Menopause Basics
Objective

Understanding menopause
Expected Outcome

(A) Helps to diagnose, categorise and stage menopause

(B) Guides regarding investigations
Definition Of Menopause

- 12 months of amenorrhea
- Retrospective diagnosis
- Depletion of ovarian follicles
- Diminution of ovarian hormones
- No independent biological marker
- Objective sensitive marker—Irregular cycles

**NO NEED TO CONDUCT TESTS ROUTINELY TO DIAGNOSE MENOPAUSE**
Hormonal changes
Diagnosis of Menopause

- **History** – symptoms
- **Signs** – vaginal pH taken from the lateral vaginal wall
- **Lab** –
  - S.FSH > 40 mIU/ml
  - S. Estradiol < 20 pg/ml
  - AMH, Inhibin B - low
  - US – < Antral Follicular Count
- **Trial of Medication**
  - Progesterone withdrawal
  - Response to HT
SOURCES OF ANDROGENS IN PREMENOPAUSE

Androgen Dynamics in Premenopausal Women

ACTH → Cortisol

Anterior Pituitary

- >80%
+ 10%

Adrenal Gland

- 50%
+ 25%

DHT

DHEA-S → DHEA

Ovaries

LH → Estradiol

Androstenedione

Testosterone

DHEA

Androsterone

50% (conversion)

25%
Androgen Production: Postmenopausal Women

Ovaries

- 60% androstenedione
- 20% DHEA
- DHEAS

Adrenals

- 40%
- 50%
- 90%

50%-75%

Testosterone

25%-35%

Simpson, Aromatization of androgen in women, Fertil Steril 2002
**Intracrinolgy of Androgens**

Testosterone

- Breast, brain, Bone, skin, Vascular endothelium, Vascular Smooth muscle, Ovary, testes, Placenta

**aromatase**

- Estradiol

**5 a -reductase types 1 & 2**

- Androgen responsive tissue

DHT

Simpson, Aromatization of androgen in women, Fertil Steril 2002
Markers for diagnosis of menopause are preferably restricted for use in special situations and for fertility issues.
Menopause

- Persistent low Estrogen levels
- Physical symptoms
- Metabolism
- Structural changes
Definitions

- PREMENOPAUSE - reproductive period prior to menopause
- PERIMENOPAUSE - 3--5 years before and one year after menopause.
- MENOPAUSE TRANSITION - disturbed menstrual cycle, endocrine changes
Postmenopause & Senescence

- **Postmenopause:**
  It is the span of time dating from the final menstrual period, regardless of whether menopause was spontaneous or iatrogenic.

- **Senescence:**
  It is the period after the age of 60 years.
Premature Menopause

- Premature menopause is the spontaneous menopause occurring two standard deviations below the mean estimated age for the reference population.
- Traditionally, it is considered to be below the age of 40 years. We may consider it as occurring below 38 years*.

*We need population-based studies to derive at the cut off values.
Early & Delayed Menopause

- **Early menopause:**
  It is the time span between the spontaneous or iatrogenic menopause occurring between the age of 40 years and the accepted typical age of menopause for a given population.

- **Delayed menopause:**
  It is not defined but may be important in terms of the increased problems associated with the hyperestrogenism. It is two standard deviations above from the natural average age of menopause in a given population. We may consider it to be beyond 54 years*.

*We need population-based studies to derive at the cut off values.*
Induced & Temporary Menopause

- **Induced menopause:**
  Cessation of menstruation that follows bilateral oopherectomy or iatrogenic ablation of ovarian function.

- **Temporary menopause:**
  It is a term preferably not to be used, since definition of menopause is complete cessation of menstruation. Rarely, ovarian function is interrupted for a period of time and later resumes.
Changes In Cycle Pattern

Anovulation

Oestrogen Surplus

Progesterone deficiency

- Periods of amenorrhea alternating
- With heavy bleeding
- Sudden amenorrhea
- Oligomenorrhoea
Change in menstrual pattern is usually the first sign of menopause

- Shorter cycles are typical. Longer cycles also seen
- Irregular bleeding may be heavy or light
- Sudden cessation of menstruation seen in 10-15% of women
- At age 52 years, 80% will not be menstruating
Any unusual bleeding pattern, however, has to be evaluated
Postmenopausal Bleeding

- Postmenopausal bleeding is the occurrence of vaginal bleeding following a woman’s final menstrual cycle and not on cyclical hormone therapy.

- But, vaginal bleeding that occurs six months after amenorrhea should be considered suspicious and warrants investigation.
Age At Natural Menopause

- The estimated mean age of menopause is 46 years in India, and is lower than that of the Caucasians.

- WE ARE NOW DOING SURVEY BE PART OF THAT

Problems of menopause

- Vasomotor symptoms
- Musculo skeletal
- Urogynecological
- Metabolic
- Long term alzheimer
- Associated malignancies
Case

- 44 yr old, P1 A1
- C/o Irreg periods since 6 mths, 3-4/25 -40 days
- LMP: 2 mths ago
- Using condoms
- No visits to Gynec since delivery
- BMI: 26, BP: 120/80
- GP has inv: TSH 2 mIU/L; FSH 8 mIU/mL
Concerns

• Is this menopause?
• Can I get pregnant?
• Are the irregular cycles normal?
What Stage Of Reproductive Aging Is She In?
# Stages of Reproductive Aging: STRAW

<table>
<thead>
<tr>
<th>Stage</th>
<th>Reproductive</th>
<th>Menopausal Transition</th>
<th>Postmenopause</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early</td>
<td>Peak</td>
<td>Late*</td>
</tr>
<tr>
<td>−5</td>
<td>Early</td>
<td>Peak</td>
<td>Late</td>
</tr>
<tr>
<td>−4</td>
<td>Early</td>
<td>Late</td>
<td>Early*</td>
</tr>
<tr>
<td>−3</td>
<td>Early</td>
<td>Late</td>
<td>Late</td>
</tr>
<tr>
<td>−2</td>
<td>Variable</td>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>−1</td>
<td>Variable</td>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Regular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+1</td>
<td>Regular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+2</td>
<td>Regular</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Menstrual Cycles**
- Variable to Regular
- Regular
- Variable cycle length (>7 days different from normal)
- ≥2 Skipped cycles and an interval of amenorrhea (≥60 days)
- Amen x 12 mos
- None

**Endocrine**
- Normal FSH
- ↑ FSH

**Duration of Stage**
- 1 yr
- 4 yrs
- Until demise

**Terminology**
- Reproductive
- Menopausal Transition
- Postmenopause

**Final Menstrual Period (FMP)**
- 0
# Staging Of Menopause

Dr Behram Anklesaria (1997)

<table>
<thead>
<tr>
<th>STAGES Years</th>
<th>Stage 1</th>
<th>Stage IIA</th>
<th>Stage IIB</th>
<th>Stage III From 5yrs after Menopause upto lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-5 yrs before Menopause</td>
<td>One year</td>
<td>Upto 5 yrs after Menopause</td>
<td>lifetime</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Events</th>
<th>IA - Menstrual Irregularity</th>
<th>MENOPAUSE CONFIRMATION</th>
<th>Local atrophic Changes</th>
<th>IIA - late atrophic changes</th>
<th>IIB - IHD</th>
<th>IIC—Osteoporosis</th>
<th>IID—very late complications CVA, Alzheimers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IB - Vasomotor Instability</td>
<td></td>
<td>Late Psychomotor symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IC - Early Psychomotor Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actions</th>
<th>ESTABLISH communication</th>
<th>WINDOW OF OPPORTUNITY</th>
<th>TREAT</th>
<th>PREVENT</th>
</tr>
</thead>
</table>
The Stages Of Reproductive Aging Workshop
+10 staging system for reproductive aging in women (2012)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Terminology</th>
<th>Duration</th>
<th>PRINCIPAL CRITERIA</th>
<th>SUPPORTIVE CRITERIA</th>
<th>DESCRIPTIVE CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>REPRODUCTIVE</td>
<td>variable</td>
<td>Menstrual Cycle</td>
<td>Endocrine</td>
<td>Symptoms</td>
</tr>
<tr>
<td>-4</td>
<td>REPRODUCTIVE</td>
<td>variable</td>
<td>Variable to regular</td>
<td>FSH</td>
<td>Blood draw on cycle days 2-5</td>
</tr>
<tr>
<td>-3b</td>
<td>REPRODUCTIVE</td>
<td></td>
<td>Regular</td>
<td>AMH</td>
<td>= elevated</td>
</tr>
<tr>
<td>-3a</td>
<td>REPRODUCTIVE</td>
<td></td>
<td>Regular</td>
<td>Inhibin B</td>
<td>Approximate expected level</td>
</tr>
<tr>
<td>-2</td>
<td>MENOPAUSAL TRANSITION</td>
<td>1-3 years</td>
<td>Subtle changes in Flow/Length</td>
<td>&gt;25 IU/L**</td>
<td>Increasing symptoms of urogenital atrophy</td>
</tr>
<tr>
<td>-1</td>
<td>MENOPAUSAL TRANSITION</td>
<td>2 years (1+1)</td>
<td>Variable Length Persistent ≥7-day difference in length of consecutive cycles</td>
<td>Variable Low</td>
<td>Vasomotor symptoms Likely</td>
</tr>
<tr>
<td>+1a</td>
<td>POSTMENOPAUSE</td>
<td>3-6 years</td>
<td>Interval of amenorrhea of ≥60 days</td>
<td>Variable Low</td>
<td>Vasomotor symptoms Most Likely</td>
</tr>
<tr>
<td>+1b</td>
<td>POSTMENOPAUSE</td>
<td>Remaining lifespan</td>
<td></td>
<td>Variable Low</td>
<td></td>
</tr>
<tr>
<td>+1c</td>
<td>POSTMENOPAUSE</td>
<td></td>
<td></td>
<td>Stabilizes</td>
<td></td>
</tr>
<tr>
<td>+2</td>
<td>POSTMENOPAUSE</td>
<td></td>
<td></td>
<td>Very Low</td>
<td></td>
</tr>
<tr>
<td>FMP (0)</td>
<td></td>
<td></td>
<td></td>
<td>Very Low</td>
<td></td>
</tr>
</tbody>
</table>

* Blood draw on cycle days 2-5  † = elevated
**Approximate expected level based on assays using current international pituitary standard""
# Mid Life OPD cards

**Name of Dr:**

**Address of Dr:**

**S.no:**

**Patient Name:**

**Age:**

**Address of Patient:**

**Religion:** Hindu / Sikh / Christian / Muslim

**Ph. Mobile:**

## PERSONAL DETAILS

<table>
<thead>
<tr>
<th>Name:</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Age:</td>
<td></td>
</tr>
<tr>
<td>Menarche (age ±):</td>
<td></td>
</tr>
<tr>
<td>Menopause (age ±):</td>
<td></td>
</tr>
<tr>
<td>Marital status:</td>
<td></td>
</tr>
<tr>
<td>Menstrual formula:</td>
<td></td>
</tr>
<tr>
<td>Clotting history:</td>
<td></td>
</tr>
<tr>
<td>Address &amp; mobile:</td>
<td></td>
</tr>
<tr>
<td>Allergic to (please specify, if any):</td>
<td></td>
</tr>
</tbody>
</table>

## PAST HISTORY

<table>
<thead>
<tr>
<th>NIDDM</th>
<th>Hypertension</th>
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<tbody>
<tr>
<td>Heart problem</td>
<td>Fracture</td>
</tr>
<tr>
<td>Rheumatic arthritis</td>
<td>Cancer breast</td>
</tr>
<tr>
<td>Cancer ovary</td>
<td>Any other cancer</td>
</tr>
<tr>
<td>Thrombophlebitis</td>
<td>Arthritis</td>
</tr>
<tr>
<td>Asthma</td>
<td>Allergic rhinitis</td>
</tr>
</tbody>
</table>

## LIFESTYLE HISTORY

| History of alcohol intake > 2 drinks: |                   |
| Smoking:                             |                   |
| Caffeine:                            |                   |
| Exercise:                            |                   |
| Diet calcium:                        |                   |
| Vitamin D intake:                    |                   |
| Medication history (if any):         |                   |
| Special intake (if any and closer):  |                   |

## FAMILY HISTORY

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<td>Any other cancer</td>
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## GENERAL PHYSICAL EXAMINATION

| Physical:                |                   |
| Height:                  |                   |
| Weight:                  |                   |
| BMI:                     |                   |
| B/P:                     |                   |
| WHR / WAIST HIP (ratio): |                   |
| Gait:                    |                   |
| Any other:               |                   |

## BASE LINE INVESTIGATIONS

| Hemoglobin:              | Lipid profile:     |
| HDL:                     | CHOLESTEROL TOTAL  |
| TSH:                     |                   |

## LOCAL EXAMINATION

| Blood sugar (F):         | Blood sugar (PP):  |
| Blood sugar (PP):        |                   |
| Deca scan:               |                   |
| BMD (TZ Score):          |                   |
| Pap smear (BBC/HPV/HR):   |                   |
| Ultrasound:              |                   |
| Mammography:             |                   |
GUIDE TO LIVE HEALTHY LIFE LONG & ALWAYS

DIET
- Calcium Intake: 1200-1500 mg Daily
- Vitamin D: 400-600 IU/Day

Blood Indicators
- Hemoglobin Level: 12 Gm%

Exercise
- Aerobic Exercise: 50 Minutes 5 times a week, Weight Bearing/Resistance Exercise: 20 min./Day, 2-3 Days a week

Vital Stats
- WHR (Waist Hip Ratio): 0.8 Women or absolute 34 inches, BMI: 19-25 ideal

BREAST CANCER SCREENING
- Breast self-examination
- Clinical examination - every year
- Mammography - more than 40 years age - every 2 years

MENOPAUSE RATING SCALE
- Hot flushes, sweating (episodes of sweating)
- Heart discomfort (unusual awareness of heart beat, heart skipping, heart racing, tightness)
- Depressive mood (feeling sad, down on the verge of tears, lack of drive, mood swings)
- Irritability (feeling nervous, irritable, tension, feeling aggressive)
- Anxiety (minor restless ness, feeling panic)
- Sexual problems (change in sexual desire, activity and satisfaction)
- Physical and mental exhaustion (general decrease in performance, impaired memory, decrease in concentration, forgetfulness, fatigue, headache, dizziness)
- Bladder problems (difficulty in urinating, increase in frequency, bladder incontinence)
- Dryness of vagina (sensation of burning or dryness in vagina, difficulty in sexual intercourse)
- Joint & muscular discomfort (joint pain, muscle pain, backache)

According to WHO standards, the degree of severity are consistent with:
- No problem/None: absent negligible 0-4%
- Mild problem: slight-low 5-24%
- Moderate problem: medium-high 25-49%
- Severe problem: high extreme 50-95%
- Complete problem: total 95-100%
Investigations - Essential

- Complete blood picture
- Urine test routine
- Fasting glucose level
- Lipid profile
- Serum TSH
- Stool for occult blood
- PAP smear
- Transvaginal ultrasound
- Mammogram/ultrasound-as per availability
- Eye check-up—intraocular pressures, refractive index, and retina.
USES

- Evaluation of anemia
- Determine the quantitative variations in peripheral blood cells
- ESR - nonspecific indicator of infectious disease and inflammatory states
- For females over age of 50 range is 0-30mm/ 1st hour
Blood Glucose

**Uses:**

- To detect and evaluate hyperglycemic states. The commonest cause of elevation is diabetes mellitus.
- Analysis can be done on
  - Fasting
  - 2hr postprandial
  - 2hr post glucose GCT 2hr >120mg/dl
  - Hb A1C level
Lipid Profile

- Measurements include
  - Serum cholesterol
  - Triglyceride
  - HDL/LDL
  - Lp
  - Cholesterol.

- Reference ranges are variable and related to sex and age
- TG levels increase with age. With cholesterol values within normal ranges, TG levels less than 250 mg/dl are not thought to be related to risk
- Desirable blood cholesterol level is less than 200mg/dl
Now consensus of NHLBI,AHA-2005

- Any three of five criteria
- Fasting glucose ≥100 mg/dL (or receiving drug therapy for hyperglycemia)
- Blood pressure ≥130/85 mm Hg (or receiving drug therapy for hypertension)
- Triglycerides ≥150 mg/dL (or receiving drug therapy for hypertriglyceridemia)
- HDL-C < 40 mg/dL in men or < 50 mg/dL in women (or receiving drug therapy for reduced HDL-C)
- Waist circumference ≥102 cm (40 in) in men or ≥88 cm (35 in) in women; if Asian American, ≥90 cm (35 in) in men or ≥80 cm (32 in) in women
Faecal Occult Blood Test

Uses:

- Detects occult blood in stool.
- Useful Economical screening test for Colorectal Cancer.
- Normal Range: Negative
- Specificity/sensitivity/cost and ease of performance of the test vary significantly amongst the methods used
Investigations - on Indication

- FSH
- Estradiol
- Tests for increased risk of thrombosis
- Endometrial Biopsy
- BMD
- LFT
- ECG, 2D Echo, Stress test
Menopause - A Biological Marker for Disease

- It is reported that osteoporotic fractures occur 10–20 years earlier in Indians compared to Caucasians.
- The first myocardial infarction attack occurs in 4.4% of Asian women at a younger age than in European women.
- In India Type 2 Diabetes Mellitus occurs a decade earlier than the Caucasians.
- Breast cancer incidence peaks before the age of 50 years.
- Cervical cancer is leading cause of mortality due to cancers in women. The highest age specific incidence rate of 98.2 per 100,000 for cancer cervix was seen in the 60-64 yr age group.
Is the average age at menopause in India 48/46/52 yrs?

- 46 yrs
Are irregular cycles a symptom of menopause?

- Yes
Is FSH needed to diagnose menopause?

- No.
- May be needed in special situations and for fertility issues
Post menopausal ovary secretes

1) Androstenedione + estrogen
2) Androstenedione + testosterone
3) Estrogen + testosterone
4) Estrogen + progesterone

Ans : 2
THANK YOU!