Menopause:

Navigating Nutrition in Midlife

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I HAVE NO CONFLICTS OF INTEREST TO DISCLOSE

OBJECTIVES

1. Describe the physiological changes that occur during menopause.
2. Name common symptoms women experience during the menopausal transition, including the health risks that are associated.
3. Recognize the nutritional needs of a midlife woman.

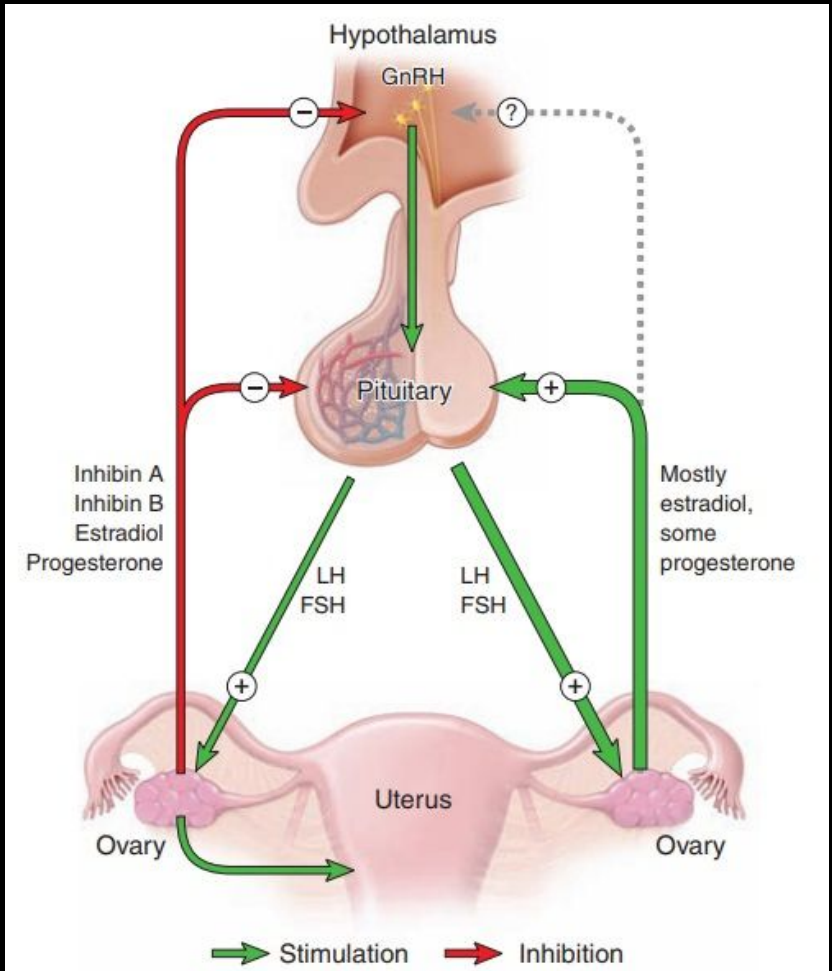


FIGURE 33.1. The reproductive cycle requires complex interactions and feedback between the hypothalamus, pituitary, and ovaries which are simplified in this diagram. CNS = central nervous system; GnRH = gonadotropin-releasing hormone; FSH = follicle stimulating hormone; LH = luteinizing hormone.

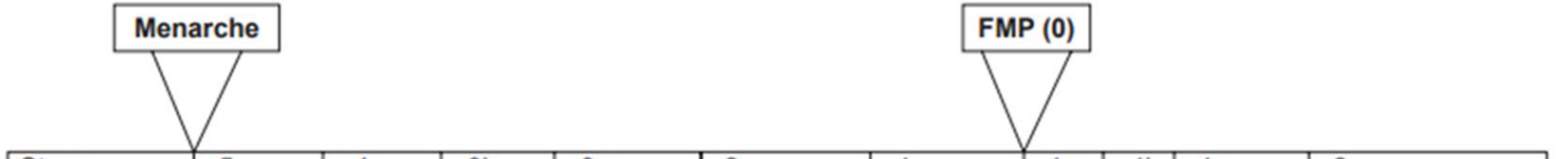
PHYSIOLOGY: THE BASICS

- Females are born with all the oocytes they will ever have which is approximately one million follicles
- Follicular loss occurs before a female is even born
- As follicular number decreases, there is reduced inhibin-B release → upregulation in FSH secretion from the pituitary → increased E2 production from the ovaries… until the ovaries "burn out" = Menopause

TERMINOLOGY

- Early Menopause and Late Menopause
  - Used to describe menopause that occurs earlier or later than within the normal range of ages (FMP before 45 or FMP after 54)
- Early Post-menopause and Late Post-menopause
  - Early if they are within 8 years of their FMP, otherwise late
- Menopause Transition
  - Time before the FMP when the menstrual cycle becomes variable or other menopause-related symptoms begin
- Perimenopause – "AROUND MENOPAUSE"
  - Onset of intermenstrual cycle irregularities or other menopause-related symptoms and extends beyond the FMP to include the 12 months after menopause
  - Encompasses 1 year longer than menopause transition

Figure 1. The Stages of Reproductive Aging Workshop + 10 Staging System



Stage	−5	−4	−3b	−3a	−2	−1	+1a	+1b	+1c	+2
Terminology	REPRODUCTIVE				MENOPAUSE TRANSITION		POSTMENOPAUSE			
	Early	Peak	Late		Early	Late	Early			Late
					Perimenopause					
Duration	*variable*				*variable*	1-3	2 (1+1)		3-6	*Remaining lifespan*
PRINCIPAL CRITERIA										
Menstrual cycle	Variable to regular	Regular	Regular	Subtle changes in flow/ length	*Variable length* Persistent ≥7-day difference in length of consecutive cycles	Interval of amenorrhea of ≥60 days				
SUPPORTIVE CRITERIA										
Endocrine										
FSH			Low	Variable[a]	↑ Variable[a]	↑ >25IU/L[b]	↑ Variable[a]		Stabilizes	
AMH			Low	Low	Low	Low	Low		Very low	
Inhibin B			Low	Low	Low	Low	Low		Very low	
Antral follicle count			Low	Low	Low	Low	Very low		Very low	
DESCRIPTIVE CHARACTERISTICS										
Symptoms						Vasomotor symptoms *Likely*	Vasomotor symptoms *Most likely*			*Increasing* symptoms of urogenital atrophy

↑ indicates elevated.
a. Blood draw on cycle days 2-5.
b. Approximate expected level based on assays using current international pituitary standard.
Abbreviations: AMH, antimüllerian hormone; FMP, final menstrual period; FSH, follicle-stimulating hormone.
Adapted from Harlow SD, et al.[9] © North American Menopause Society.

Executive summary of the Stages of Reproductive Aging Workshop + 10: addressing the unfinished agenda of staging reproductive aging

WHY SHOULD YOU CARE?

- By 2031, about 1.2 billion women globally will have reached menopause
- Associated with elevated cardiovascular risk
- Untreated symptoms have been associated with higher healthcare costs, negative effects on quality of life, and adverse effects for women in the workplace
- We talk to teenagers about puberty but rarely mention menopause to middle-aged women

COMMON SYMPTOMS

- Vasomotor Symptoms
- Genitourinary Symptoms
- Mood Disturbances
- Cognitive Changes
- Skin and Hair Changes
- Difficulty Sleeping
- Changes in Libido
- Headaches
- Weight Gain
- Arthralgias

*not all symptoms are related to hormone changes; some are age related

VASOMOTOR SYMPTOMS

- AKA – Hot Flashes, Hot Flushes, and Night Sweats
  - "The Hallmark of Menopause"
- Transient sensation of heat, flushing, and sweating
- Some may describe this as "severe anxiety" or "panic attacks"
- 80% of women with median duration of 7.4 years
- These lead to other issues – sleep, mood, cardiovascular, bone
- Not all VMS symptoms are hormone related

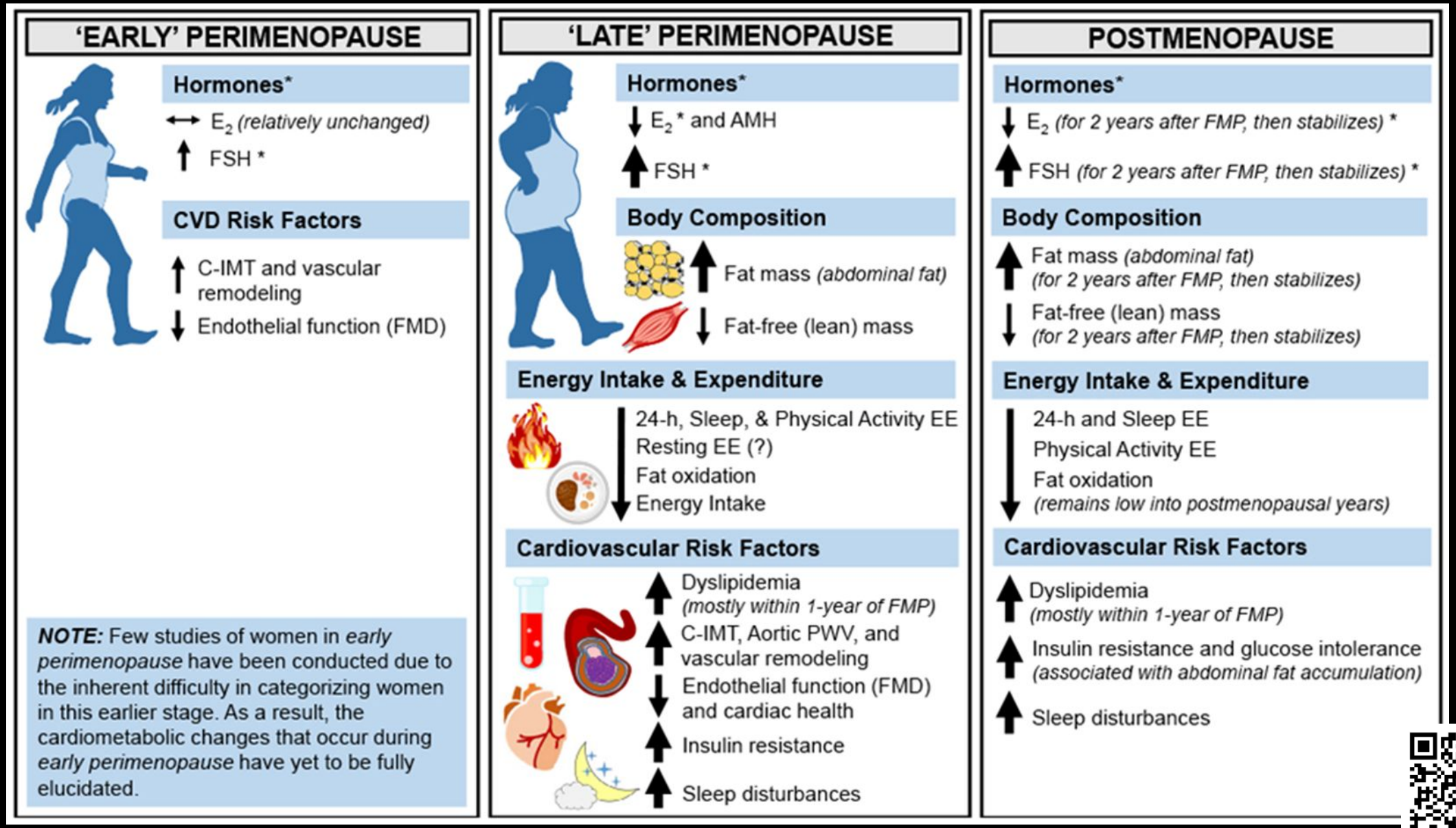
GENITOURINARY SYNDROME OF MENOPAUSE

- Vaginal dryness
- Pruritus
- Burning
- Dyspareunia
- urinary urgency
- frequent urinary tract infections

- Affects more than 50% of women during the menopausal transition and 27-84% of women experience issues postmenopausal

BODY CHANGES

- “I just don’t feel like myself”
- Weight gain – average of 5-7 pounds
- Change in body weight composition – from pear to apple
- Change in basal metabolic rate of up to 250–300 kcal per day



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INSULIN SENSITIVITY AND GLUCOSE TOLERANCE

- Mixed evidence on association between menopause and diabetes
- Multiple studies have shown no association between natural menopause and diabetes[6,7,8]
- SWAN study did show increase in metabolic syndrome 2/2 to lipids
- Several studies have also shown that hormone therapy reduces the risk of developing DMII[11-13]
- Not as clear as we would like for it to be
- What we do know:
  - Estrogen peripheral fat distribution, improves insulin sensitivity[9]
  - Increased BMI, as well as increased abdominal adiposity, are strongly linked to insulin resistance, DMII, and CVD[10]

DYSLIPIDEMIA

- "From Pear to Apple" – increase in abdominal fat leads to changes in lipids
- Female hormones, primarily estrogen, may be protective against dyslipidemia
- SWAN Study: drastic increase in total cholesterol, LDL-C, and apolipoprotein B within 1 year interval surrounding FMP. [14]
- Elevations in LDL-C and triglycerides leads to greater risk of carotid plaque and the atherosclerotic process

SLEEP DISRUPTIONS

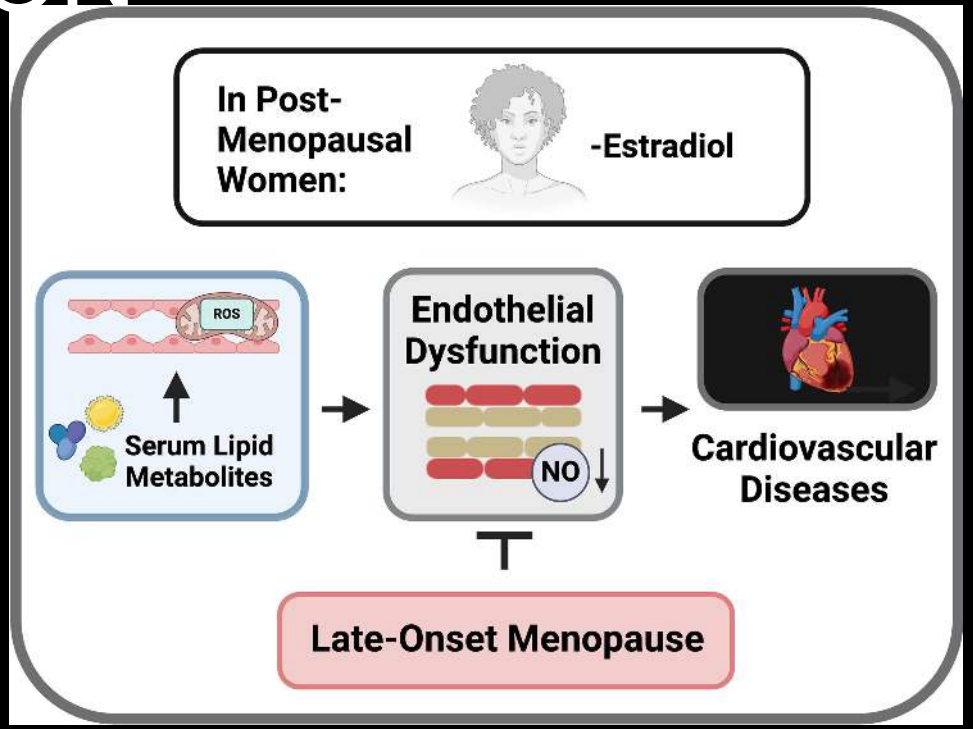
- SWAN: More sleep disturbances as they progress through the menopausal stages
  - Increases from 16-42% premenopause, to 39-47% in perimenopause and 35-60% in postmenopause [15]
- independent of vasomotor symptoms
- Sleep disturbance changes in hunger and appetite metabolic abnormalities
- Therefore, women who experience worse sleep disruptions may experience more weight gain and abdominal fat

CARDIOVASCULAR DISEASE

- Leading cause of mortality in postmenopausal women
- The loss of estrogen likely increases the risk of CVD
- Risk factors include vascular dysfunction, hypertension, and cardiac dysfunction

VASCULAR DYSFUNCTION[3]

- As people age, there is increased oxidative stress and inflammation leading to reduced nitric oxide
- Nitric oxide synthase is also impaired further reducing NO bioavailability
- Endothelial dysfunction and arterial stiffening
- Vascular function appears to be preserved until menopause when estrogen is loss



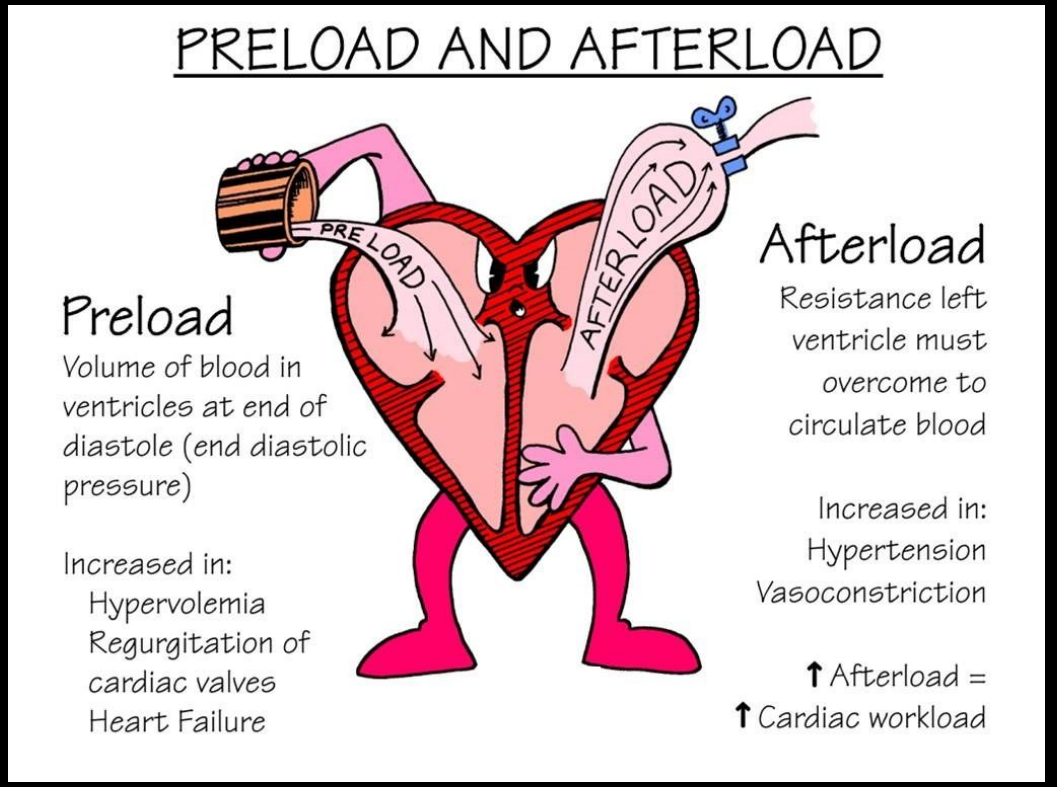
Preservation of Vascular Endothelial Function in Late-Onset Postmenopausal Women

HYPERTENSION

- Incidence increases with age
- But the age-related increases are more rapid in women and correlated with menopause
- Multifactorial – weight gain, metabolic syndrome, endothelial dysfunction, arterial stiffness

CARDIAC DYSFUNCTION[3]

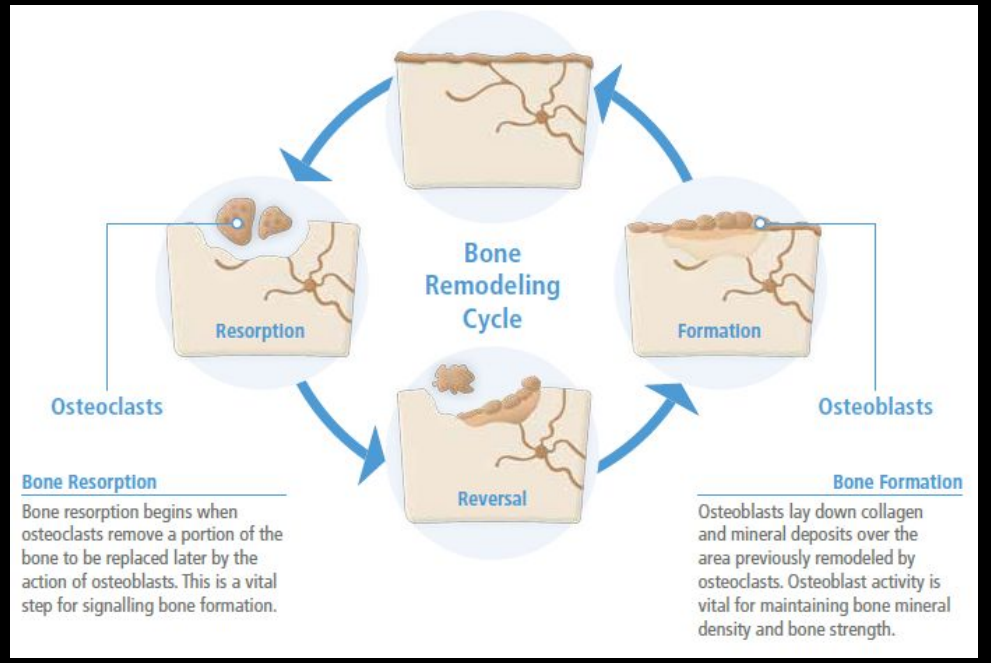
- The previously mentioned changes can lead to stress on the heart
- Majority caused by overall increase in afterload and work needed to preform by the left ventricle diastolic dysfunction HFpEF



https://cards.rxexplained.com/2021/11/12/preload-and-afterload/

OSTEOPOROSIS[1]

- Impaired bone strength that increases risk of fracture
- Bone remodeling
- In premenopausal women, this is balanced
- During menopause, estrogen deficiency leads to rapid bone resorption and the process is no longer balanced bone loss and gradual but progressive deterioration of the bone architecture
- Risk factors, consequences, treatment/prevention



https://www.osteoporosis.foundation/health-professionals/about-osteoporosis/bone-biology

SO HOW CAN WE HELP?

- Lifestyle Interventions
  - Diet
  - Exercise
  - The earlier, the better
- Medication

PROTEIN

- 1-1.2 g/kg of body weight
  - Needs to be combined with regular exercise
- Essential for increasing and maintaining skeletal muscle

CARBOHYDRATES

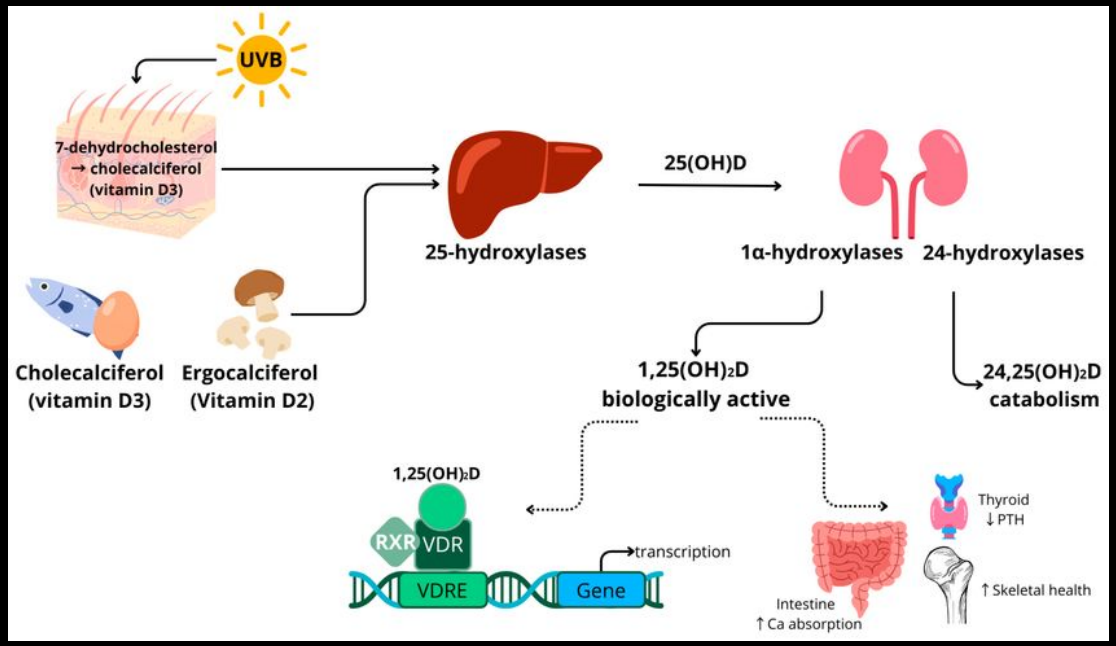
- 120g
- Choices should be rich in vegetable fibers, vitamin, and minerals
- Added sugar intake should be no more than 10% of the daily energy intake
- Low glycemic index, Fiber rich = protective health effects
  - Decreases risk of CVD, intestinal malignancies, and DMII
- Fiber is KING (Actually, Queen)
  - Satiating
  - Changes intestinal flora Decreases risk of metabolic syndrome
  - May even effect estrogen metabolism, slowing the development of symptoms from estrogen deficiency

FAT

- Quality of fatty acids in the diet > total amount
- Replace saturated fatty acids with polyunsaturated fatty acids
- Emphasize the importance of dietary intake of omega-3 fatty acids

VITAMIN D

- Fat soluble vitamin found in egg yolks, dairy products, oily fish
- Essential for absorption of calcium; therefore, essential for bone health
- Osteoporosis treatment is only effective with adequate vitamin D (with or without supplementation)
- Recommended Dietary Allowance – 600 IU until 70 years old then 800 IU



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CALCIUM

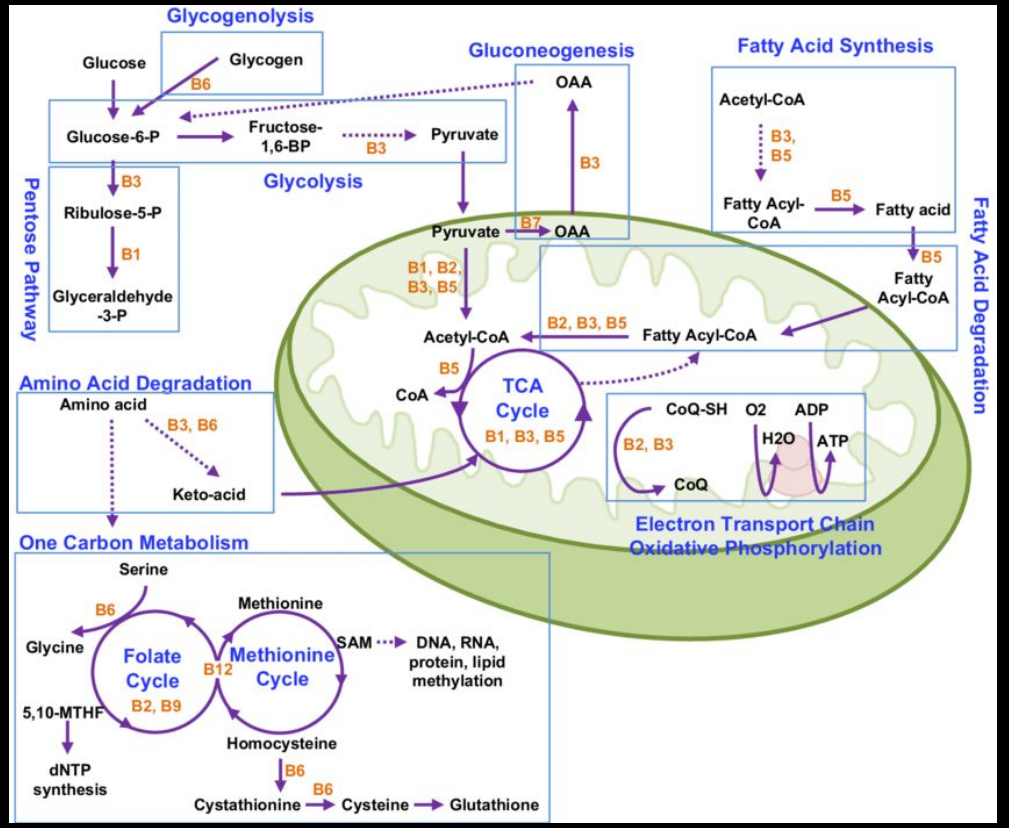
- Most abundant mineral in the human body
- Needs change throughout a woman's life
  - Increase during teen years, fall during reproductive years, and rise again around menopause (decreased intestinal absorption, vitamin D deficiency)
- Most calcium requirements can be met with diet alone
- Dairy products, food supplemented with calcium
- Recommended Dietary Allowance of 1200 mg/d

VITAMIN C

- Necessary for collagen formation and tissue repair
- Also plays important role in metabolism, immune function, and preservation of vessel integrity
- Supplementation often not necessary
- Recommended Dietary Allowance is 75 mg
- Fruits and vegetables
  - Peppers
  - Citrus fruits
  - sauerkraut

B VITAMINS

- Thiamin, Riboflavin, Niacin, Pantothenic Acid, Pyridoxine, Folic Acid, and Cyancobalamin
- Cofactors for enzymes that play a huge role in the metabolism of carbohydrates, fats, and proteins
- Also important for a regular functioning nervous system
- B vitamins can lower homocysteine levels, reducing the risk of stroke as well as osteoporosis and risk of bone fractures



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EXERCISE

- Multiple benefits
  - Sleep, mood, chronic disease, bone health
- Diet + Exercise = greatest weight and fat mass loss
- At least 150 min/wk
- Aerobic + resistance training

RESOURCES

- The Menopause Society - https://menopause.org/
- Dr. Jen Gunter
- Dr. Mary Claire Haver
- How to Balance Your Hormones: What Your Doctor Isn't Telling You About Menopause - The Mel Robbins Podcast with Dr. Jen Gunter MD




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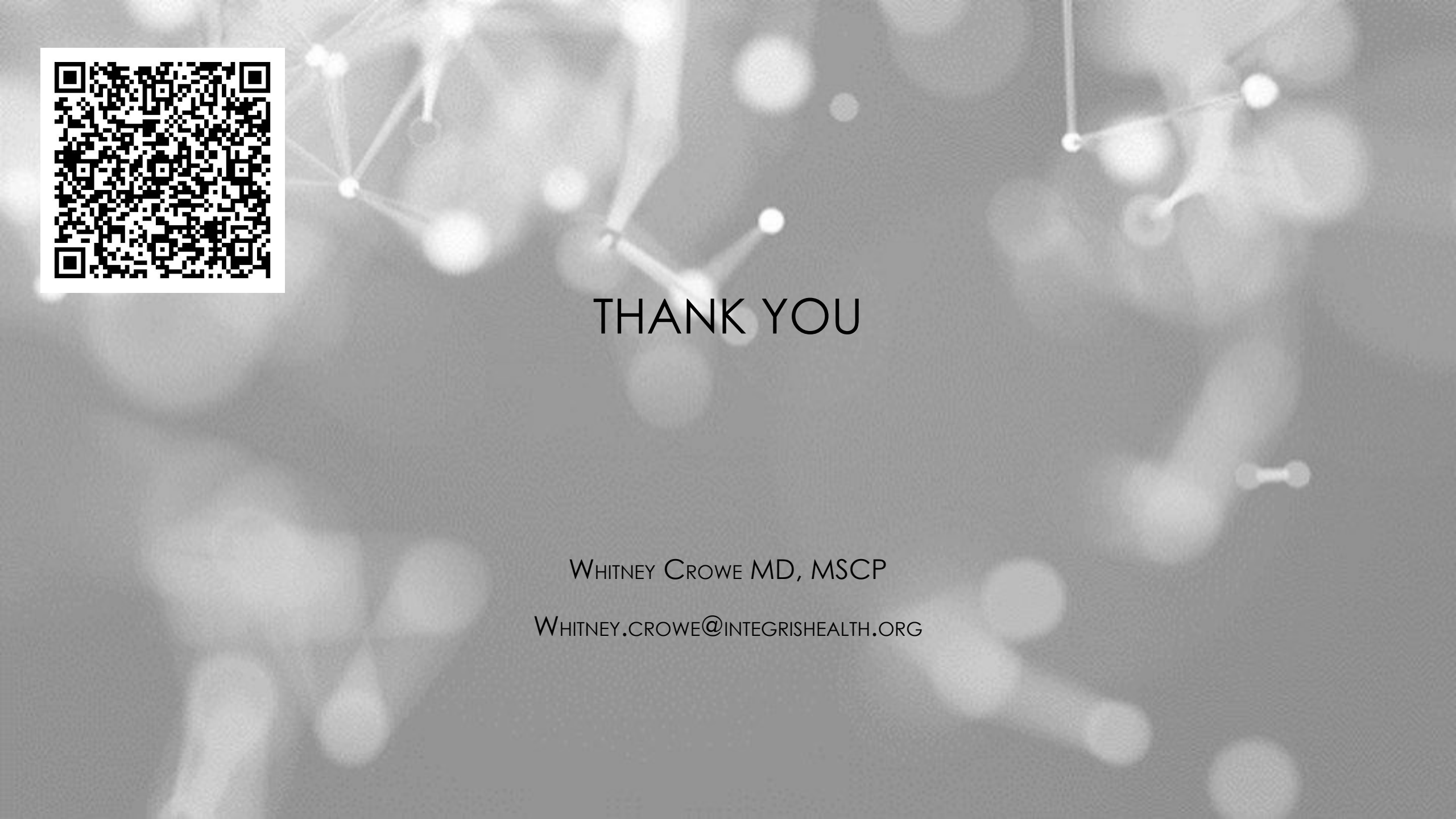

THANK YOU

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