PCOS: Understanding and Managing this Complex Condition

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Presenter

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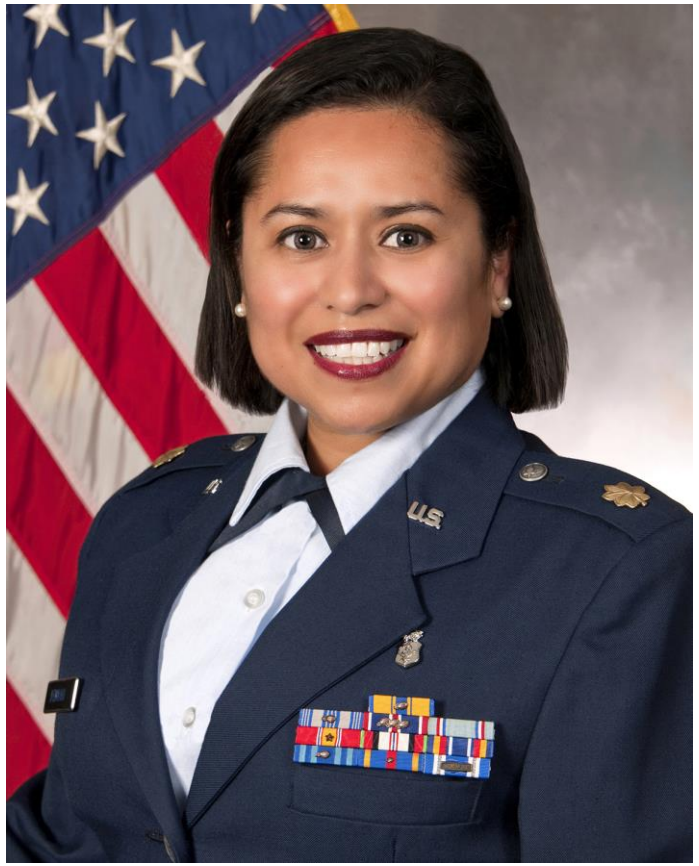

Major Karla M. Dennard is the Uniformed Services University of the Health Sciences, Graduate School of Nursing, Clinical Assistant Professor assigned to the 59th Training Squadron at Joint-Base San Antonio, Lackland AFB, Texas. As the Doctor of Nursing Practice Program Phase 2 Site Director, Major Dennard is directly responsible for the planning, implementation and evaluation of the Family and Women's Health Nurse Practitioner clinical residency. In this role, she develops educational and administrative tools for the adherence and sustainment of accreditation by the Commission on Collegiate Nursing Education and the National Organization of Nurse Practitioner Faculties. Additionally, Major Dennard maintains her own medical competencies and clinical currency by providing key support to the Family Health and Women's Health Clinics.

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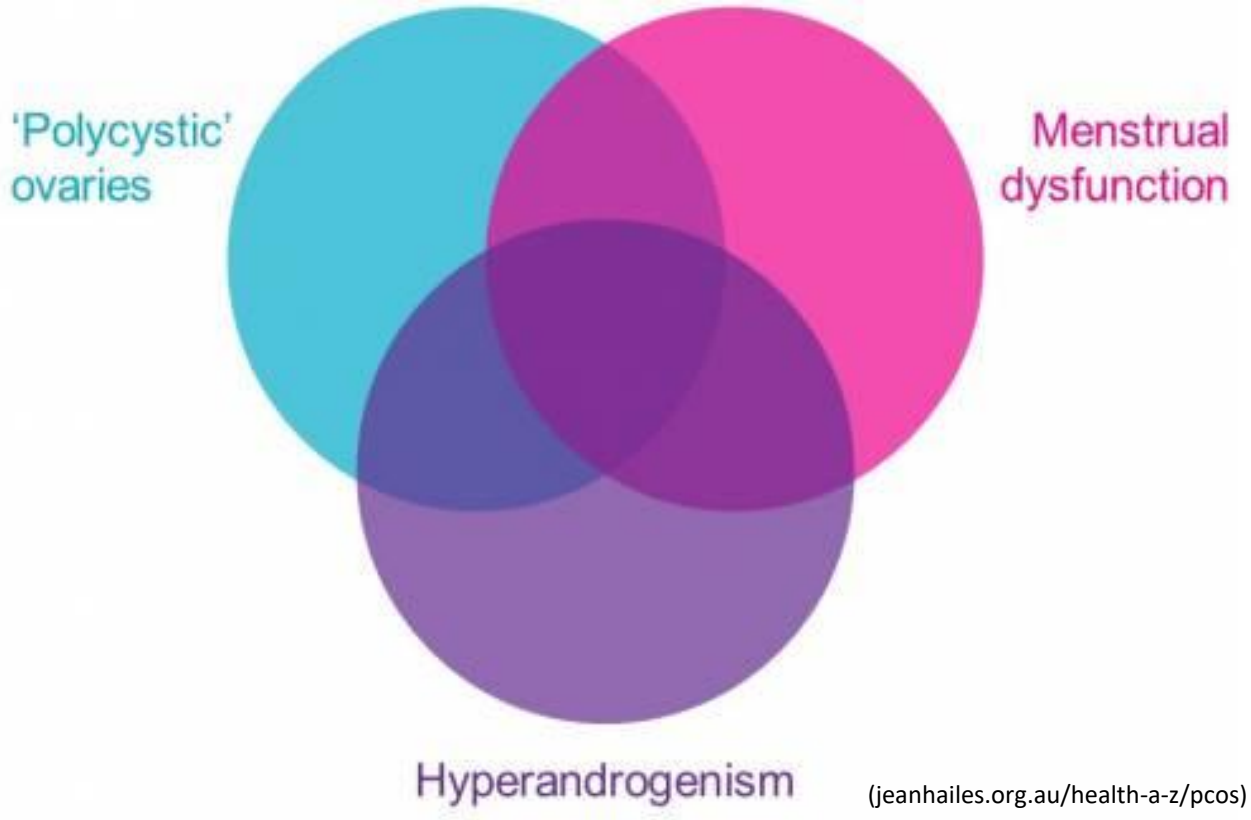
Learning Objectives

At the conclusion of this activity, participants will be able to:

- Define Polycystic Ovarian Syndrome (PCOS)
- Describe the recommended Diagnosing Criteria
- Identify the clinical and biochemical features/markers of PCOS
- Evaluate a patient that presents with PCOS features
- Develop a plan of care for a woman newly diagnosed with PCOS
- Describe pharmaceutical treatment of symptoms of PCOS
- Explain the importance of early recognition/prevention of PCOS
- Describe the treatment goals for women with PCOS

Polycystic Ovarian Syndrome

- Syndrome of Ovarian Dysfunction
  - Hyperandrogenism, ovulatory dysfunction, polycystic ovaries
- Stein & Leventhal in 1935
  - Known as Stein-Leventhal Syndrome until ~1960s
- Heritable disorder
- Most common androgen excess disorder in reproductive-aged women
- Adversely affects endocrine, metabolic and cardiovascular health

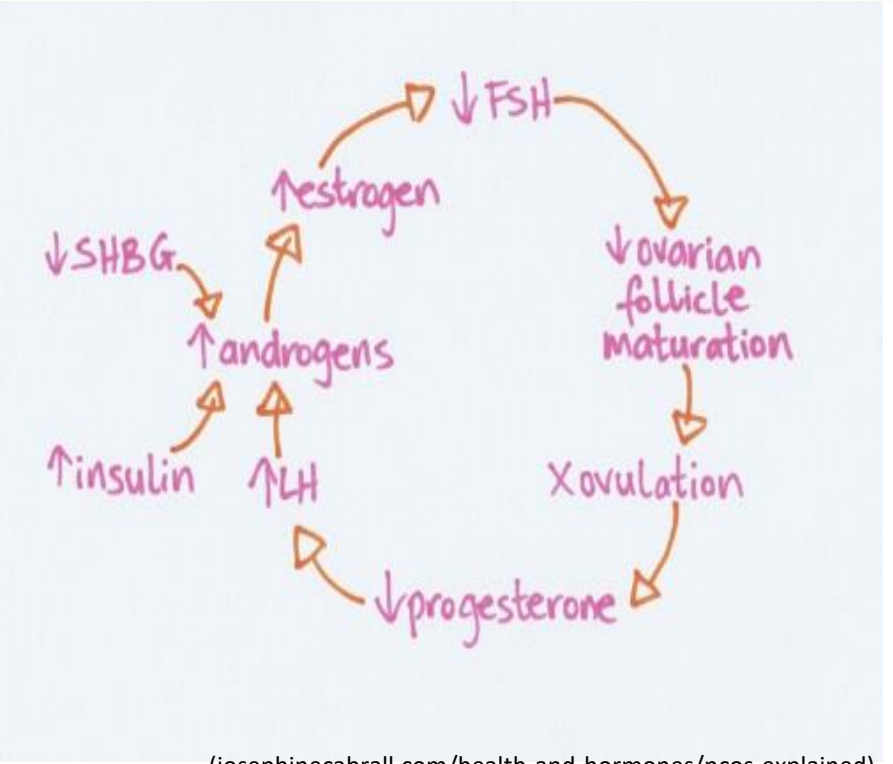


(jeanhailes.org.au/health-a-z/pcos)

(Setji & Brown, 2014; Marshall & Dunaif, 2012; Sirmans & Pate, 2014)

Etiology and Pathophysiology

- Uncertain etiology – appears to be genetic
- High levels of insulin in blood/ obesity
  - Ovaries produce excess testosterone
    - Reduced levels of sex-hormone binding globulin
    - Resulting in increased free testosterone
    - Increased adipose tissue causes
      - increased androgens (hirsutism/virilization)
      - Increased estrogens (inhibits FSH negative feedback loop)
- Multiple ovarian cysts – immature follicles
  - Appear as a “String of Pearls” on US

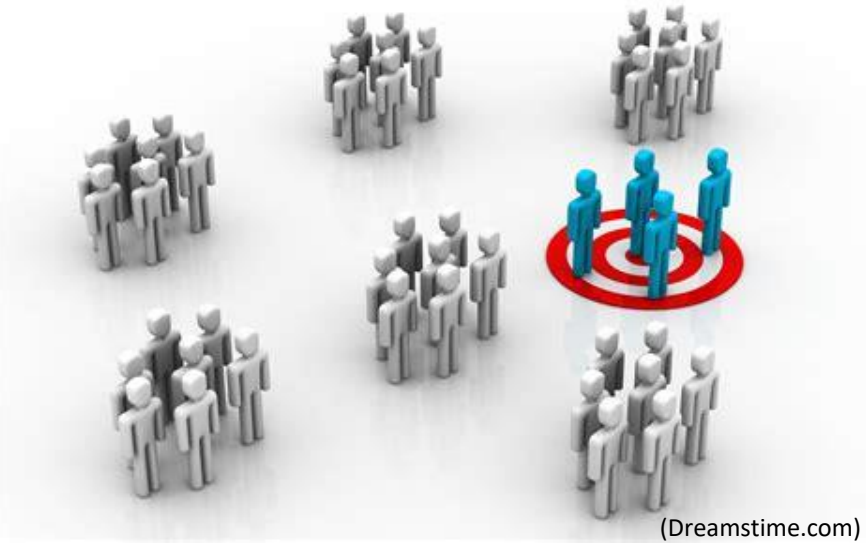


(josephinecabrall.com/health-and-hormones/pcos-explained)

(Setji & Brown, 2014; Kabel, 2016)

Epidemiology

- Changes in diagnostic criteria affect prevalence (6% to 18%)
- 10-15% of US women have PCOS
- 80% of women presenting with androgen excess have PCOS
- 70% of women will have oligomenorrhea/ amenorrhea or prolonged erratic menses
- Hirsutism occurs on 70% of women with PCOS



(Dreamstime.com)

"Medically Ready Force…Ready Medical Force"

(Sirmans & Pate, 2014; Wolf et al., 2018)

Epidemiology

- 40% present with Acne (usually cystic)
- Insulin Resistance present in 60-70% of women w/PCOS (independent of obesity)
- 40% experience infertility issues
- Metabolic Syndrome more common in women with PCOS
- 35% of women with PCOS suffer from Depression

(Dreamstime.com)

(Sirmans & Pate, 2014; Wolf et al., 2018)

Predisposing Factors

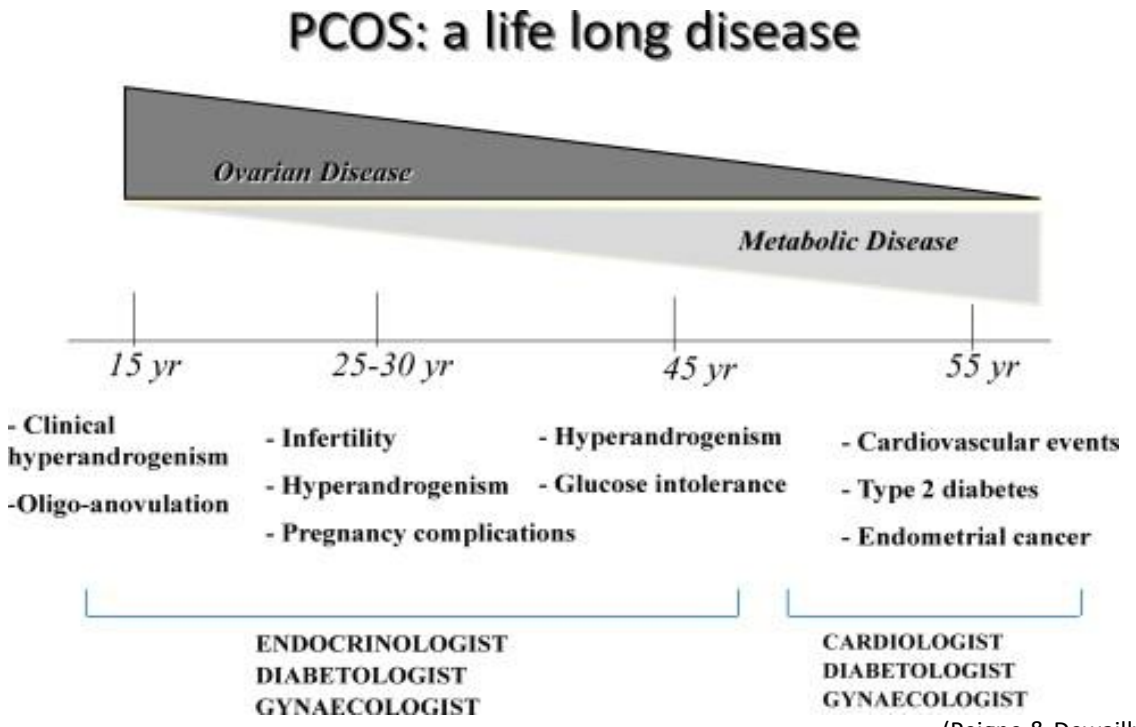
- Family History of PCOS
- Premature Adrenarche (prior to 8yrs)
- GDM or Impaired Glucose in Pregnancy
- Onset of DM before Menarche
- Anti-Epileptic Drugs (Valproate)

(depkewellness.com)

(Kabel, 2016)

Associated Comorbidities

- Obesity
- Insulin Resistance/ Diabetes
- Dyslipidemia
- Metabolic Syndrome
- Endometrial Cancer
- Infertility
- Depression/ Anxiety

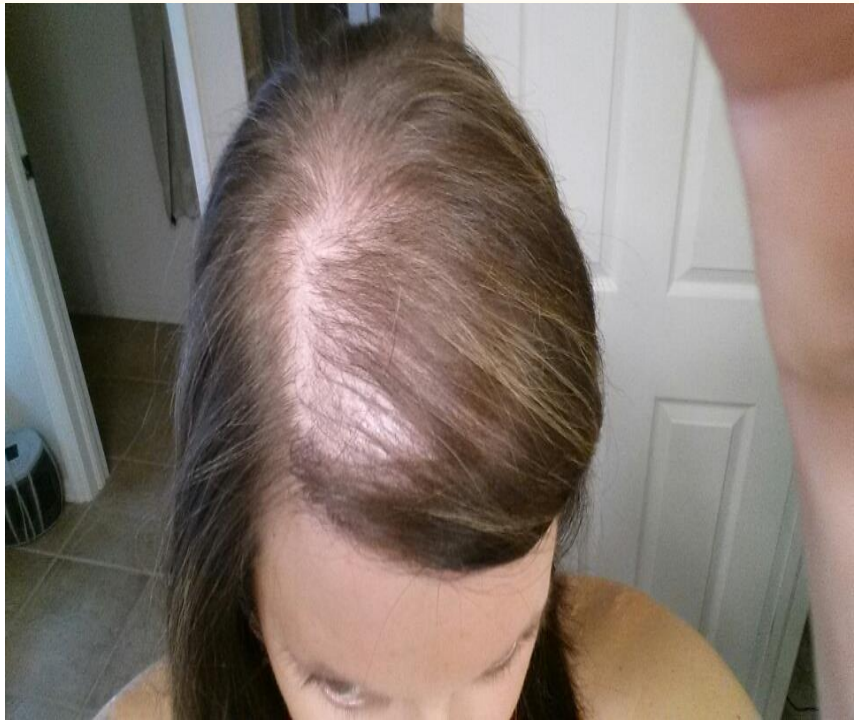


(Peigne & Dewailly, 2014)

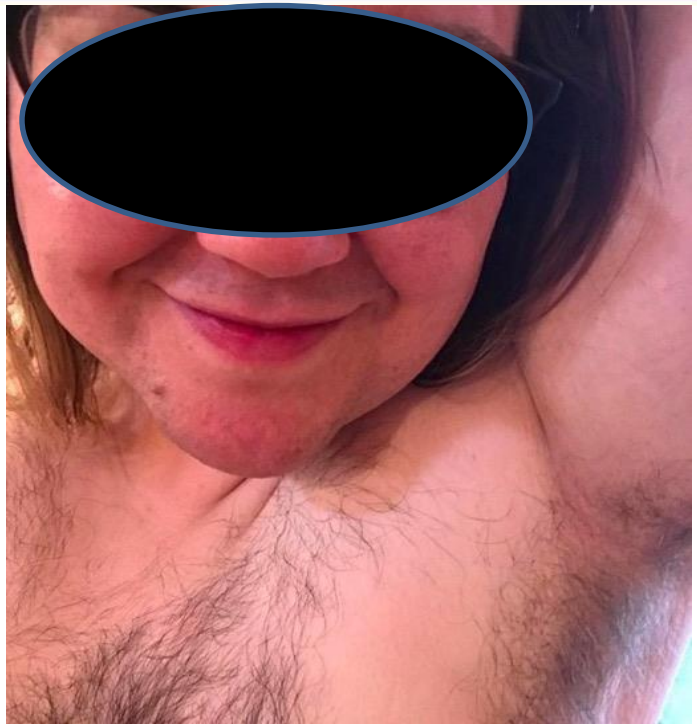
(Peigne & Dewailly, 2014 Setji & Brown, 2014)

Clinical Manifestations

- Oligo/Amenorrhea
- Hirsutism
- Acne
- Male-pattern Hair Loss
- Central Obesity
- Clitoromegaly
- Deepening of Voice



(rebelcircus.com)



(yahoo.com/lifestyle/woman-excess-body-hair-pcos)

(Setji & Brown, 2014; Sirmans & Pate, 2014; Kabel, 2016)

Diagnosing Criteria

NIH/NICHD

- All of the following:
  - Clinical and/or biochemical hyperandrogenism
  - Ovarian Dysfunctions and/or Polycystic Ovaries

ESHRE/ASRM (ROTTERDAM)

- Two of the following:
  - Clinical and/or Biochemical hyperandrogenism
  - Oligo-ovulation or anovulation
  - Polycystic Ovaries

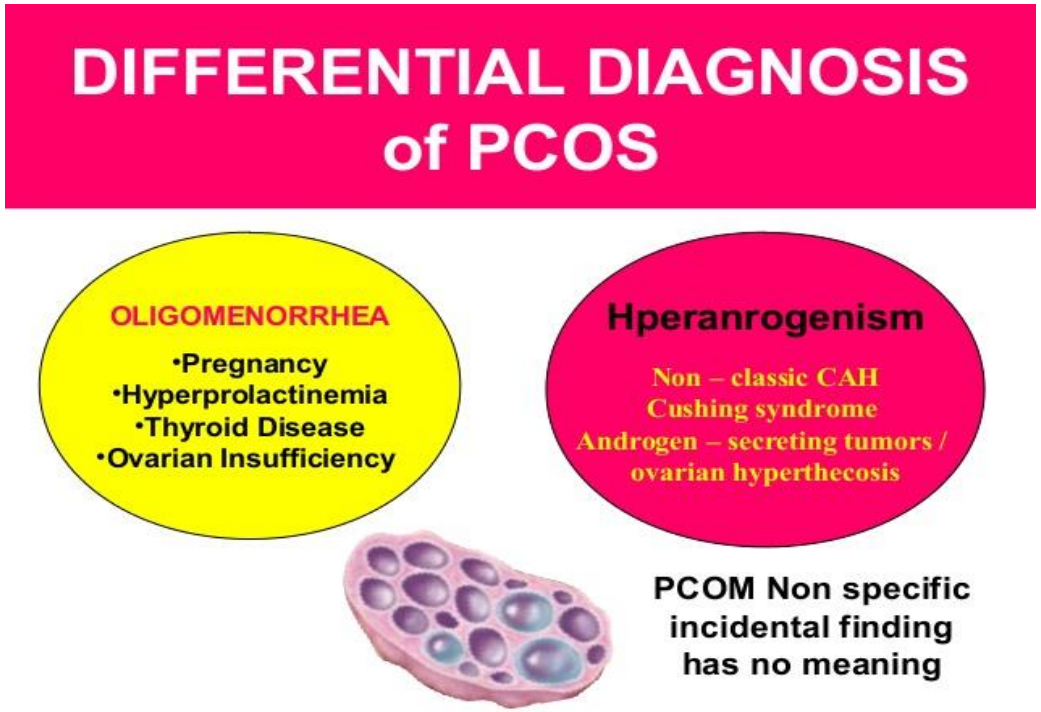
PCOS SOCIETY

- All of the following:
  - Clinical and/or Biochemical Hyperandrogenism
  - Ovarian Dysfunction and/or Polycystic Ovaries

(Sirmans & Pate, 2014; Teede et al., 2018)

Differential Diagnoses

- Nonclassical Congenital Adrenal Hyperandrogenism (NCCAH)
- Cushing's Syndrome
- Ovarian Hyperthecosis
- Prolactin Secreting Tumors
- Ovarian Insufficiency
- Thyroid Disease
- Pregnancy



(Slideshare.net/lifecareCentre)

(Sirmans & Pate, 2014)

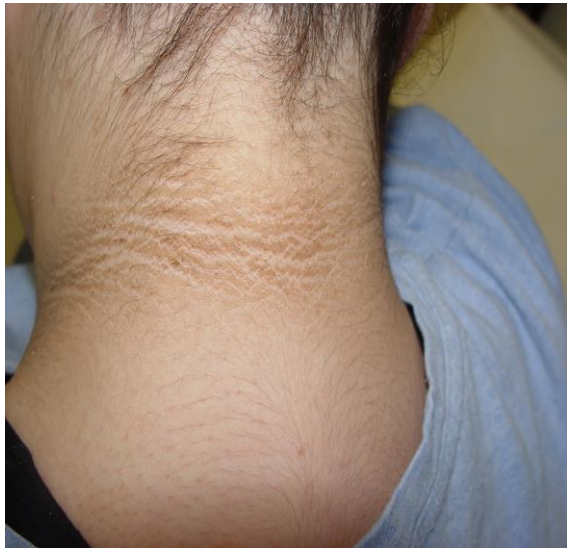
Evaluation

Patient History

- Menstrual pattern
- Obesity
  - Onset, progression/problems
- Hirsutism
- Lifestyle Patterns (especially of Obese)
  - Diet/ Exercise
- Fertility
- Family History
  - Infertility
  - Menstrual Disorders
  - Hursutism in relatives

Physical Examination

- BMI – Body Habitus
- Blood Pressure
- Presence of Acne
- Male Pattern Baldness
- Acanthosis Nigricans
- Clitoromegaly
- Deepening of Voice
- Hirsutism



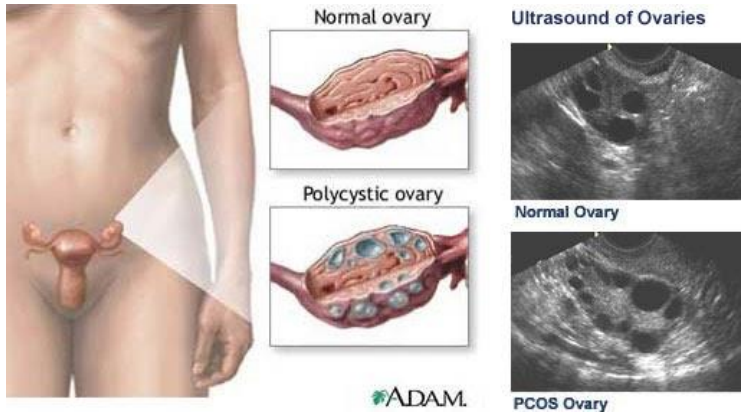
(Mayoclinic.org)

(Kabel, 2016)

Evaluation

Ultrasonography

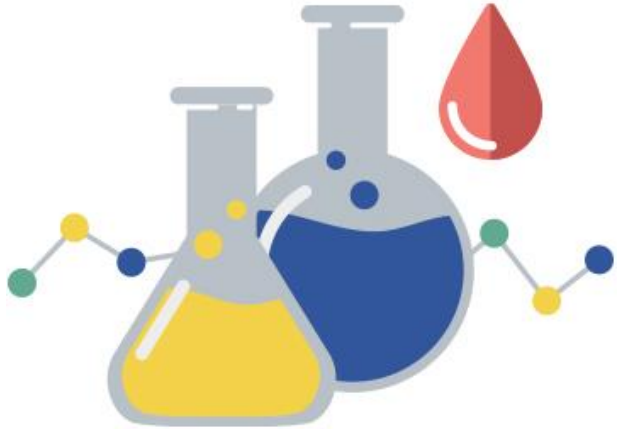
- Small immature ovarian follicles
  - ❑ 12+ small follicles (between 2mm-9mm)
  - ❑ "String of Pearls"
  - ❑ Increased ovarian size (1.5 to 3 times)



(girlgoneprimal.blogspot.com)

Laboratory Tests

- HCG
- Serum Total Testosterone
- DHEAS
- Androstedione or Serum 17-Hydroxyprogesterone
- Prolactin
- TSH
- CBC (if menorrhagia)
- FSH/LH
  - ❑ 1:3 ratio

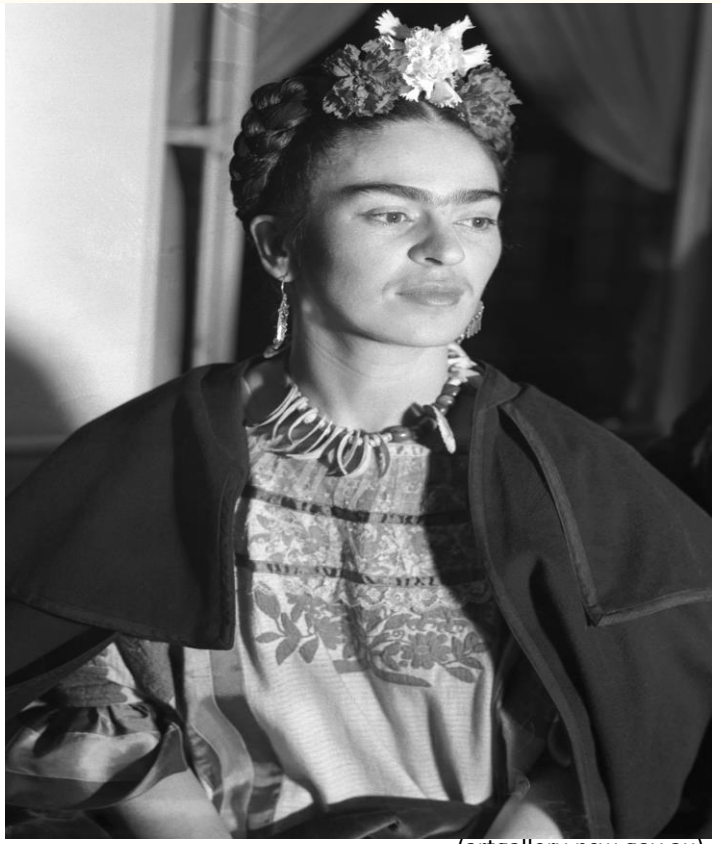


(Kabel, 2016)

Hirsutism

- Excess Terminal Body Hair (thick/ pigmented)
- May be noted
  - ❑ Upper lip
  - ❑ Chin
  - ❑ Peri-areolar area
  - ❑ Midsternal
  - ❑ Lower Abdomen
  - ❑ Upper Thighs

(topdoctors.co.uk)

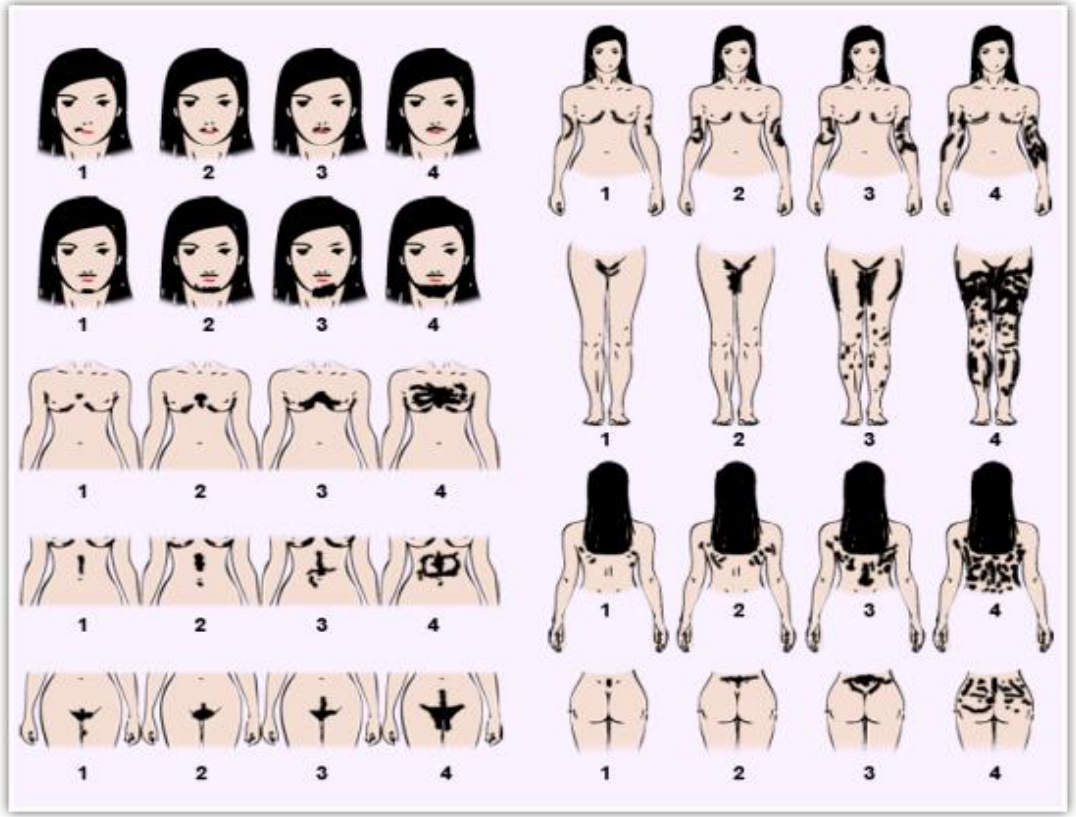


(artgallery.nsw.gov.au)

(Fede et al., 2010)

Hirsutism

- Ethnic Variations/Ferriman-Gallwey Scoring System
  - ❑ US/UK Black/White Women
    - >/= 8
  - ❑ Mediterranean/Hispanic/Middle Eastern Women
    - >/= 9
  - ❑ South American Women
    - >/= 6
  - ❑ Asian Women
    - >/= 2



(historianatlarge.wordpress.com/2016/03/23/the-hairy-women-scale/)

(Fede et al., 2010)

Management

- LIFESTYLE INTERVENTION → Diet/exercise (5-10% weight loss)
- LOCAL THERAPIES/COSMETICS→ Waxing, Electrolysis (Vaniqa)
- PHARMACEUTICAL INTERVENTIONS
  - NON-FERTILITY
    - CONTRACEPTIVES → Any COC, Drospirenone has low androgenicity but risk for VTE
    - METFORMIN (BMI >25) → 500-1500mg/d
    - ANTI-ANDROGENIC AGENT → Spironolactone (100-200mg/d—check potassium level before initiation/annually); Finasteride/Propecia (2.5-5mg/d)
  - INFERTILITY
    - METFORMIN/CLOMID/LETROZOLE
    - GONADOTROPINS
- DEPRESSION/ANXIETY MANAGEMENT (prevalence 38% AND 25%, respectively)
  - NOT ON ANTIDEPRESSANTS → TREAT PCOS FIRST
  - ON ANTIDEPRESSANTS → TAPER OFF OR CONTINUE WHILE STARTING PCOS TREATMENT

(Setji & Brown, 2014; Sirmans & Pate, 2014; Kabel, 2016; Chaudhari et al., 2017; Teede, 2018)

Treatment Goals

- Ameliorate hyperandrogenic features (hirsutism, acne, scalp hair loss)
- Reduction of health factors
- Management of underlying metabolic abnormalities
- Prevention of endometrial hyperplasia/carcinoma
- Contraception f/those desiring pregnancy prevention
- Ovulation induction f/those desiring pregnancy
- Improved Quality of Life
  - ❑ Impact of condition → Depression and/or Anxiety

Continued Management

- Cardiovascular
  - ❑ Blood Pressure
  - ❑ BMI
  - ❑ Fasting Blood Lipid
  - ❑ 2-Hr Oral Glucose Tolerance Test (2H-OGTT) **or** Fasting Blood Glucose w/A1C (2-H OGTT preferred as Fasting lacks sensitivity in PCOS)
- Nonalcoholic Fatty Liver
- Fertility
- Depression/ Anxiety

(fda.gov)

(Teede et al., 2018)

Ethnic Disparities

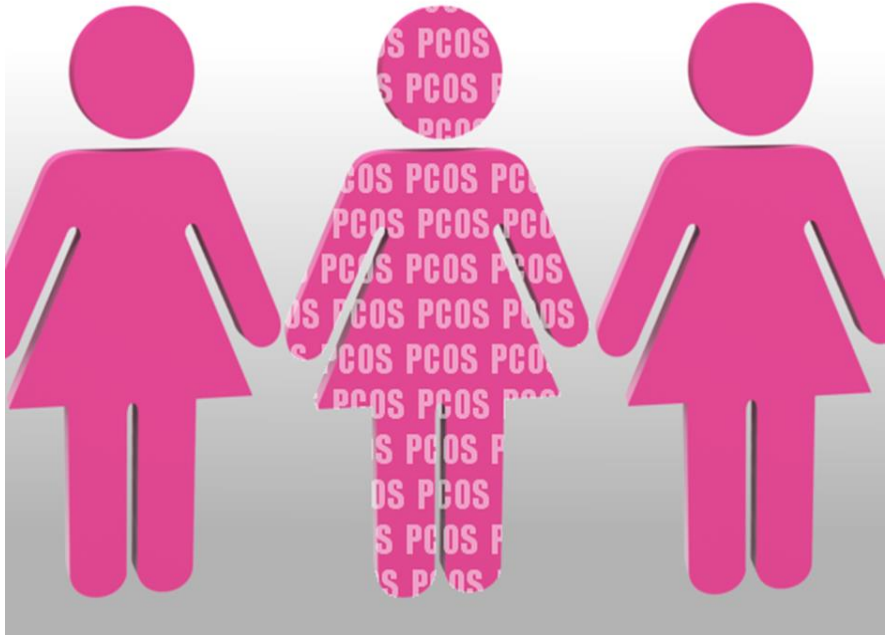
- No difference between African-American & Caucasian women
- Higher prevalence in Asian women when compared with AA/Caucasian but tend to be less hirsute
- Hispanics have highest prevalence of insulin-resistance/metabolic syndrome compared to non-Hispanic
  - ❑ Studies suggest prevalence of PCOS in Hispanic women is double
  - ❑ Phenotype is much worse in Hispanic women

(pcosnutrition.com/health-concerns-Hispanic-women-pcos)

(Ketefian et al., 2010; Sam et al., 2015; Engmann et al., 2017)

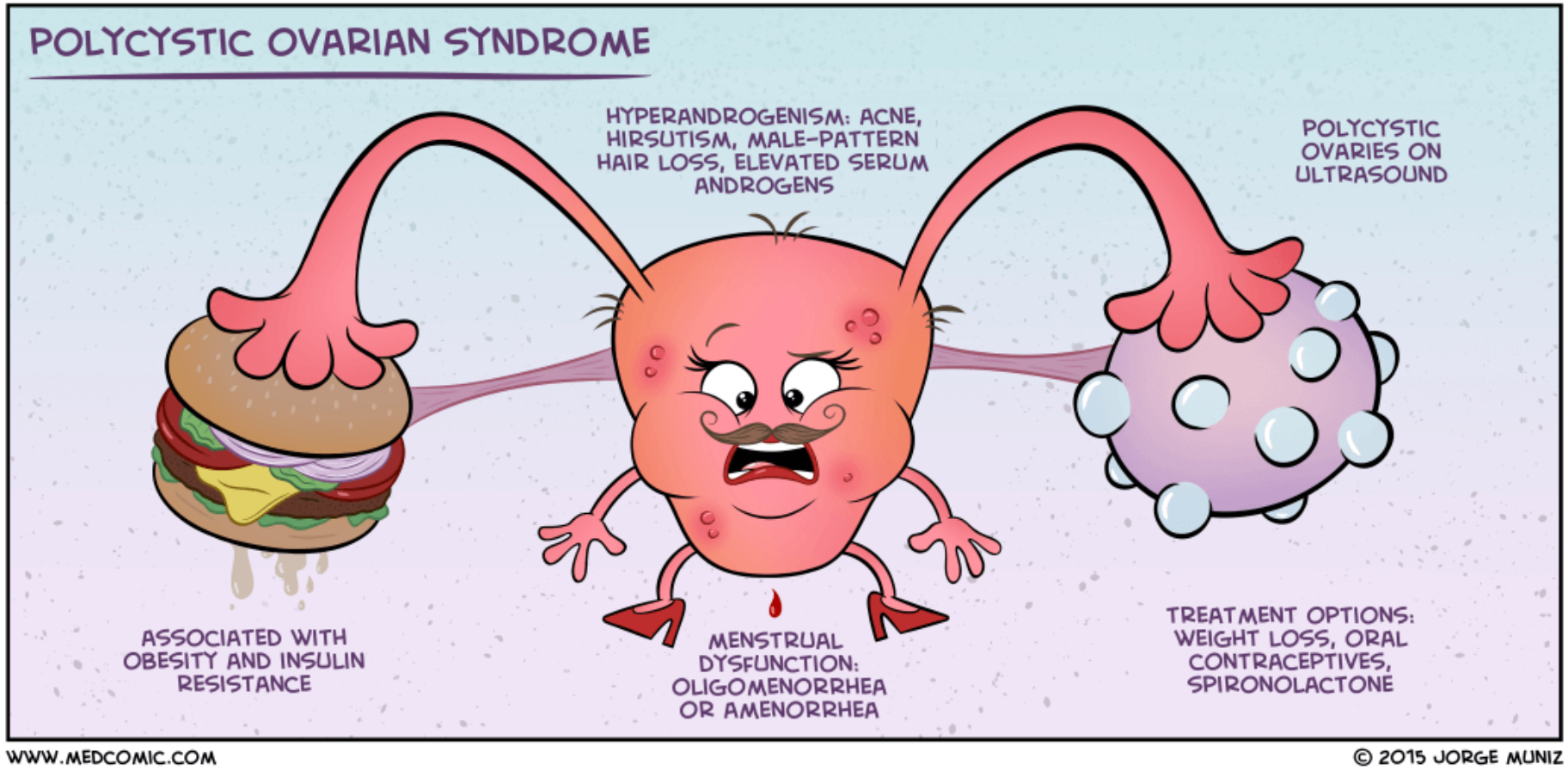
Key Take Aways

- Most common androgen excess disorder in reproductive aged women
- Diagnosis of Exclusion
- Unknown etiology
- Genetic predisposition
- Rotterdam Criteria is recommended
- May lead to serious complications
  - Prevention/early detection are important
- Treatment Goals
- Continued Management/lifestyle interventions post-diagnosis



(healthcare.utah.edu)

Polycystic Ovarian Syndrome



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