widening center part, intact frontal hairline **Pathophysiology**: ↑ androgen:estrogen ratio → anagen phase shortening **Risk factors**: Genetics, stress, smoking, DM, HTN, low ferritin/vitamin D

Other Hair Loss Types

- **Telogen effluvium**: Sudden shedding after stressor
- **Male pattern**: Vertex balding + bitemporal recession (rare in women)
- **Frontal fibrosing alopecia**: Postmenopausal, inflammatory, permanent

Evaluation

History: Menstrual/hormone history, family history, medications, triggers **Exam**: Pattern assessment, hair pull test, signs of hyperandrogenism **Labs**: CBC, CMP, TSH, iron/ferritin, total/free testosterone, SHBG, DHEA

Treatment

First-line: Topical minoxidil 2% solution or 5% foam **Adjunctive**:

- Spironolactone 50-200 mg daily (monitor K+)
- Finasteride (off-label, not FDA approved for women)
- Nutritional support (correct deficiencies)

Hirsutism

Causes: PCOS (70-80%), idiopathic hypersensitivity **Treatment**: Spironolactone/finasteride + direct hair removal (laser, electrolysis)

3. HEALTH DISORDERS IN MIDLIFE

A. THYROID DISORDERS

Epidemiology

- 7x more common in women
- ↑ incidence in midlife
- Hashimoto's most common cause hypothyroidism

Hypothyroidism

Symptoms: Fatigue, cold intolerance, weight gain, constipation, heavy menses **Diagnosis**: ↑ TSH + ↓ FT4 **Treatment**: Levothyroxine 1.6 µg/kg/day

- Age 50-60: Start 25-50 µg/day
- With CHD: Start 12.5-25 µg/day
- Target TSH: Normal range

Hyperthyroidism

Symptoms: Anxiety, palpitations, heat intolerance, light menses **Diagnosis**: ↓ TSH + ↑ FT4/T3 **Causes**: Graves, toxic multinodular goiter, toxic adenoma

HT Interactions

- **Oral estrogen** → ↑ binding proteins → may need ↑ levothyroxine
- **Transdermal estrogen** → minimal effect
- Check TSH 6-8 weeks after starting/stopping oral estrogen

Thyroid Nodules

- Palpable in 5% women, ultrasound detectable in 19-68%
- **Hot nodules**: Rarely malignant, consider hyperthyroidism treatment
- **Cold nodules**: 5% malignant risk, FNA if >1 cm
- Higher TSH → ↑ malignancy risk

B. CARDIOVASCULAR DISEASE

Key Statistics

- Leading killer of women worldwide (1 in 3 deaths)
- Most CVD occurs postmenopause (>55 years)
- Early menopause (<35) → 2-3x ↑ MI risk

Menopause-Related Changes

- ↑ LDL-C and total cholesterol year after FMP
- ↑ carotid atherosclerosis progression
- ↑ metabolic syndrome prevalence
- ↓ blood flow, ↑ vasoconstriction

Risk Assessment

Traditional factors: DM, smoking, obesity, inactivity, HTN, dyslipidemia **Women-specific**: Preeclampsia, gestational DM, preterm delivery, breast cancer treatment

Hypertension

- 4-5 mmHg ↑ SBP after menopause
- Goal <150/90 if >60 years, <140/90 if younger
- Thiazides/CCBs preferred for Black patients

Lipid Management

Screening: All women by age 21, not mandatory fasting **Targets based on ASCVD risk calculator Statins indicated**:

- CVD or LDL >190 (high-intensity)

- Age 40-75 + DM (moderate-intensity)
- Age 40-75 + ASCVD risk >10% + risk factors

C. OSTEOPOROSIS

Menopause Impact

- 10-12% bone loss across transition (≈1 T-score)
- 30% peak bone mass lost by age 80
- 40-50% postmenopausal women have osteoporotic fracture

Screening

- DEXA at age 65 (earlier if risk factors)
- T-score ≤-2.5 = osteoporosis
- Z-score for premenopausal women

Risk Factors

Fracture: Prior fracture, low BMD, age, smoking, alcohol >3 drinks/day **Bone loss**: Low BMI, family history, ethnicity, RA, medications

Treatment

Lifestyle: Calcium 1200 mg + Vitamin D 800 IU **Pharmacologic**:

- **Bisphosphonates**: First-line, drug holiday after 3-5 years low-risk patients
- **Denosumab**: 60 mg SC q6 months, no duration limit
- **Anabolics**: Teriparatide/abaloparatide (24-month lifetime limit)

HT for Bone

- Prevents bone loss but not approved for established osteoporosis
- Not first-line due to risks
- Consider if other benefits (VMS relief) + high fracture risk

D. DIABETES/METABOLIC SYNDROME

Metabolic Syndrome (3+ criteria)

1. Waist >35 inches (>31.5 South Asian)
2. TG >150 mg/dL
3. HDL <50 mg/dL
4. BP >130/85 mmHg
5. Fasting glucose >110 mg/dL

Type 2 Diabetes

Prevalence: 11.7% US women, 25% if ≥65 years **Screening**: Age 45+ q3 years (sooner if risk factors) **Menopause effects**: ↑ central fat → ↑ insulin resistance

Treatment Hierarchy

1. **Metformin** (first-line)
2. **With CVD**: GLP-1 agonists, SGLT-2 inhibitors
3. **A1C goals**: <7% healthy, <8% age 80+

HT Effects

- May ↓ diabetes risk 14-19% (WHI data)
- Transdermal preferred (no ↑ TG or thrombotic factors)
- Not recommended solely for diabetes prevention

4. TREATMENT OPTIONS FOR MENOPAUSAL SYMPTOMS

A. HORMONE THERAPY

FDA-Approved Indications

1. **Moderate-severe VMS** (first-line)
2. **Prevention of bone loss** (high-risk women)
3. **Hypoestrogenism** (POI, surgical menopause)
4. **GSM** (local estrogen products)

Absolute Contraindications

- Undiagnosed abnormal bleeding
- Known/suspected breast cancer
- Estrogen-dependent neoplasia
- Active/history VTE or stroke (within 1 year)
- Liver dysfunction/disease
- Pregnancy

Estrogen Types and Equivalencies

Oral	Transdermal	Notes
Estradiol 1 mg	0.05 mg patch	Bioidentical
CEE 0.625 mg	0.0375 mg patch	Animal-derived
Esterified estrogens 0.625 mg	-	Synthetic

Progestogen for Endometrial Protection

Cyclic regimens:

- MPA 5-10 mg × 12-14 days/month
- Micronized progesterone 200 mg × 12-14 days/month

Continuous regimens:

- MPA 2.5 mg daily
- Micronized progesterone 100 mg daily

Oral vs Transdermal Comparison

Factor	Oral	Transdermal
HDL effect	↑ Increases	Neutral
Triglycerides	↑ 25% increase	No increase
VTE risk	Increased	No increase
Gallbladder	Increased risk	Lower risk

Factor	Oral	Transdermal
Liver metabolism	First-pass effect	Avoids first-pass
Best for	Lipid benefits	DM, VTE history, migraines

Special Formulations

DuaVee (CEE 0.45 mg + bazedoxifene 20 mg):

- For women with uterus who want VMS relief without bleeding
- Bazedoxifene provides endometrial protection

Compounded HT:

- Not recommended due to safety/quality concerns
- Exception: Peanut allergy (progesterone contains peanut oil)

Duration and Monitoring

- Use lowest effective dose
- Relief expected 8-12 weeks
- 50% experience VMS return upon discontinuation
- Extended use acceptable if benefits > risks
- Regular reassessment and tapering attempts

B. NON-HORMONAL VMS TREATMENTS (5%)

FDA-Approved

- **Paroxetine** 7.5 mg daily (Brisdelle)
- **Fezolinetant** 45 mg daily (Veozah) - Neurokinin B antagonist

Off-Label Effective Options

Drug	Dose	Mechanism	Key AEs
Venlafaxine	37.5-150 mg	SNRI	Nausea, dry mouth
Desvenlafaxine	100-150 mg	SNRI	Less drug interactions

Drug	Dose	Mechanism	Key AEs
Citalopram	10-20 mg	SSRI	Fewer AEs
Gabapentin	600-2400 mg	Anticonvulsant	Dizziness, somnolence
Clonidine	0.1-0.2 mg	Alpha agonist	Hypotension, dry mouth

Considerations

- SSRIs/SNRIs: Also help sleep, mood
- Avoid paroxetine with tamoxifen (CYP2D6 interaction)
- Gabapentin: Good for women with sleep issues
- Start low, titrate slowly

C. LOCAL GSM TREATMENTS

Low-Dose Vaginal Estrogen ⭐

Product	Dose	Frequency	Notes
Estrace cream	0.5-2 g	2-3×/week	Messy but effective
Vagifem/Yuvafem	10 µg tablet	2×/week	Convenient
Estring	2 mg ring	Every 90 days	Continuous release
Imvexxy	4-10 µg insert	Daily × 2 weeks, then 2×/week	Newest option

Key Points:

- Minimal systemic absorption with low-dose products
- No progestin needed with low-dose
- **Femring** (higher dose) requires progestin protection

Non-Estrogen Options

Intravaginal DHEA (Intrarosa):

- 6.5 mg nightly
- Improves dyspareunia, vaginal dryness
- Stays within normal postmenopausal DHEA range

Ospemifene (Osphena):

- 60 mg daily oral SERM
- For moderate-severe dyspareunia
- Black box warning: endometrial/VTE risk

Non-Hormonal

- **Moisturizers**: Regular use (Replens, K-Y)
- **Lubricants**: At time of intercourse
- **Hyaluronic acid**: Emerging option

5. PREVENTIVE CARE AND COUNSELING

A. IMMUNIZATIONS

Essential Midlife Vaccines

Vaccine	Age/Indication	Key Points
Shingrix	Age ≥50	Preferred over Zostavax, 2-dose series
Influenza	Annual	High-dose if ≥65
PPV23	Age ≥65	Pneumococcal protection
HPV	Age 27-45	Shared decision-making
Tdap	One-time	Then Td q10 years
Hepatitis B	Risk factors	HCW, multiple partners, ESRD

HPV Vaccine Details

- **Types available**: Bivalent, quadrivalent, 9-valent
- **Coverage**: Types 16/18 (70% cervical CA), 6/11 (genital warts)
- **9-valent**: Additional 15% cervical cancer protection
- **Age 27-45**: Shared decision-making (most already exposed)

B. CANCER SCREENING

Breast Cancer

- **Mammography**: Annual 50-74 (varies by organization)
- **High-risk**: Consider MRI (BRCA, strong family history)
- **Self-exam**: Optional, know normal baseline

Cervical Cancer

Age 30-65:

- Pap + HPV q5 years (preferred)
- Pap alone q3 years (acceptable)

Discontinue at 65 if adequate prior screening:

- 2 negative co-tests in 10 years OR
- 3 negative Paps in 10 years

Colorectal Cancer

- **Colonoscopy**: q10 years starting age 45-50
- **Earlier/more frequent**: Family history, Lynch syndrome, FAP

Hereditary Cancer Syndromes

BRCA 1/2:

- Breast cancer risk: up to 85%
- Ovarian cancer risk: up to 46%
- Consider prophylactic surgery

Lynch Syndrome:

- Colorectal cancer: 52-82% lifetime risk
- Endometrial cancer: 40-60% lifetime risk
- Begin colonoscopy age 20-25

C. SEXUALLY TRANSMITTED INFECTIONS

Screening Recommendations

Chlamydia/Gonorrhea:

- All sexually active women <24
- Women ≥25 with risk factors

HIV:

- One-time screening ages 15-65
- Annual if high-risk

Syphilis:

- Not routine; test if high-risk

Hepatitis C:

- One-time for ages 18-79
- Baby boomers at highest risk

Common STIs in Midlife

HSV:

- No routine screening
- Treat outbreaks: acyclovir, famciclovir, valacyclovir
- Daily suppression if ≥6 outbreaks/year

HPV:

- 80% lifetime exposure by age 50
- Persistent infections more likely postmenopause

Trichomoniasis:

- 3rd most common vaginitis cause
- Treatment: metronidazole or tinidazole

D. LIFESTYLE COUNSELING

Nutrition

Recommended patterns:

- **Mediterranean**: ↓ CHD, ↑ cognition, ↓ metabolic syndrome
- **DASH**: ↓ HTN, stroke, colorectal cancer

Key components:

- ≥4.5 cups fruits/vegetables daily
- Whole grains, oily fish 2×/week
- Limit sodium 1.5-2.4 g/day
- Moderate alcohol (≤1 drink/day)

Exercise

Aerobic: 150 min moderate OR 75 min vigorous weekly **Resistance**: 20 min, 2-3×/week on non-consecutive days **For weight loss**: 60-90 min most days

Essential Supplements

Calcium: 1200 mg/day (food sources preferred) **Vitamin D**: 800 IU/day for ≥71 years **B12**: Consider if ≥50 years **Omega-3**: CV benefits, 1-4 g/day depending on indication

EXAM-TAKING STRATEGIES

High-Yield Pearls

1. **Know exact ages**: POI <40, early menopause <45, screening ages
2. **FDA-approved treatments**: These are heavily tested
3. **Absolute contraindications**: Especially for HT
4. **Ethnic differences**: Asian (low E2), Black (high FSH), White (high AMH)

5. **Drug interactions**: Oral estrogen effects on other medications

Common Traps

- Confusing menopause transition vs. perimenopause duration
- Missing progestin requirements for women with uterus
- Forgetting to screen POI patients for genetic conditions
- Overlooking transdermal advantages in specific populations

Last-Minute Review

- Mean menopause age: 51.4 years
- POI diagnosis: FSH >25 twice, 4+ weeks apart
- VMS first-line: HT if no contraindications
- Bone screening: Age 65 or earlier with risk factors
- Essential vaccines: Shingrix ≥50, annual flu, Tdap once

6.HAIR LOSS (FPHL)

Key Points

- **Pattern**: Crown thinning, widening central part, frontal hairline preserved
- **Pathophysiology**: Autoreactive immune response, androgens involved (finasteride effectiveness suggests this)

Evaluation

- **History**: Menstrual/pregnancy history, family history, medications, triggers
- **Exam**: Confirm pattern, rule out cicatricial alopecia, check for hyperandrogenism signs
- **Labs**: CBC, CMP, TSH, T3, T4, iron, ferritin, zinc, total/free testosterone, SHBG, DHEA
    - **Red flags**: Testosterone >140-200, DHEA >700 (tumor workup)

Treatment

- **Goal**: Prevent progression (not regrowth)
- **First-line**: Topical minoxidil (2% solution/5% foam FDA-approved)

    - "Dread shed" first 1-2 months
    - Takes 4-6 months for results
- **Off-label**: Spironolactone (50-200mg daily), Finasteride
- **Adjuncts**: Ketoconazole 2% shampoo, zinc pyrithione 1%

7.SLEEP CHANGES

Insomnia

- **Definition**: ≥3x/week for ≥3 months with distress/impairment
- **Causes**: VMS, primary, secondary, behavioral/environmental
- **Treatment**:
    - Sleep hygiene, behavioral therapy
    - HT for VMS-related insomnia
    - Z-drugs (zolpidem, zaleplon, eszopiclone) - women eliminate slower
    - Ramelteon (sleep onset), Suvorexant (arousal reduction)

Sleep Apnea (OSA)

- **Risk factors**: Obesity (#1), menopause
- **Symptoms**: Unrefreshed sleep, fatigue, morning headaches
- **Treatment**: Weight loss, CPAP

Restless Leg Syndrome (RLS)

- **Worsens after menopause**, associated with VMS
- **Causes**: Iron deficiency, dopamine dysfunction, certain medications
- **Treatment**:
    - 1st line: Pramipexole, ropinirole
    - Iron if ferritin <50

8.SEXUAL HEALTH

Prevalence

- **40-50%** of women report ≥1 sexual dysfunction

- **Low desire** most common problem
- **Sexual pain** affects 44% of postmenopausal women

Evaluation

- Rule out GSM, assess psychological/relationship factors
- Consider testosterone baseline if therapy planned
- Screen for medication effects (antidepressants, antihistamines, etc.)

Treatment by Condition

HSDD (Hypoactive Sexual Desire Disorder)

- **Flibanserin (Addyi)**: 100mg at bedtime, black box warning with alcohol
- **Bremelanotide (Vyleesi)**: 1.75mg SC 45min before activity, max 8 doses/month
- **Testosterone**: Off-label, various formulations

Sexual Pain

- Vaginal moisturizers/lubricants
- **Low-dose vaginal ET** (cream, ring, tablet)
- **Ospemifene (Osphena)**: SERM for dyspareunia
- Pelvic floor PT for high-tone dysfunction

9.BREAST SYMPTOMS

Breast Pain

First-line (6 months trial)

- Well-fitting bra, OTC analgesics
- Reduce caffeine, stop smoking
- Hormonal medication adjustment

Second-line

- **Tamoxifen**: 10mg daily x 3 months (off-label)

- **Danazol**: 200mg daily (FDA no longer approves for fibrocystic disease)

Breast Lumps - Key Differentials

Benign

- **Fibroadenoma**: Firm, mobile mass
- **Cysts**: Fluid-filled, compressible
- **Fibrocystic changes**: Diffuse, tender, cyclical

Malignant

- **Infiltrating ductal carcinoma**: 70-80% of invasive cancers
- Any suspicious findings → mammography ± ultrasound

10.ABNORMAL UTERINE BLEEDING (AUB)

PALM-COEIN Classification

- **P**olyp, **A**denomyosis, **L**eiomyoma, **M**alignancy
- **C**oagulopathy, **O**vulatory dysfunction, **E**ndometrial, **I**atrogenic, **N**ot classified

Evaluation

- **Labs**: CBC, UPT, TSH
- **Imaging**: TVUS (time after bleeding episode)
- **Biopsy guidelines**:
    - Postmenopausal: Endometrial thickness >4mm
    - Premenopausal: Endometrial thickness >16mm

Treatment

- **First-line**: COCs, then LNG-IUD
- **NSAIDs**: Mefenamic acid 500mg TID x 5 days
- **Tranexamic acid**: 1300mg TID x 5 days (contraindicated if thromboembolism risk)
- **Fibroids**: Size/location dependent; UAE for perimenopausal women

11.ARTHRALGIA

Prevalence & Risk Factors

- Present in >50% of women around menopause
- Maximal ages 45-55
- Associated with fatigue, mood changes, sleep disturbance

Key Differentials

Osteoarthritis

- Most common form
- Knee, hip, hand involvement
- **Treatment**: Weight loss, exercise, topical NSAIDs, acetaminophen first-line

Rheumatoid Arthritis

- 3x more common in women, peak 35-55
- **Key features**: Morning stiffness >30min, symmetric MCP swelling
- Elevated ESR/CRP, positive RF
- **Urgent referral needed** - rapidly progressive

Fibromyalgia

- Most common source of arthralgia/myalgia in women
- Pain in all 4 quadrants, poor sleep, fatigue
- Associated with migraine, IBS
- **Treatment**: Sleep hygiene, graded exercise, pregabalin/gabapentin

12. HIGH-YIELD TESTING POINTS

Lab Values to Remember

- **Testosterone >140-200** or **DHEA >700**: Tumor workup needed
- **Ferritin <50**: Consider iron treatment for RLS
- **Endometrial thickness**: >4mm (postmenopausal) or >16mm (premenopausal) needs biopsy

FDA-Approved Medications

- **Hair loss**: Minoxidil only
- **Sexual dysfunction**: Flibanserin (HSDD), Bremelanotide (HSDD), Ospemifene (dyspareunia)
- **Breast pain**: No FDA-approved options (tamoxifen/danazol off-label)

Key Contraindications

- **Tranexamic acid**: Thromboembolism risk
- **Bremelanotide**: Uncontrolled HTN, known CVD
- **Flibanserin**: Alcohol (black box warning)

Treatment Timelines

- **Minoxidil**: 4-6 months for results
- **Tamoxifen for breast pain**: 3 months trial
- **Insomnia diagnosis**: ≥3 months duration required

12.VASOMOTOR SYMPTOMS (VMS)

Definitions

- **Hot flashes**: Sudden heat sensation (face, neck, chest), 1-5 minutes
- **Severity**:
  - Mild: Heat without sweating
  - Moderate: Heat with sweating, activity continues
  - Severe: Heat with sweating, activity stops

Mechanisms

- Associated with estradiol decline but not fully explained by estrogen alone
- **Thermoregulation**: Narrowed thermoneutral zone in menopause
- Hypothalamic dysfunction likely involved

Pathophysiology

- **KNDy neurons** (Kisspeptin-Neurokinin B-Dynorphin) are key regulators
- Located in hypothalamic infundibular nucleus
- Project to median preoptic nucleus (thermoregulatory center)
- Hypertrophy occurs in postmenopausal women
- Express estrogen receptors; estrogen suppresses neurokinin B and kisspeptin
- **Serotonin** involved in thermoregulation; SSRIs have some efficacy for VMS

Demographics & Prevalence

- **60-80%** of women experience VMS
- **Racial differences**: Black (46%) > Hispanic (35%) > White (31%) > Chinese (21%) > Japanese (18%)
- **Duration**: Median 7-10 years (Black women often 10+ years)
- Early VMS onset = longer duration

Risk Factors

- **Socioeconomic**: Lower education, income, difficulty paying for basics
- **Obesity**: Higher BMI increases risk (especially early menopause); decreases risk in late postmenopause
- **Smoking**: Current smokers 50% more likely, former smokers 30% more likely
- **Diet**: High-fat/sugar increases risk; Mediterranean/fruit decreases risk
- **Surgery**: More severe after hysterectomy ± BSO

Health Outcomes

- Sleep disturbance, depressive symptoms, cognitive issues
- Unfavorable CVD risk profile
- Lower bone mineral density, increased fractures

13.GENITOURINARY SYNDROME OF MENOPAUSE (GSM)

Definition & Symptoms

- Genital and urinary symptoms from estrogen deficiency
- **Genital**: dryness, irritation, burning
- **Urinary**: dysuria, urgency, recurrent UTI
- **Sexual**: dryness, pain with penetration

Pathophysiology

- Estrogen receptors in vagina, vulva, urethra, bladder
- **Normal vaginal pH**: 4.5 (maintained by lactobacilli)
- Estrogen loss → epithelial thinning, loss of rugae, narrowing, decreased elasticity
- Higher pH (more basic) → increased infection risk
- Decreased glycogen → less lactobacilli substrate

Evaluation

- Complete history including onset, duration, treatments tried
- External genitalia exam: look for pallor, friability, petechiae, loss of rugae
- **Cotton swab test** for vulvar pain
- Vaginal pH, wet prep, cultures as appropriate
- **Biopsy any suspicious lesions** (especially in postmenopausal women)

14. DIFFERENTIAL DIAGNOSIS OF VUVAR/VAGINAL SYMPTOMS

Vaginitis

Yeast (Candida)

- Thick, clumpy white discharge + vulvar erythema
- More common in postmenopause with HT, DM, immunodeficiency

- Non-albicans species: boric acid 600mg × 14 nights

Bacterial Vaginosis

- Thin gray/white discharge, fishy odor, high pH
- **Amsel's criteria** (3 of 4): thin discharge, clue cells >20%, pH >4.5, positive whiff test
- Treatment: metronidazole or clindamycin

Dermatoses

Lichen Sclerosus

- White papules/plaques, severe itching, dyspareunia
- **5% risk** of squamous cell carcinoma
- Treatment: potent topical corticosteroids

Lichen Planus

- Three types: classic, hypertrophic, erosive (most common vulvar type)
- Can cause scarring, stenosis
- **3% risk** of SCC

Vulvar Cancer

- 4th most common GYN malignancy
- **Squamous cell carcinoma** most common
- **VIN 2/3 (HSIL)**: precancerous, requires treatment
- **dVIN**: not HPV-related, associated with lichen sclerosus, wide excision needed

15. URINARY TRACT INFECTIONS IN MENOPAUSE

- Higher vaginal pH → bacterial colonization
- **Risk factors**: incontinence, cystocele, elevated PVR, DM
- **Prevention**: void after sex, front-to-back wiping, cranberry extract
- **Vaginal estrogen** effective (oral estrogen is not)

16. PELVIC FLOOR DISORDERS

Incontinence Types

Stress Incontinence

- Loss with increased intra-abdominal pressure (cough, sneeze)
- Related to poor urethral support, sphincter weakness

Urgency Incontinence

- Loss preceded by urgency sensation
- Larger volume losses
- Due to bladder overactivity

Mixed Incontinence

- Combination of stress and urgency symptoms

Evaluation

- **PVR measurement**: Normal <100mL, abnormal >200mL
- 3-day urinary diary
- Urinalysis and culture

High Tone Pelvic Floor Dysfunction (HTPFD)

- Overactive, hypertonic muscles
- Symptoms: frequency, urgency, dysuria, retention, dyspareunia
- Hormone deficiency worsens condition
- Treatment: pelvic floor PT, muscle relaxants, dilators, botulinum toxin

17. COGNITIVE AND MOOD CHANGES

- **44-62% prevalence** of subjective cognitive decline
- Memory for verbal information compromised

- **Estrogen influences** hippocampus and prefrontal cortex
- Sleep difficulties, anxiety, depression worsen cognitive symptoms
- **HT**: No sustained cognitive benefit in older women
- **Oophorectomy <46 years**: increased dementia risk

18. THYROID DISORDERS

Hypothyroidism

- **7x more common** in women
- **Most common cause**: Hashimoto's thyroiditis
- Symptoms: fatigue, cold intolerance, weight gain, heavy menses
- **TSH elevated, FT4 low**
- Treatment: Levothyroxine 1.6 µg/kg/day (start lower in elderly/CHD)

Hyperthyroidism

- Symptoms: anxiety, palpitations, heat intolerance, light menses
- **TSH low, FT4 elevated**
- Etiologies: Graves, toxic multinodular goiter, toxic adenoma

Thyroid Nodules

- **Hot nodules**: rarely malignant, produce excess hormone
- **Cold nodules**: 95% of nodules, 5% cancer risk
- Evaluate if >1cm with ultrasound and FNA
- **Higher TSH** = increased malignancy risk

HT Interactions

- **Oral estrogen** increases thyroid-binding globulin → may need increased levothyroxine
- Check TSH 6-8 weeks after starting/stopping oral ET

19. HEADACHES

Migraine

- **Diagnostic criteria**: ≥5 attacks, 4-72 hours, moderate-severe throbbing pain
- Plus: photophobia/phonophobia OR nausea/vomiting
- **60%** of women report menstrual association
- **Migraine with aura**: visual symptoms lasting ~20 minutes

Tension-Type

- Most common (90% occurrence)
- Bilateral, mild-moderate, non-throbbing, 30min-7 days
- No nausea, photophobia, or worsening with activity

Treatment Pearls

- **Menstrual migraines** often improve with menopause
- **Tension headaches**: NSAIDs, acetaminophen
- **Prophylaxis**: TCAs most effective for tension-type

Key Facts

- **Hormonal triggers**: Faster estrogen decline in women with menstrual migraine
- **HT approach**: Stabilization of hormone levels necessary for symptom control
- **Best HT options**: Low-dose estrogen during OC withdrawal, continuous HT, or transdermal estrogen
- **Safety concern**: CHC contraindicated with migraine + aura (increased stroke risk, especially smokers)

Treatment Strategies

Abortive (Acute)

- Mild: Aspirin/acetaminophen + caffeine combinations
- Effective: **Triptans** (almotriptan, sumatriptan, etc.) - highly effective, safe (contraindicated in CVD)
- Combination: NSAIDs + triptan recommended
- Avoid: Butalbital, isometheptene (ineffective, abuse potential)

Preventive

- **Menstrual migraines**: NSAID or triptan 2 days before expected onset, BID for 5-7 days
- **Daily prevention** (>2 days/week or significant disability):
  - **First line**: Beta-blockers, ARBs (candesartan), TCAs, anticonvulsants
  - **Second line**: SSRIs, SNRIs, gabapentinoids
- **Nutraceuticals**: Magnesium, riboflavin, CoQ10, butterbur, feverfew

20. SKIN CHANGES IN MENOPAUSE

- **Estrogen decline** → decreased fibroblast activity, less collagen
- Increased collagen breakdown
- **Recommendations**:
  - SPF 30+ sunscreen (zinc/titanium oxide best)
  - Daily moisturizer with hyaluronic acid
  - Topical retinoids (start slowly)
  - Consider professional treatments (peels, lasers, injectables)

Key Exam Tips

1. **Know racial differences** in VMS prevalence and duration
2. **Biopsy any suspicious vulvar lesions** in postmenopausal women
3. **Vaginal estrogen helps UTIs**; oral estrogen does not
4. **Thyroid-HT interactions** are testable
5. **KNDy neurons** are the key VMS pathway
6. **Lichen sclerosus** and **lichen planus** have malignancy risk
7. **PVR >200mL** is abnormal
8. **Amsel's criteria** for BV diagnosis
9. **Systemic HT may worsen** stress incontinence
10.

21. DEMENTIA

Risk Factors

- **Gender**: Women > men (longer lifespan, genetic vulnerability)
- **Surgical**: Hysterectomy <50 years, oophorectomy <46 years increase risk
- **Modifiable**: High BMI, physical inactivity, smoking, cardiovascular risks

HT & Dementia - Critical Points

- **Age 65+**: HT NOT recommended for dementia prevention
- **WHIMS findings**: Doubled dementia risk with EPT in women >65; no significant increase with ET alone
- **Younger women**: Potential AD risk reduction when HT used at younger ages
- **Transdermal estradiol** in early postmenopause associated with reduced AD pathology

22. DEPRESSION & ANXIETY

Depression in Menopause

- **Risk**: 2x higher in reproductive years; **highest risk in perimenopause**
- **Vulnerable groups**: Hispanic women, those with prior depression history
- **Diagnosis**: 5 symptoms daily for ≥2 weeks (must include depressed mood OR anhedonia)

Anxiety Disorders

- **Prevalence**: ~30% of women experience anxiety disorder
- **Menopause transition**: Increased anxiety likely
- **Hot flash connection**: Can trigger anxiety responses, creating cycle

Treatment Approaches

Pharmacological

- **First line**: Antidepressants (SSRIs: citalopram, escitalopram; SNRI: duloxetine)
- **Estrogen therapy**: May augment SSRI/SNRI response; transdermal ET shows antidepressant properties in perimenopausal women
- **HT benefits**: Lower anxiety scores, fewer sleep complaints

Non-pharmacological

- **CBT**: Gold standard psychotherapy
- **Exposure therapy**: CBT method for anxiety disorders

23. CARDIOVASCULAR HEALTH

Post-Menopause CVD Risk

- **Leading cause of death**: CVD kills 1 in 3 women
- **Timing**: Most CVD occurs post-menopause or after age 55
- **Early menopause**: 2-3x increased MI risk if menopause <35 years
- **Lipid changes**: Accelerated LDL-C and total cholesterol increase in year after final menstrual period

Hypertension

- **Prevalence**: Increases with age; women >60 have higher prevalence than men
- **Post-menopause**: ~4-5 mmHg increase in SBP
- **Treatment**: Drug therapy for BP >140/90; goal <150/90 for age >60
- **Preferred agents**: Thiazides, calcium antagonists for Black patients

Hyperlipidemia

- **Screening**: All women by age 21
- **Fasting**: Not mandatory except TG >400 (then recheck fasting)
- **Severe elevation**: TG >500 often secondary causes; TG >1000 genetic disorders (pancreatitis risk)

CVD Risk Factors

Traditional: Diabetes, smoking, obesity, physical inactivity, HTN, dyslipidemia

Pregnancy-related: Preterm delivery, preeclampsia, gestational diabetes

Other: Autoimmune disease, breast cancer treatment, depression, PCOS

Lifestyle Interventions

Exercise: 150 min moderate OR 75 min vigorous weekly + resistance training 2-3x/week

Diet: Mediterranean or DASH diet, >4.5 cups fruits/vegetables daily, oily fish 2x/week

Weight: BMI 18.5-24.9, waist <35 inches (<31.5 for South Asian women)

Smoking: Counsel at every visit; smokers 2-6x more likely to have MI

Alcohol: Limit to 1 drink/day; light-moderate consumption may reduce CVD mortality in women >50

Medications

Statins: Primary prevention tool for ASCVD risk reduction

Omega-3: Effective for TG reduction; high-dose for TG >1000

Plant sterols/stanols: 2-3g daily reduces LDL-C by 6-15%

KEY EXAM POINTS TO REMEMBER

1. **HT timing matters**: Benefits vs risks depend heavily on age of initiation
2. **Migraine + aura = CHC contraindication** due to stroke risk
3. **Perimenopause = highest depression risk window**
4. **Early menopause significantly increases long-term health risks**
5. **Lifestyle interventions are foundational for all conditions**
6. **Transdermal delivery often preferred over oral for many indications**

GOOD LUCK ON YOUR EXAM!!!!!!!!