

A detailed botanical illustration background featuring various plants. In the top left, there are pink flowers with green leaves. In the top right, there are white flowers with green leaves. In the bottom left, there is a large yellow flower with a dark red center and green leaves. In the bottom right, there is a yellow lemon with green leaves and a small white flower. The central text is framed by a white border with a thin black outline.

# Women's Health



# 1. Polycystic Ovarian Syndrome

*Ghada AlAlSheikh, Nouf AlHamid*



# Objectives

- ◉ Identify the clinical picture of Polycystic Ovarian Syndrome.
- ◉ List the investigations required to diagnose Polycystic Ovarian Syndrome.
- ◉ Describe the management options to treat Polycystic Ovarian Syndrome.



# Case Scenario

Fatima, a 25-year-old morbidly obese girl, presented to you for the evaluation of irregular menses since menarche. The patient said that she has 1 period every 6 months.



# How would you approach this patient?

*History*

*Physical  
Examination*

*Investigation*

*Management*





# Sequence of Steps

**G**reet

**A**sk

**T**ell

**H**elp

**E**xplain

**R**eturn






# History

The patient said that when she has her period, she bleeds very heavily, passing large clots, and has a lot of cramping. She also complained about acne and excessive facial hair. Fatima mentioned that her mother also has a lot of facial hair.



A detailed botanical illustration featuring a variety of plants. On the left, there is a large yellow hibiscus flower with a dark red center, a pink hibiscus flower, and a green vine with heart-shaped leaves and small buds. At the bottom left, a branch with small green leaves and red flowers is visible. On the right, there are citrus branches with green leaves, white flowers, and small green fruits. The central text is set against a white background.


# Polycystic Ovarian Syndrome





# What is **PCOS**?

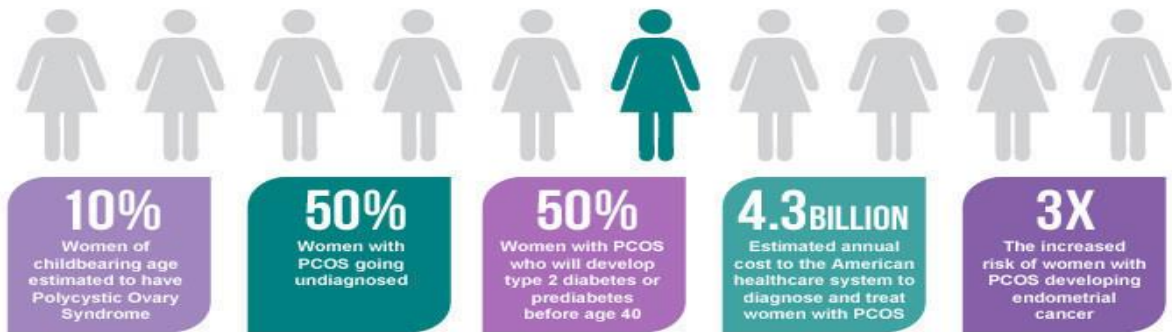
Polycystic ovary syndrome (PCOS) is the most common endocrinopathy that affects women. It is one of the most leading causes of infertility. 5% to 10% of women in their reproductive years are affected with PCOS.



# WHAT IS PCOS?

Polycystic Ovary Syndrome (PCOS) is a genetic, hormonal, metabolic and reproductive disorder that affects women. It is a leading cause of female infertility. PCOS can also lead to other serious conditions including severe anxiety and depression, obesity, endometrial cancer, type 2 diabetes and cardiovascular disease.

## PCOS AFFECTS 1-IN-10 WOMEN



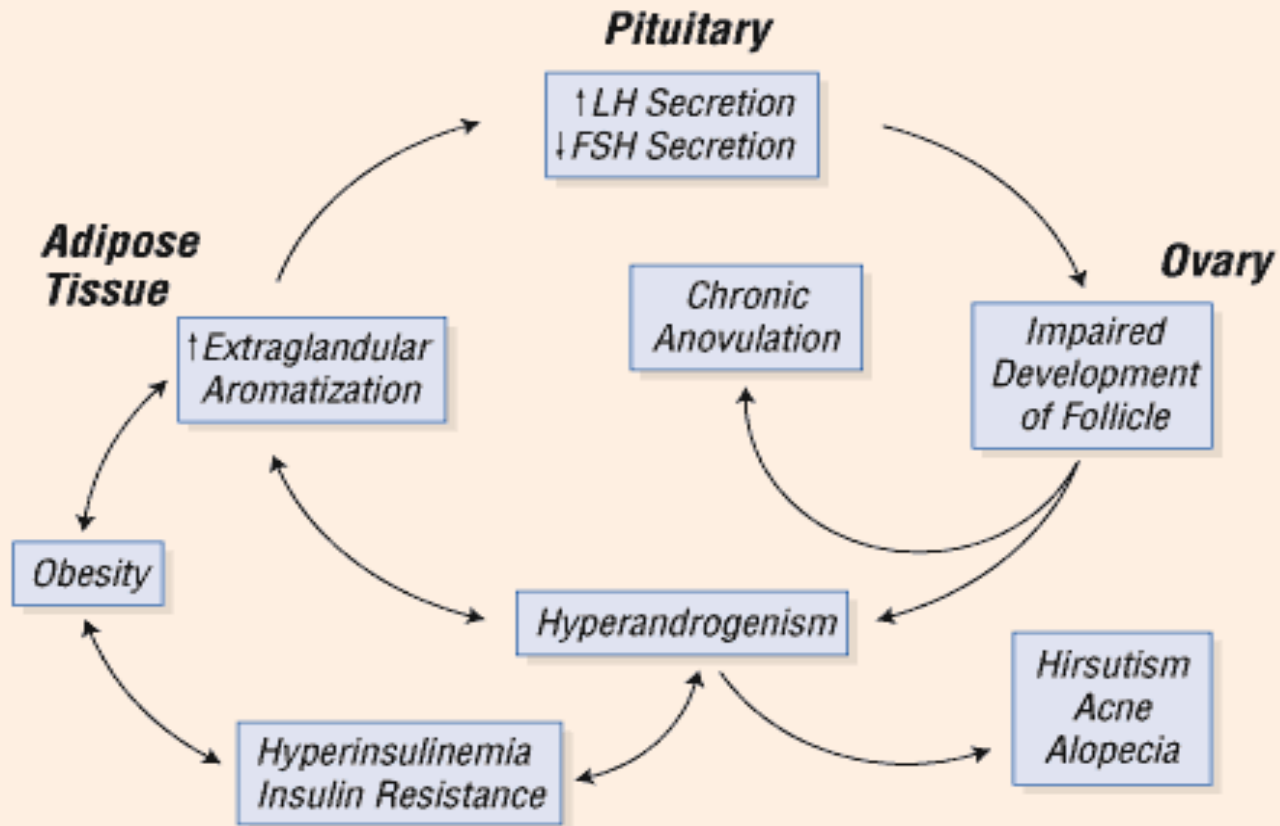
## COMMON SIGNS AND SYMPTOMS

irregular periods   excess facial and body hair   severe acne   small cysts in ovaries  
insulin resistance   anxiety and depression   infertility   weight gain   male pattern hair loss



**Figure 1**


# **Pathophysiology of Polycystic Ovary Syndrome**





Source: Rasgon NL (2001)



# How to diagnose **PCOS**?

- **PCOS is often diagnosed by the presence of two of the three following criteria:**
    1. Hyperandrogenism (80% of them have polycystic ovaries)
    2. Ovulatory dysfunction (70% of cases)
    3. Polycystic ovaries
  - **Because these findings may have multiple causes other than PCOS, you should take detailed history and physical examination.**
- 


- 
- **When evaluating this patient, testing for parameters known to be abnormal in women with PCOS, such as LH & FSH, they are unnecessary and expensive.**
  - **You should follow these principles:**
    1. Exclude other etiologies of **amenorrhea**, such as prolactin or thyroid abnormalities
    2. Exclude other causes of **hyperandrogenism**
    3. Exclude **glucose intolerance**, and detect insulin resistance and lipid abnormalities. (30% of women with PCO have impaired glucose tolerance)
- 



# Investigations



# Which investigations to do?

- **Standard oral glucose tolerance testing with insulin levels.** Peak levels of insulin that exceed  $100 \mu\text{U}$  per mL are suggestive of insulin resistance .
  - **Bioavailable (free) testosterone levels** may support the diagnosis.
  - **Assessments of total HDL, LDL and cholesterol levels** as well as **triglyceride levels** to help in planning and follow-up of recommended dietary modifications to reduce obesity and cardiovascular risk.
- 





- **Check thyroid hormone levels & prolactin**
- **Endometrial biopsy** is helpful to rule out endometrial hyperplasia in patients with prolonged amenorrhea (more than five months).



## Laboratory Investigation of PCOS


TEST	NORMAL VALUE	PURPOSE
$\beta$ -hCG	< 5 mIU per mL (< 5 IU per L)	Exclude pregnancy
TSH	0.5 to 4.5 $\mu$ U per mL (0.5 to 4.5 mU per L)	Exclude thyroid dysfunction
Prolactin	< 20 ng per mL (< 20 $\mu$ g per L)	Exclude hyperprolactinemia
Testosterone (total)	< 20 ng per dL (< 0.7 nmol per L)	Exclude androgen-secreting neoplasm
Testosterone (free)	20 to 30 years—0.06 to 2.57 pg per mL (0.20 to 8.90 pmol per L) 40 to 59 years—0.4 to 2.03 pg per mL (1.40 to 7.00 pmol per L)	Establish diagnosis or monitor therapy

Cholesterol (total)	150 to 200 mg per dL (1.5 to 2 g per L)	Monitor lifestyle changes
HDL cholesterol	35 to 85 mg per dL (0.9 to 2.2 mmol per L)	Monitor lifestyle changes
LDL cholesterol	80 to 130 mg per dL (2.1 to 3.4 mmol per L)	Monitor lifestyle changes
Pelvic ultrasonography		Monitor lifestyle changes
Endometrial biopsy	Negative for hyperplasia/malignancy	Exclude malignancy or hyperplasia

DHEAS	600 to 3,400 ng per mL (1.6 to 9.2 $\mu$ mol per L)	Exclude androgen-secreting neoplasm
Androstenedione	0.4 to 2.7 ng per mL (1.4 to 9.4 nmol per L)	Establish diagnosis



# How to manage this patient?

- The primary goal of all forms of therapy is to **suppress insulin-facilitated, LH-driven androgen production.**
  - The choice of the therapy depends on what concerns the patient the most.
  - After the primary concern is identified, the patient can decide if **contraception or fertility** is preferred. Lifestyle modification is a central measure in either case.
- 

# Management of Polycystic Ovary Syndrome

Women who wish to achieve pregnancy/ovulation induction → Clomiphene citrate or gonadotropins

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## Treatment

Hirsutism, acne → Depilatory/electrolysis

Obesity → Lifestyle modification

Insulin resistance, oligomenorrhea → Metformin (Glucophage)

Women who need contraception → Combination oral contraceptive pills

---

## Treatment

Hirsutism, acne → Depilatory/electrolysis  
→ Spironolactone (Aldactone)

Obesity → Lifestyle modification

Insulin resistance, oligomenorrhea → Metformin (Glucophage)

# Oral Contraceptives

- OCPs are the most efficient means of androgen suppression (ovarian as well as adrenal), and nearly any combination OCP is effective in treating PCOS.
- **Estrogen component** → reduces androgen, can reduce hirsutism and acne too.
- **Progestin component** → provides competitive antagonism to androgen at its receptors, reducing the action of testosterone at the target organ.



# Insulin Reduction

- **Metformin (Glucophage)**
- Use of this agent is associated with reductions in serum levels of bioavailable androgen, LH, and atherogenic lipids.






# Ovulation Induction Agent

**Clomiphene** is used to cause ovulation in women with certain medical conditions (such as polycystic ovary syndrome) that prevent naturally occurring ovulation.





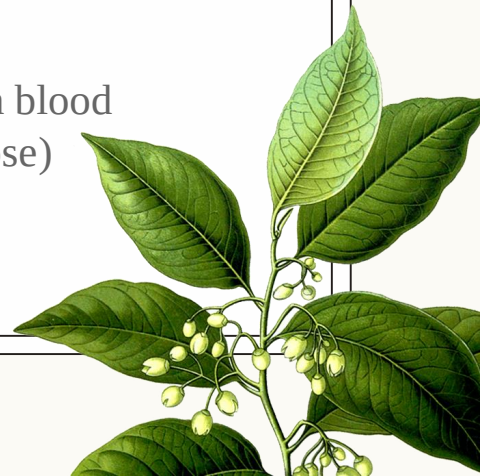
# Lifestyle Modification

- **The most successful therapy is WEIGHT LOSS.** It helps the improvement in cardiovascular risks, insulin sensitivity, and menstrual pattern.
  - **Gentle exercise**
  - **Intake of dietary carbohydrates with a low glycemic index.**
  - **Reduced intake of fats and simple sugars.**
- 






# What are the complications of **PCOS**?

- **Weight gain or obesity**
  - **Type 2 diabetes**
  - **Cardiovascular disease**
  - **Metabolic syndrome** (generally having at least two of high blood pressure, high cholesterol, obesity, high fasting blood glucose)
  - **Endometrial cancer**
- 




# Endometrial cancer



**Endometrial** cancer is what we want to avoid as a complication. Having the condition PCOS does not cause endometrial cancer.

**Chronic** anovulation, leads to a lack of menstruation or shedding of endometrium which increase the risk of abnormal cells, that can develop into cancerous cells.





## 2. Contraception

*Tala Qadoumi, Wafa AlQarni*




# Oral Contraceptives



*Combined  
Oral  
Contraceptive*

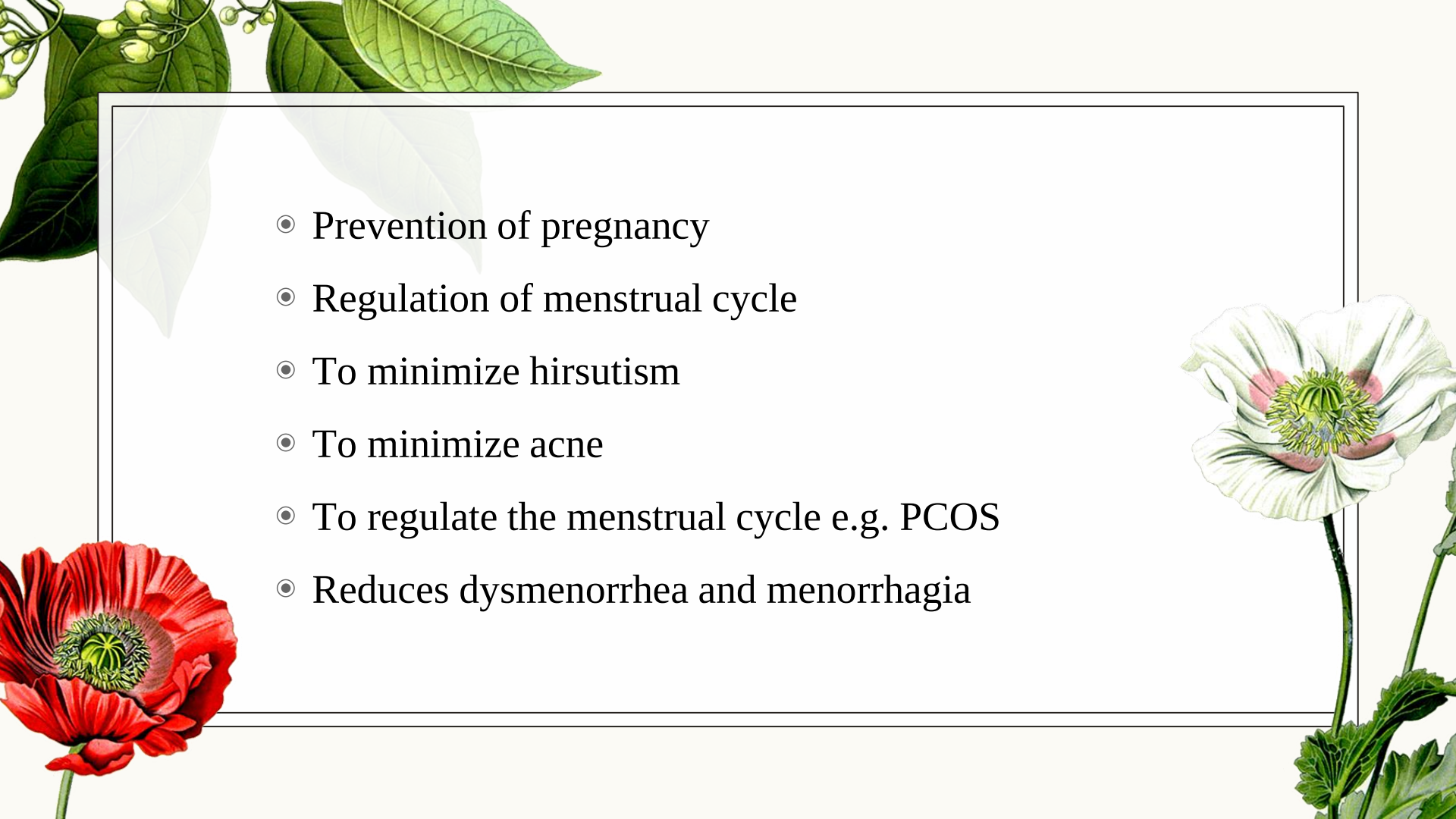
*2 Types*

*Progestin only  
pills (mini pill)*



A detailed botanical illustration featuring a variety of plants and flowers. On the left, there is a large yellow hibiscus flower with a dark red center, a pink morning glory flower, and a green leafy vine. At the top right, there are green leaves and small red flowers. On the right side, there are white flowers with pink centers and green foliage. At the bottom right, there are green leaves and small white flowers. The central text is in a purple serif font.

**Combined  
birth control  
pills**

- 
- ◉ Prevention of pregnancy
  - ◉ Regulation of menstrual cycle
  - ◉ To minimize hirsutism
  - ◉ To minimize acne
  - ◉ To regulate the menstrual cycle e.g. PCOS
  - ◉ Reduces dysmenorrhea and menorrhagia



## Mechanism of action


- ◉ Stop ovulation by inhibition pituitary FSH & LH secretion.
- ◉ Cervical mucus becomes scanty and viscous.
- ◉ Thins uterine lining.
- ◉ Decreases tubal movement.

## Efficacy

- ◉ With perfect use, the combined pill is over **99%** effective in preventing pregnancy.
- ◉ With typical use, it is **92%** effective in preventing pregnancy




## Method

- ◉ Take 21 hormone pills and then seven inactive non-hormone pills.
  - ◉ Preferably on the same time every day.
  - ◉ Antibiotics like rifampicin can reduce efficacy.
- 



# Side Effects

- Weight gain
  - Carbohydrate metabolism
  - Lipid metabolism
  - Increased risk of thromboembolism
  - Myocardial infarction and hemorrhagic stroke
  - Breast cancer
  - Cervical cancer
- 





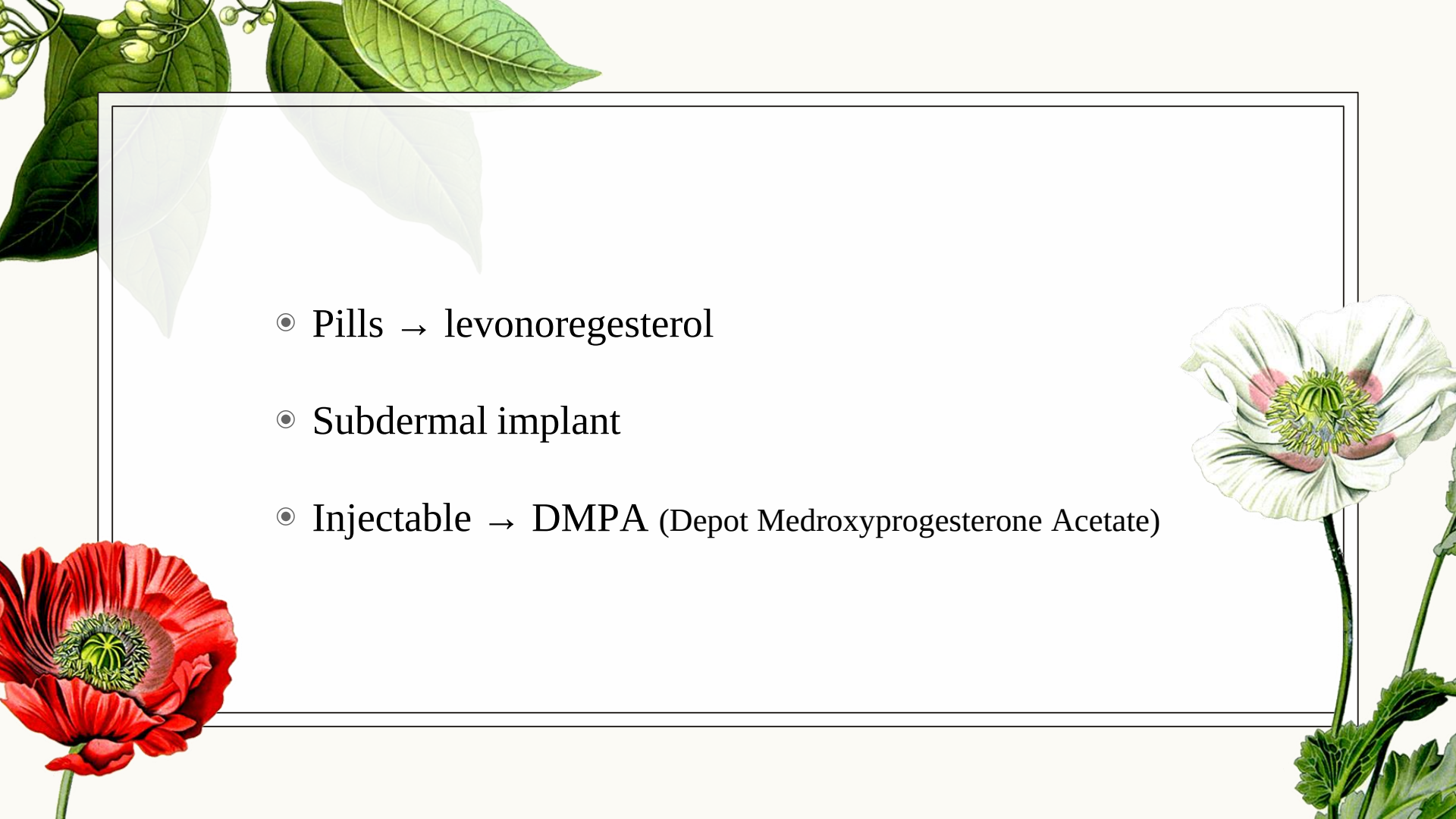
# Contraindications

## Women above the age of 35 with

- ◉ Smoking
- ◉ Hypertension
- ◉ Migraine
- ◉ Arterial or venous thrombosis
- ◉ Ischemic heart diseases
- ◉ Cerebrovascular diseases
- ◉ Diseases of the liver/liver tumors
- ◉ Pregnancy
- ◉ Undiagnosed vaginal bleeding
- ◉ History of breast cancer
- ◉ Migraine with aura


A detailed botanical illustration featuring a variety of plants. On the left, there is a large yellow hibiscus flower with a dark red center, a pink morning glory flower, and a green leafy vine. On the right, there are white flowers with pink centers, green leaves, and small red flowers. The central text is in a purple serif font.

# Progestin only pills

- 
- ◉ Pills → levonoregesterol
  - ◉ Subdermal implant
  - ◉ Injectable → DMPA (Depot Medroxyprogesterone Acetate)



# Mechanism of Action

- Suppression FSH & LH Secretion and inhibits ovulation.
  - Cervical mucus modification, which inhibits sperms penetration.
- 



## Advantages

- ◉ Minimal impact on lipid profile and hypertension, so can be used in cardiovascular disease.
- ◉ Can be used by lactating mother.

## Disadvantages

- ◉ Menstrual disturbances with injection.
- ◉ Irregular spotting or bleeding with pills.
- ◉ May develop functional ovarian cyst due to luteinization of unruptured ovarian follicle.
- ◉ Protect against intrauterine pregnancy but not ectopic because it modifies tubal function.
- ◉ Weight gain



# Emergency contraception

Should be taken ideally within 72 hours of unprotected intercourse

## **Plan B**

2 pills of 0.75 mg of levonoregesterol

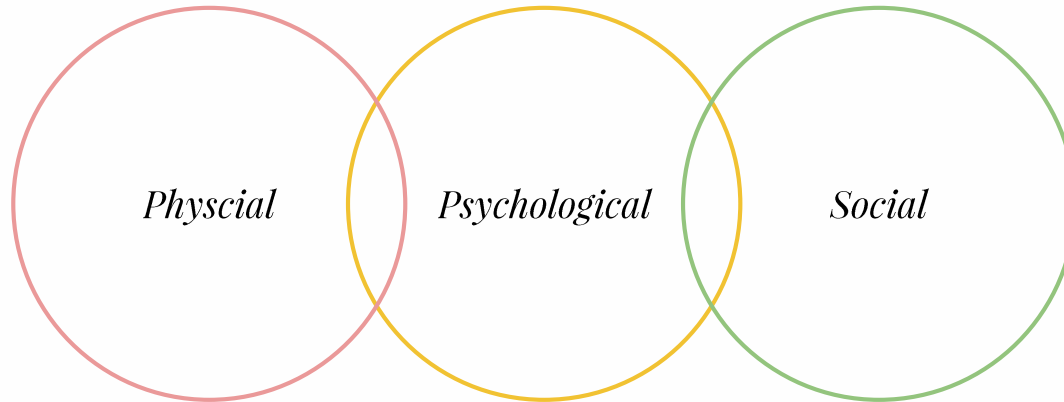
## **Plan B one step**

1 pill of 1.5 mg of levonoregesterol






# Using triaxial model in counseling skills





# Factors for consideration

- **Age**
  - **Cost**
  - **Availability**
  - **Menstrual history**
  - **Partner participation**
  - **Social history:** smoking
  - **Medical history:** bleeding pattern, migraine, STIs.
- 





# 1- Prevention of a fertilized egg from implanting in the uterus: (IUD)

IUDs are long acting reversible contraceptives, IUD located in the fundal portion of endometrium the strings are outside external os of cervix.


**They are 99% effective.**

## ***Types of IUD:***

- Copper IUD
- Progesterone IUD



# IUD with progesterone levonorgestrel

- Works by **thickening the cervical mucus** to prevent sperm from entering the uterus.
  - IUDs advises that insertion occur during the **first seven days of menses**, and a waiting period of **six weeks postpartum**.
  - Last for **3-5 years**.
  - **Side effects:** headaches, nausea, hair loss, breast tenderness, depression, decreased libido, ovarian cysts, oligomenorrhea, and amenorrhea
- 




# Contraindications

- ◉ Pregnancy or suspicion of pregnancy
- ◉ Abnormal uterine anatomy
- ◉ Presence or history of PID
- ◉ History of ectopic pregnancy
- ◉ Endometriosis
- ◉ Immunocompromised e.g., leukemia, HIV.
- ◉ History or suspicion of breast, uterus, or cervical cancer





# Copper IUD

- Works by **creating unfavorable environments for sperm** to fertilized an egg.
  - Insertion **immediately after vaginal or cesarean delivery** may be considered.
  - Lasts for **10 years**.
  - **The main side effect:** increased menstrual bleeding, which may continue even with long-term use.
- 




# Contraindications

- ◉ Pregnancy
  - ◉ Abnormal uterine anatomy
  - ◉ Unexplained vaginal bleeding
  - ◉ Ongoing pelvic infection
- 
- 



# What are the complications of **IUDs**?

- The most common complication is **IUD expulsion**.
  - So patients should be encouraged to feel for their IUD strings on a regular basis at home to ensure correct placement.
- 



# Advantages of **copper IUD** over **levonorgestrel**

**Copper IUD can be used with:**

- ◉ History of an ectopic pregnancy
- ◉ History of migraines
- ◉ History of PID
- ◉ Endometriosis
- ◉ Smoking



# Myth or Truth

**Nulliparous women cannot use IUDs?**

**Myth.** The use of IUDs in nulliparous is acceptable according to the AFP.



**The use of antibiotic prophylaxes is not beneficial before the insertion of IUDs?**

**Truth.**





## 2- Blocking the sperm and egg from uniting by mechanical, chemical or physical barriers

### *Male/female condoms*

- **Advantages:**
  - STI protection **98-99%**
  - Low cost.
  - Only use when needed.
- **Disadvantages**
  - Less effective in preventing pregnancy **71%**

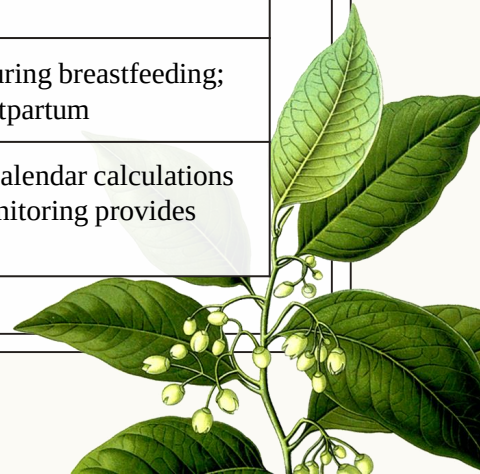


## 3- Natural Family Planning

**The advantages include** the lack of medical adverse effects, the methods of family planning involve calendar calculation, basal body temperature charting, cervical mucus monitoring, the symptothermal method, and lactational amenorrhea.



<b>Method</b>	<b>Description</b>
<b>Basal Body Temperature Charting</b>	Identifies the luteal phase of the menstrual cycle by postovulatory increase in basal body temperature; all other days are considered fertile
<b>Calendar Calculation</b>	Predicts the fertile period by menstrual dating
<b>Cervical Mucus Monitoring</b>	Identifies beginning and end of the fertile period from cervical secretions
<b>Lactational Amenorrhea</b>	Maximizes suppression of ovulation during breastfeeding; effectiveness limited to six months postpartum
<b>Symptothermal Method</b>	Based on cervical mucus monitoring; calendar calculations or basal body temperature charting monitoring provides redundancy





*According to AFP, perfect use of these methods is reported to be at least 95% effective in preventing pregnancy, but the effectiveness of typical use is 76%.*

”



# 3. Menopause

*Noura Ahmed, Lamees AlMezaini*



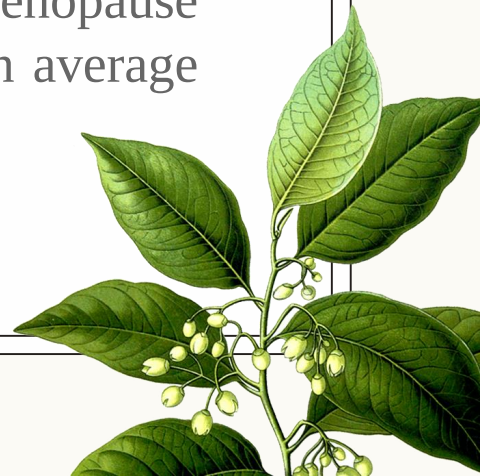
# Climacteric

The *climacteric* refers to the phase in a woman's reproductive life when a gradual decline in ovarian function results in decreased sex steroid production with its sequelae.



# What is **Menopause**?

Menopause literally refers to the last menstrual period. The exact time of menopause is usually determined in retrospect; that is, **1 year without menses**. In most women, menopause occurs between the ages of **50 and 55 years**, with an average age of 51.5 years.



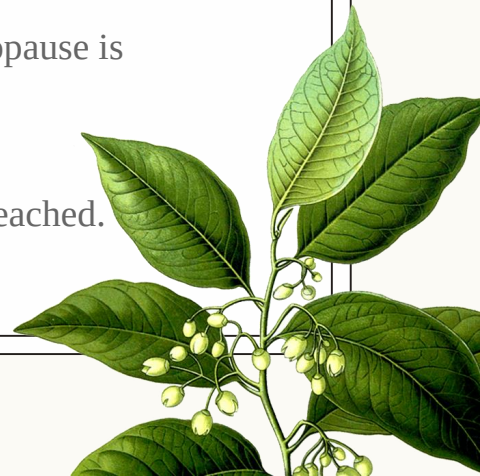


# Hormonal Changes






# Perimenopause

- For some years before menopause, the ovary begins to show signs of impending failure.
  - **Anovulation** becomes common, with resulting **unopposed estrogen production** and irregular menstrual cycles.
  - In some women, **hot flushes** and **night sweats** begin well before menopause is reached.
  - These perimenopausal symptoms may last **3 to 5 years** before there is complete loss of menses and postmenopausal levels of hormones are reached.
- 



# Post menopause

- Following menopause, **estradiol and progesterone** values decline which prevents the transformation and sloughing of the endometrium thus resulting in **amenorrhea**.
  - Even though postmenopausal women **produce less androgens**, they tend to be **more sensitive** to them because of the lost opposition of estrogen.
  - This sometimes results in unwelcome changes such as **excessive facial hair growth** and **decreased breast size**.
- 



## Perimenopause

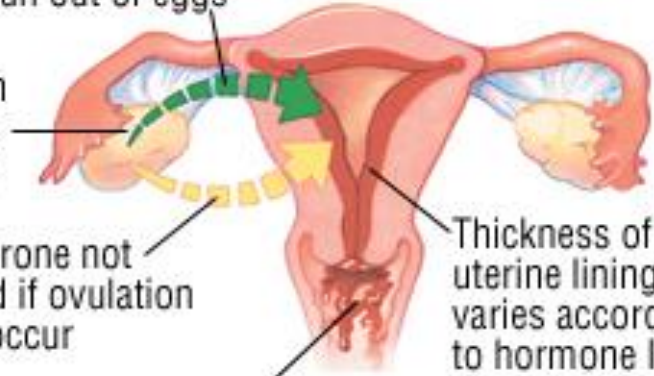
Estrogen decreases as ovaries run out of eggs

Ovulation becomes irregular

Progesterone not produced if ovulation doesn't occur

Periods become irregular

Thickness of uterine lining varies according to hormone level



## Postmenopause

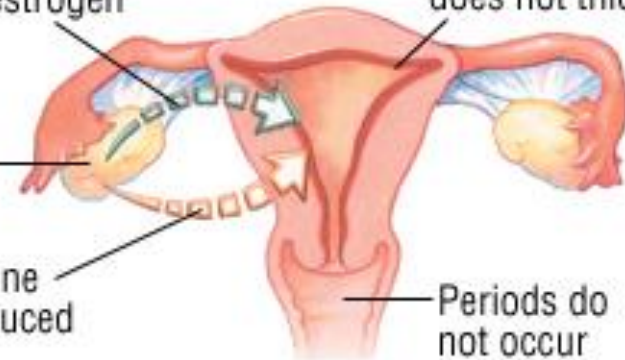
Very little estrogen released

Ovulation does not occur

Progesterone is not produced

Uterine lining does not thicken

Periods do not occur





# Clinical Manifestations



**HEADACHES AND HOT FLASHES**

**HAIR BECOMES THINNER AND LOSES LUSTER**

**TEETH LOOSEN AND GUMS RECEDE**

**BREASTS DROOP AND FLATTEN**

**RISK OF CARDIOVASCULAR DISEASE**

**NIPPLES BECOME SMALLER AND FLATTEN**

**BACKACHES**

**SKIN AND MUCOUS MEMBRANES BECOME DRIER, SKIN DEVELOPS A ROUGHER TEXTURE**

**BODY AND PUBIC HAIR BECOMES THICKER AND DARKER**

**ABDOMEN LOSES SOME MUSCLE TONE**

**BONES LOSE MASS AND BECOME MORE FRAGILE**

**VAGINAL DRYNESS, ITCHING AND SHRINKING**

**STRESS OR URGE INCONTINENCE**





# Hot flashes



## Incidence

About **85%** of women experience hot flashes and about half of these women are seriously disturbed by them.

## Frequency

Flashes may occur as frequently as every **30 to 40 minutes**, but more often they occur about **8 to 15 times daily**.

## Associated Symptoms

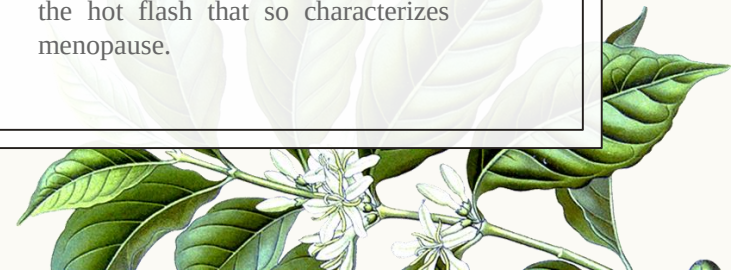
There may be associated **sweating, dizziness, and palpitations**.

## Severity

Often, the hot flash may **awaken the woman at night** and impair the quality of her sleep, as a result may increased fatigue and irritability.


## Pathophysiology

When levels of estrogen are low, the hypothalamus is freed from negative feedback and secretes increasing amounts of GnRH into the pituitary portal circulation. This, in turn, stimulates an increased release of LH and FSH into the circulation. Which leads to sudden increase in skin blood flow and perspiration—the hot flash that so characterizes menopause.






# How to diagnose **Menopause?**

- Menopause can be **self-diagnosed** in most cases.
  - Doctor should ask about the **last menstrual period** and how often the patient experiences the symptoms (**hot flashes, spotting, mood swings, trouble sleeping, or sexual problems**).
  - Doctor can swab the vagina to **test its pH levels**, which can also help **confirm menopause**. Vaginal pH is about **4.5** during your reproductive years. During menopause, vaginal pH rises to a balance of **6**.
- 



# Which investigations to do?

**Tests to rule out other conditions, such as ovarian failure or a thyroid condition. These tests may include:**

- Blood test to check your levels of FSH and estrogen
  - Thyroid function test
  - Lipid profile
  - Tests for liver and kidney function
- 





# Screening



## Breast cancer


The USPSTF recommends screening for breast cancer every one to two years, with mammography alone or mammography and annual clinical breast examination, for women 40 years and older.

## Cervical cancer

The USPSTF recommends routine screening with Pap testing for all women who have a cervix and are or have been sexually active. Screening can be discontinued after 65 years of age if the patient has had regular normal Pap smears.



## Colorectal cancer

- ◉ Early detection of colorectal cancer improves outcomes.
  - ◉ The **five-year survival rate** is approximately **91%** with localized disease, but drops to **6%** among persons presenting with distant metastasis.
  - ◉ The USPSTF and the American Cancer Society recommend screening for colorectal cancer for all persons 50 years and older.
  - ◉ **The screening options include the following:**
    - Fecal occult blood testing every year
    - Flexible sigmoidoscopy every five years
    - Fecal occult blood testing every year plus flexible sigmoidoscopy every five years
    - Double contrast barium enema every five years
    - Colonoscopy every 10 years
- 




# How to manage **Menopause?**

## *Combined Estrogen and Progestin*





- Many health outcomes potentially associated with the use of hormone therapy in postmenopausal women have been examined.

## *Estrogen Alone*

- The use of estrogen without progestin has generally been restricted to women who have had a hysterectomy, because unopposed estrogen use increases the risk of endometrial cancer in women with an intact uterus
- 



# Prevention




*Menopause can not be prevented.  
We can manage many common  
symptoms and prevent possible  
complications.*

”




# Eating a healthful diet

- Eating a **well-balanced diet** and maintaining a **healthy weight** is key to lowering the risk of heart disease, diabetes, and other chronic health conditions.
  - The National Institutes of Health (NIH) advises adults between the ages of 19 and 70 to get **600** international units (IUs) of **vitamin D** per day.
  - The NIH also encourages adult women up to the **age of 50** to get **1,000 mg of calcium per day** and women between the ages of 51 and 70 to get 1,200 mg of calcium daily.
- 




# Exercising regularly

- Getting regular physical activity is important at any age, but it may offer extra perks during menopause. It can help in relieving hot flashes, regulating mood, and managing weight.
- 




# Getting enough sleep

- The CDC encourages adults to get **7 to 8 hours** of sleep each night. Exercising during the day, avoiding caffeine in the evening, and following a regular sleep schedule may help in falling and staying asleep more easily.
  - **Practicing relaxation strategies**, such as deep breathing, progressive muscle relaxation, or meditation, may also help.
- 






# Maintaining bone strength

- **DEXA scan**
  - Eat foods that are rich in **calcium and vitamin D**.
  - Practice strength training exercises, such as **weight lifting** or **yoga**.
  - Learn to exercise in safe ways to help prevent bone fractures and other injuries.
  - Take steps to **prevent falls**, for example, by installing hand rails on stairways.
- 



# Monitoring blood pressure

- **Measure blood pressure regularly.**
  - If already diagnosed with hypertension, **follow prescribed treatments.**
- 



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**Thanks!**  
*Any questions?*

