OBJECTIVES
1. Understand the clinical definitions of perimenopause and menopause
2. Describe systems affected by hormonal changes including vasomotor, cognitive, and dental
3. Identify risk factors and prevention strategies for oral, heart, and bone health
4. Address the role of the dental professional in understanding, supporting and educating patients

LET'S TALK ABOUT IT
I am Woman, I am Man
• Individualized symptoms and care
• Value the whole person

DEFINITIONS
Stages of Woman’s Reproductive Cycle
• Reproductive
• Menopausal transition
• Post menopause

REPRODUCTIVE
• Onset of menses
• Begins at birth

MENOPAUSE TRANSITION
The span of time when menstrual cycle and endocrine change occur post reproductive, through early and late perimenopause and just into post menopause

MENOPAUSE
• 12-months of no periods with no obvious pathologic cause
• A point in time. A woman reaches menopause, she is not in it.

PERIMENOPAUSE
• Beginning in early transition and ending with the 12-month post-period mark
• May last up to 10 years

POST MENOPAUSE
Any span of time after the day a woman reaches menopause, regardless of whether menopause was natural or induced.
INDUCED MENOPAUSE

- Bilateral oophorectomy; most common causes is severe endometriosis and cancer
- Chemotherapy/radiation – stops ovarian function

Incidence

- Western world, natural menopause occurs at the average age of 51.4 years
- By year 2020, approximately 50 million women over the age of 51 reach menopause
- 6,000 women reach menopause daily

Natural transition

FMP (Final Menstrual Period) A natural function of aging, a permanent cessation of menses resulting from loss of ovarian follicular function.

PREMATURE MENOPAUSE

- Smoking accelerate age of menopause approximately – 1.5 years
- Lifetime depression
- Childhood cancers – 8% vs. 0.8%
- History of heart disease, Type 1 diabetes, epilepsy
- Low socioeconomic status, being widowed, divorced, and unemployed

PERIMENOPAUSE

Keeping track of your cycles, signs & symptoms

In 2003 research article in the JAMA, “It is determined that clinical diagnoses of perimenopause are done primarily through menstrual history and age. A woman’s self-assessment of her signs and symptoms add to the clarity of diagnoses and other lab tests are not necessary to determine if you are in perimenopause.”

ABOUT PERIMENOPAUSE

- It can last anywhere from 2-10 years and is the marker noting the end of a woman’s reproductive years
- Hormonal levels can be highly erratic, exhibiting differing fluctuation patterns from month to month
THE HORMONES

Androgen-DHEA — dehydroepiandrosterone sulfate
- Derived from adrenal gland
- Precursor to other sex hormones
- Can be converted to estrogen in adipose tissue

Testosterone
- Derived from adrenal gland and ovaries
- May be converted to estradiol in adipose tissue
- Maintain libido and lean body mass

Estrogen - Estradiol (Most Potent)
- Power hormone for women
- Curves, softness, regulation of entire reproductive cycle
- Approx. 300 tissues in the body have estrogen receptors
- Secreted by ovaries
- Can be made from estrone and testosterone in adipose tissue
- Collagen production
- Inhibits bone resorption
- Breast cancer risk

Estrogen - Estrone (2nd Most Potent)
- Produced in adipose tissue
- Can convert back to estradiol

Estrogen - Estrial (Least Potent)
- Used to gauge viability of pregnancy
- “Protective” estrogen

Progesterone
- Produced in ovaries and adrenal glands
- Produced in the second half of the menstrual cycle
- Survival of the fetus
- Stimulates bone building cells
- Promotes energy production in the brain

Estrogen Abundance
- Water retention
- Fatigue
- Breast tenderness
- Fibrocystic breasts
- Premenstrual – like mood swings
- Loss of sex drive
- Heavy or irregular menses
- Craving for sweets
- Weight gain

Estrogen Shortage
- Hot flashes
- Night sweats
- Sleep disorders
- Dry skin
- Anxiety
- Mood swings
- Headache
- Vaginal shrinkage
- Painful intercourse
- Depression

Progesterone Abundance
- Breast fullness
- Somnolence
- Depression

Progesterone Shortage
- Bloating
- Inability to concentrate
- Fluctuations in body temperature
- Headache
- Low libido
- Fuzzy thinking
- Food cravings
- Insomnia
- Irritability
CHANGES IN THE BODY – VASOMOTOR (Hot Flashes, Night Sweats)

Hotflash: Recurrent, transient episodes of flushing and sensation of warmth to intense heat on upper body and face often followed by chills.

- Up to 75% of perimenopausal women in the US have hot flashes
- More body fat = more estrogen = more hot flashes
- Higher BMI 27 kg/m² predictor of hot flash frequency
- Heart rate speeds up 7-15 more bpm

Science of Why

- Hypothalamus = Thermostat
- Extremely sensitive to hormonal changes

Strategies - Hot Flashes

- Stop smoking
- Dress in layers – think absorbent, breathable
- Vigorous exercise – maintain a healthy body weight
- Bamboo
- Avoid personal triggers
- Avoid caffeine, spicy foods, alcohol, stress before bed
- Adopt relaxation techniques
- Take a deep breath – and RELAX!
- Mild, nonprescription therapies
- Soy foods, Red clover
- black cohosh, vitamin E (mixed evidence)
- OTC or bioidentical progesterone
- Prescriptive HT – Vivelle dot (Moderate to severe)
- Bioidentical estrogens, Phyto estrogens (Moderate to severe)

Menopause Marketing!

- drynights.com
- cooljams.com
- estroven.com
CHANGES IN THE BODY – ORAL HEALTH

Science of Why
Hormone changes and the life cycle during:
• Adolescence
• Pregnancy
• Menses
• Menopause (JDH, ADA, NAMS)

Hormone changes can contribute to change in the oral mucosa.
• Altered taste perception
• Changes in gingival color and texture
• Hypersensitivity
• Enamel Erosion/Demineralization
• Xerostomia
• Perio and Caries Risk

Estrogen Affects Gingiva
• Cellular proliferation
• Differentiation
• Keratinization of gingival epithelium
• Hormone receptors embedded in basal layers of epithelium and connective tissue

Hormones Affect Caries Rate
Female sex hormones can significantly affect cavity formation
• Cumulative effect of estrogens over a female’s lifetime
• The difference in saliva flow rate and biochemical composition between women and men
• Differing food aversion and cravings during pregnancy

Hormones Affect Periodontal Health
Effects of stress, cortisol and depression on periodontal disease:
• Positive correlation
• Increased levels of cortisol can lead to increased periodontal destruction of the gums and jawbone (JOP 2006, 2007, 2009)
• Increased cortisol levels are also found in women experiencing chronic stress
• Bone loss = tooth loss?
• Each 1% per year decrease in BMD – risk for tooth loss quadruples (NAMS)

REFERENCE ALERT: 2006 Oral Health Care Series – Women’s Oral Health Issues, the ADA ada.org/prof/resources/topics/healthcare.asp
Strategies – Oral Health

1. Clinical Considerations

Low to no SLS Products

Fl Varnish- Extended Fluoride Release
- Decreases sensitivity
- Protects from caries risk

Prescription Strength Fl Toothpaste
- Low Abrasion
- Protects from Caries Risk
- Inhibits Demineralization and Enhances Remineralization

Oral Rinse
- Antimicrobial, Protects against Perio Disease
- Decreases Sensitivity
- Reduces Plaque build-up
- Helps with Xerostomia and Mal Odor

Xylitol Mints
- Stimulates Saliva Flow
- Prevents Caries
- No Sugars

2. Practitioner Considerations - Understanding is Key!

- Listening/Awareness
- Basic principles of oral hygiene
- Referral to medical specialist
- Addressing stress management techniques (JOP 2009)

CHANGES IN BODY – BONE HEALTH

Osteoporosis is defined by NIH 2000 as a “skeletal disorder characterized by compromised bone strength predisposing people to fracture”
- Decreased estrogen = increased bone resorption = decreased bone density
- Increased risk for tooth loss
- Check on dental x-rays
- NAMS reports the few years preceding and following menopause, BD loss can be seen at 2% annually; it then slows to 1-1.5% annually

Strategies
- Estrogen replacement
- Vitamin D- super bone power!
- Exercise and food choices
- Calcium

REFERENCE ALERT: North American Menopause Society (NAMS) menopause.org, obesityaction.org/educational-resources/resource-articles-2/obesity-related-diseases/what-your-weight-means-for-your-bones
CHANGES IN THE BODY – HEART HEALTH

Heart disease is the #1 killer of women in the United States.

Science of Why? (Risk Factors)
- Aging
- Lifestyle choices - food, exercise
- Genetics - High blood pressure
- High LDL cholesterol
- Smoking
- Excessive alcohol use
- Perio disease

Symptoms for Women
- Angina (dull, heavy to sharp chest pain or discomfort)
- Pain in the neck/jaw/throat or pain in the upper abdomen or back
- No symptoms, silent

Perio and Heart Health- Inflammation and Perio Pathogens
- Those with periodontal disease have 30% higher risk of heart disease
- Periodontal Bacterial Pathogens (PBP) can invade coronary arteries, weakening walls & increasing thrombosis formation
- Elevated levels of LDL and fibrinogen are associated with 3 to 6-fold increased risk for heart disease and stroke.

Strategies
- Screening
- Healthy body weight
- Exercise
- Clean eating
- Lower Inflammatory burden on body
Breast Cancer - 2nd most common cancer in American women.

- 89% found in women 50+ years of age
- 11% in women younger than 45 years of age.

Warning Signs

- New lump in the breast or underarm (armpit).
- Thickening or swelling of part of the breast.
- Irritation or dimpling of breast skin.
- Redness or flaky skin in the nipple area or the breast.
- Pulling in of the nipple or pain in the nipple area.
- Nipple discharge other than breast milk, including blood.
- Any change in the size or the shape of the breast.
- Pain in the breast.

Know Your Breasts

What are BRCA1 and BRCA2?

- Gene mutations
- In the U.S., between 1 in 400 and 1 in 800 people have a BRCA1/2 mutation
- BRCA1/2 mutations can be passed to you from either parent and can affect the risk of cancers in both women and men.

Risk Factors

- Having first menstrual period before age 12
- Never giving birth, or being older when your first child is born
- Starting menopause after age 55
- Taking hormones to replace missing estrogen and progesterone in menopause for more than five years
- A personal history of breast cancer, dense breasts, or some other breast problems
- A family history of breast cancer (parent, sibling, or child)
- Getting radiation therapy to the breast or chest
- Being overweight, especially after menopause

Strategies-Prevention

- Mammograms = X-rays
- Ultrasound
- Self-examination
- Mammography - Breast Cancer Screening

Recommendations - The US Preventive Services Task Force (USPSTF)

- 40 years – talk to physician, when to start and how often
- 50-74 years – at average risk for breast cancer should get a mammogram every two years
CHANGES IN THE BODY – COGNITIVE-BRAIN HEALTH

• Irritability
• Insomnia
• Decreased memory and concentration
• Depression
• Anxiety
• Feeling stressed
• Decreased sense of well-being
• The Bitch Zone

Science of Why?

• Decreasing and Erratic Hormone Levels
• Increasing King Kong Molecule - MAO Oxidase
  ° A thick, dense molecule that eats up neurotransmitters: norepinephrine, serotonin, dopamine
• Sex Hormones and Cortisol Affect Several Neurotransmitter Systems
  ° Norepinephrine
  ° Dopamine
  ° Serotonin

At Menopause, a Woman may lose up to

• 40% of testosterone = lowered concentration, sexual desire, and energy
• 50% of estrogen = raised mental depression, and temperature fluctuation

SWAN Study

SWAN is a National Institutes of Health funded, multi site, longitudinal study of the natural history of
the midlife including the menopausal transition

• Results- Transitional memory challenges during perimenopause
• Estrogen therapy during transition is recommended

Reward Neurotransmitters – Serotonin and Dopamine

Serotonin and Dopamine give you:

• Well being
• Happiness
• Positive energy
• Emotional and mental balance
• Euphoria!
• Better Sleep
• Satiety Moderate

What Can We Do to Get More?

Positive Attitude – self-talk connects brain map activity in a different way.

• Journal 3 positive things each day. Meditate on the positive.
• Affirmations, self love, self care
• Bonding with others
• Light up your senses – music, scents, places, comedy, touch, etc.
• Take in more Omega-3, Vitamin D, Vitamin B-Complex – serotonin enhancer
• Get moving
• Be a detective-search out providers who support you and ‘get’ you
Strategies - Cognitive

- Attaining higher/more education
- Extensive social networking
- Intake of Omega-3 fatty acids
- Alcohol in moderation
- Exercise
- Sleep
- Sex
- Feel good activities

CHANGES IN THE BODY - WEIGHT GAIN

Exercise - The Queen

- Increases serotonin and endorphins
- Decreases appetite
- Increases circulation = brain and organ health
- Decreases cortical levels = decreased belly fat
- Tells your body to stay vigorous, vibrant and healthy
- Increases better sleep
- Reduces stress - Exercise is proven to help reduce stress and improve your mood.
- Weight loss - Exercise can help create a calorie deficit, which is what you want when it comes to losing body fat.
- Reduction of hot flashes - Some research has found that exercise increases estrogen levels, which can decrease the severity of hot flashes.
- Increased bone mass - Strength training and impact activities (walking, running) can help strengthen the bones and prevent osteoporosis.
- Reduced risk of high blood pressure, heart attacks, and strokes

“Exercise may cause the same magnitude of change as that induced by estrogen therapy.” (NAMS)

Science of Why

- Increased appetite - experts at Oregon Health and Science University have found intriguing evidence that, for some, menopause may increase appetite. By studying hormones in monkeys researchers concluded that, with decreased hormones, many monkeys increased their food intake by 67%.
  (McGinnis, M Move for Happier Hormones. 60(12), 88.
- Attitude of entitlement
- Reduced activity – less exercise = more weight gain
- Decreased metabolism
- Loss of muscle mass. Lose an average of ½ pound a year if you don’t preserve it with weight training/exercise.
- Increased calories

Remember, dopamine and serotonin help control food seeking behavior and satiety. Loss of estrogen can trigger increased appetite.
Strategies – Weight Gain

- Adrenal support
- Cut out hydrogenated fats
- Reduce refined sugars
- Reduce caffeine and alcohol intake
- Eat quality protein
- Get plenty of sleep
- Practice Stress management
- Take B vitamin and Zinc
- Have a sense of humor!

CHANGES IN THE BODY – SLEEP

Sleep Hygiene

Poor sleep is measured by: total amount, degree of waking during the night and how long it takes to get to sleep.

- Adults need 7-9 hours a night to recharge (www.sleepfoundation.org)
- Poor sleep may be more harmful to women than to men
  - Increased stress
  - Increased anger and depression
  - Increased levels of C-RP and IL-6 associated with heart disease and higher levels of insulin (Brain, Behavior and Immunity, 2009 Duke Researchers)
- Sleep plays a major role in the production of hormones – those that control mood and metabolism, organ functions and energy levels
- Lack of sleep is associated with increased heart disease, high blood pressure and obesity
- Getting enough sleep allows the mind and body to regulate, recharge, and re-think.

Strategies – Sleep

- Create proper sleep environment
- Bedroom is for sleep and sex
- Ritualize pre-sleep routine and stick to it
- Unplug ½ hour before bed
- Avoid emotional phone calls or discussions
- Avoid caffeine, alcohol and large meals before bed
- Alcohol produces rebound effect, disrupts the brain’s sleep mechanism and the body converts it to sugar = high blood sugar and insulin are sleep busters
- Have a snack with protein and complex carbs
- Get into comfortable clothes
- Hot bath or shower – raises body temp, relaxes
- Herbal relaxing teas: chamomile, lavender, lemon balm, etc.
- Melatonin
- Sleep regulating chemical – produced in the pineal gland in the brain
- Triggered by darkness and light (through the retina)
- Powerful antioxidant
- Turn off computer and TV – artificial light is seen as daylight so brain doesn’t release the melatonin
- Sleep in the dark

What is your sleep hygiene routine?
CHANGES IN THE BODY — SEXUAL

Top Three:
• Sex drive change
• Painful intercourse
• Body image issues

Science of Why
Vulvavaginal Changes
• Primary stage of sexual response changes from desire to arousal
• Less estrogen and testosterone
• Lifestyle stressors
• Partner changes
• Body image suffers

Strategies-Sexual
• Suppositories, estrogen, Vitamin E
• More Vitamin D
• Exercise
• Feel good neurotransmitters
• Strengthen sexual muscles - Kegels
• Lube - natural, no sugars
• Check the negative self talk
• Indulge in sensual activities
• Use your brain
• Be patient- more time needed for arousal
• Put sex on the calendar
• Self love

HORMONE REPLACEMENT THERAPY

The History- Women’s Health Initiative, Horse Urine

Specific FDA Guidelines for Hormone Therapy
• Treat the individual
• Use the lowest effective dose
• Use for the shortest time possible

Bioidentical Hormones
• Synthesized in a lab
• Identical chemical structure of naturally occurring hormones
• Usually derived from plants
• Work like a lock and key in hormone receptors

REFERENCE ALERT: menopause.org/bioidentical.aspx
The Conflict

- Drug companies can’t patent a bioidentical structure so these compounds don’t move through the FDA approval system.
- The FDA has approved several chemically manufactured hormone therapy products that are structurally identical to hormones produced by the ovaries, so can also be termed, ‘bioidentical’
- “There are two extremes of opinion concerning the ability of the FDA to regulate compounded drugs. One opinion views compounded bioidentical hormone mixtures as unapproved new drugs whose safety and efficacy have not been demonstrated and therefore must be regulated. The opposing opinion is that compounding is the practice of pharmacy, which only states can regulate, and is therefore not appropriate for FDA oversight.” (Patsner MD. JD 2006)

Delivery systems

- Oral
- Transdermal patch/pellets
- Creams and lotions
- Sublingual drops
- Vaginal ring

Bypassing the GI tract and liver on the “first pass” can be advantageous for the body. Transdermal delivery usually leads to better and more consistent hormonal tissue levels.

REFERENCE ALERT: (Dr Goodman, A Woman’s Guide to Natural and Bioidentical Hormones) caringforwomyn.com/articles/hormones (International Academy of Compounding Pharmacist) iacprx.org, (Women to Women) womentowomen.com/bioidentical-hrt

SUPPLEMENTATION—Kelli’s Vitamins

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<td>adrenal support, thyroid support</td>
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<td>Vitamin D-3</td>
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<td>400iu daily</td>
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<td>Fiber/Hemp Powder</td>
<td>Regularity</td>
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<td>Progesterone+Estrogen</td>
<td>Eases hot flashes and vaginal dryness symptoms</td>
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<td>Testosterone</td>
<td>Eases hot flashes, sleep problems, irritability, and fatigue</td>
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<td>Selenium</td>
<td>Thyroid support, antioxidant (Brazil Nuts!)</td>
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