Select Nutritional Diagnoses in the Child Bearing Female: Clinical Implications

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Army Capt. Amanda Cain is originally from Vacaville, California but has lived in several different places including Illinois, Colorado, Texas, Maryland, and now Germany! She graduated with a Bachelor's Degree in Dietetics from Abilene Christian University, in Abilene, Texas. She commissioned in the United States Army in 2013 where she completed her Dietetic Internship and a Master's Degree in Nutrition through Baylor University. She has been a Registered Dietitian since 2015 and a Certified Lactation Counselor since 2019. Her previous work experiences include outpatient, foodservice, and clinical nutrition. She currently serves as Chief of Nutrition Services for U.S. Army Medical Activity Bavaria in Germany. She is married to Jeremy Cain and they have one dog-son, Otto. She is an avid traveler and spends her free time traveling the world and documenting her journeys on YouTube.

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Learning Objectives

- At the end of the presentation, the participants will be able to:
  1. Identify example diagnoses in the childbearing female and know when to send to Nutrition for consultation.
  2. List the main nutrition food groups and identify sources of each.
  3. Explain basic examples of carbohydrate counting.
  4. Outline the diet progression of infant food introduction.

Outline

- Polycystic Ovarian Syndrome (PCOS)
  - Diagnosis
  - Nutrition Intervention
- Nutrition During Pregnancy
  - Food Groups
  - Food Safety
  - Weight Gain
- Gestational Diabetes (GDM)
- Nutrition for the Infant
- Questions

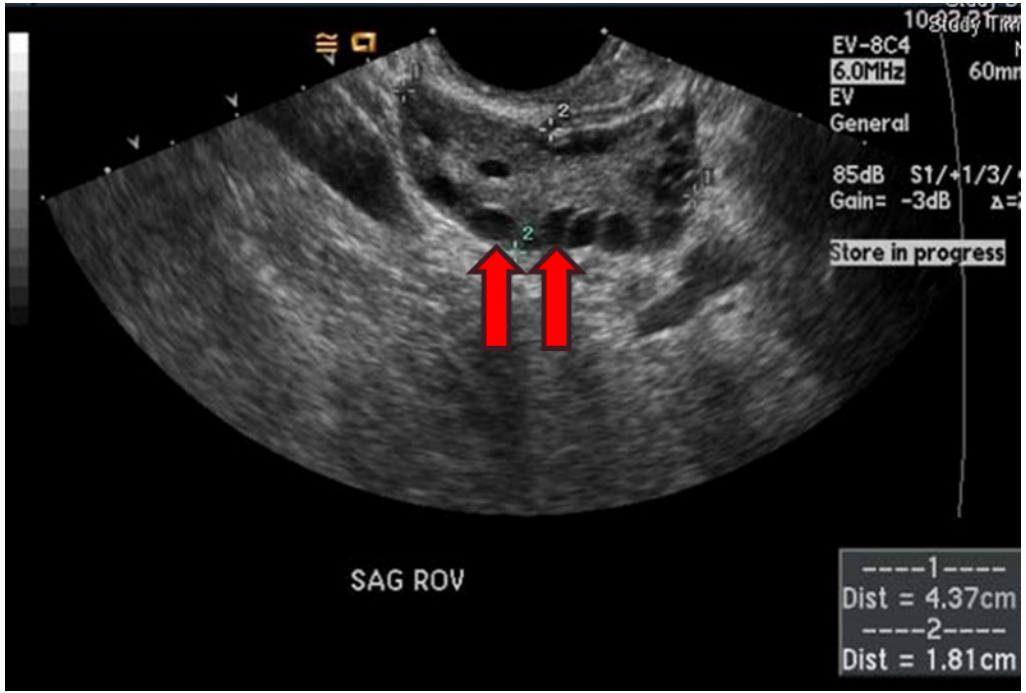
POLYCYSTIC OVARIAN SYNDROME (PCOS)

Diagnosis

- Endocrine Disorder
  - 5-10% of women affected
  - Clinical presentation
    - ✓ Oligomenorrhea: fewer than nine menstrual cycles annually
    - ✓ Hyperandrogenism: serum androgen concentrations, hair loss, acne, hirsutism (excess pigmented body hair in a typical male distribution)
    - ✓ Frequently present: obesity (40-85%), glucose intolerance, dyslipidemia, fatty liver, infertility, et al.
    - ✓ Polycystic ovaries: transvaginal ultrasound
    - ✓ Insulin resistance: 30% of lean women and 70% of obese women
  - Behavioral presentation
    - ✓ Depression, anxiety, eating disorders
- Rotterdam criteria for diagnosis
  - 2/3 of the following:
    - ✓ Oligo- and/or anovulation
    - ✓ Clinical and/or biochemical signs.
    - ✓ Polycystic ovaries

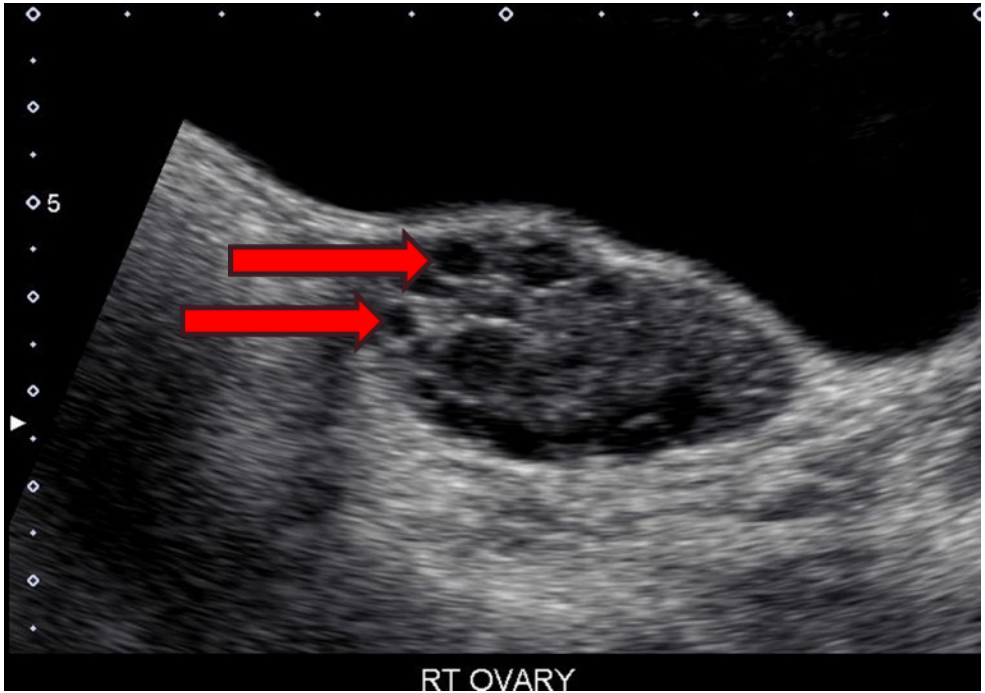
(UpToDate, 2021)

Polycystic ovaries



Case courtesy of Radswiki, Radiopaedia.org, rID: 11803

Polycystic ovaries



Case courtesy of Dr Alborz Jahangiri, Radiopaedia.org, rID: 46698

Diagnosis

- Delay in diagnosis and care
  - "In a cross-sectional study of 134 women with PCOS and 198 controls without PCOS who completed an online evaluation of their health care providers, those with PCOS had less trust in their primary care providers, perceived them as less qualified to treat PCOS-related health concerns, and argued with them more often."

(UpToDate, 2020)
(Lin et al., 2018)

Treatment

- Clinical intervention
  - Combined estrogen-progestin oral contraceptives (COCs)
    - ✓ Risk factors: obesity, age, family history of venous thromboembolism
  - Cyclic or continuous progestin therapy
  - Progestin-releasing intrauterine device (IUD)
  - If dyslipidemia present: statins. If nonalcoholic steatohepatits present: metformin. For ovulation inducing: metformin or clomiphene, but now letrozole.
- Weight loss (traditional or bariatric surgery)
  - Even a 5-10% reduction in weight may restore normal ovulation and improve chance of pregnancy
- Carbohydrate (CHO) counting
  - Low-CHO (15% kcal) vs. moderate-CHO (40% kcal)
  - What about women who are not overweight? Or who have dyslipidemia?

(UpToDate, 2020)

NUTRITION FOR THE PREGNANT WOMAN

Nutrition During Pregnancy

(Parenting.firsttry.com, 2018)

- Dairy
- Fruit
- Vegetables
- Grains
- Protein
- Pre-natal Vitamins: meant as a supplement

(Academy of Nutrition and Dietetics, 2021)

Dairy

- 3 servings per day
  - 1 cup milk
  - 6 ounces (oz) yogurt
- Vitamin D and Calcium
- Pre-natal: not enough Calcium because it can inhibit iron absorption
- Other foods
  - Almonds, tofu, fortified milk alternatives, kale, spinach

(Harvard Health Publishing, 2019)

(Academy of Nutrition and Dietetics, 2021)

Fruits and vegetables

(Harvard Health Publishing, 2019)

- Fruits
  - 2+ cups
  - Gestational diabetes: no fruit juice, no fruits for breakfast or before bed
- Vegetables
  - 3+ cups
- Variety

(Academy of Nutrition and Dietetics, 2021)

Grains

(Everyday Health, 2019)

Or

(Keyingredient, n.d.)

- Grains: 5-6 servings per day
  - 1 slice of bread, ½ cup rice/pasta/grain, 1 small dinner roll, ¼ bagel
  - Half of which should be whole grains

(Academy of Nutrition and Dietetics, 2021)

Protein

- Protein: 5-6 servings per day
  - 1 oz meat/fish
  - 1 egg
  - 2 tablespoon (tbsp) hummus
  - ¼ cup cooked beans
  - 1-2 tbsp peanut butter
  - ¼ cup nuts
  - ½ oz seeds
  - 1 slice of deli meat (remember food safety!)

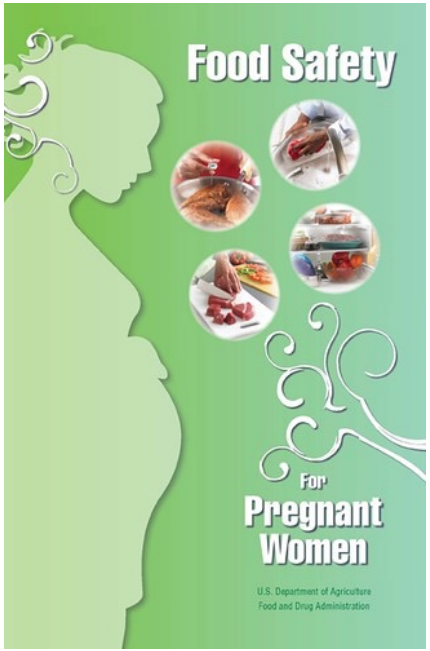
(Pinterest, n.d.)

(Academy of Nutrition and Dietetics, 2021)

Food Safety

- Wash fruits and vegetables
- Avoid cross contamination
  - Fresh produce and raw meats
- Cook meats to appropriate internal temperature
  - No sushi or other raw animal products
- Heat deli meats
- Store foods properly
  - Ready-to-eat foods above raw meats

(USDA Food and Drug Administration, 2017)



(USDA, 2017)

Recommended Weight gain

- Based on pre-pregnancy weight in relation to height, body mass index (BMI)

BMI	Single-Birth	Multiple-Births
<18.5	28-40 lbs	>40 lbs
18.5-24.9	25-35 lbs	37-55 lbs
25.0-29.9	15-25 lbs	31-51 lbs
>30	11-20 lbs	24-42 lbs

- 1st trimester: same calorie needs as pre-pregnancy
- 2nd trimester: additional 340 calories per day
- 3rd trimester: additional 452 calories per day

(Academy of Nutrition and Dietetics, 2021)

GESTATIONAL DIABETES (GDM)

Gestational Diabetes

- Diagnostic Criteria
  - National standards (Academy of Nutrition and Dietetics, 2021)
    - ✓ 24-28 weeks gestation
    - ✓ 8-hour overnight fast followed by a 75 g oral glucose tolerance test in the morning
    - ✓ Diagnosed with any of the following:
      - Fasting: 92 mg/dL
      - 1 hour post: 180 mg/dL
      - 2 hours post: 153 mg/dL
- Once diagnosed:
  - Glucose goals (American Diabetes Association, 2021)
    - ✓ Fasting: 95 mg/dL or less
    - ✓ 1 hour post: 140 mg/dL or less
    - ✓ 2 hours post: 120 mg/dL or less

Nutrition intervention for Gestational Diabetes

- Weight gain goals
  - Weight loss is contraindicated
  - However, if overweight or obese or excess weight gain, slow weight gain is recommended
    - ✓ When following the meal plan, slowed weight gain is a common result
- CHO counting
  - Minimum 175 g CHO per day for fetal brain development and prevent ketosis
  - Previous recommendation: 45% kcal from CHO
  - Recent recommendation: limited evidence, instead should focus on type of CHO and glucose response

Carbohydrate Counting

- Identify CHO food sources
  - Grains
  - Starchy vegetables
  - Fruits (juices not recommended)
  - Dairy
  - Vegetables

(Academy of Nutrition and Dietetics, 2021)

Carbohydrate Counting

- CHO “exchange”
  - 15 grams CHO per exchange
  - Examples 15 g CHO
    - ✓ Grains/starchy vegetables: 1/3 cup cooked rice or pasta or cous cous, 1 slice of bread, ¼ bagel, ½ cup cooked cereal or mashed potatoes or beans, ¾ cup unsweetened cereal
    - ✓ Fruits: 1 small apple (4 oz), ¾ cup blueberries, ½ grapefruit, ½ cup most juices
    - ✓ Dairy: 1 cup milk, 2/3 cup yogurt (Cheese low in CHO)
    - ✓ Vegetables: 3 cups raw or 1.5 cups cooked
    - ✓ What about sweets?

(Academy of Nutrition and Dietetics, 2021)

Meal Plan

- 175 g CHO spaced evenly throughout the day OR 45-50% of kcal
  - 45-60 g at breakfast/lunch/dinner and 15-30 g at 1-2 snacks
  - Better approach: balance with complex CHO, protein, and assess glucose response

(Academy of Nutrition and Dietetics, 2021)

What about artificial sweeteners?

- SAFE!
  - Generally recognized as safe: saccharin, aspartame, Ace-K, sucralose, neotame, advantame, steviol, monk fruit

(Academy of Nutrition and Dietetics, 2021)

Case Study: MR, 30 y/o

- Diagnosed at 27 weeks, 2nd pregnancy, also had GDM in 1st pregnancy. Her numbers were 115 fasting, 166 1 hour post, and 152 2 hours post
- Pre-pregnancy weight: 156 lbs (normal BMI)
- Current weight: 181 lbs
- Diet before: not ideal
- Since diagnosis:
  - Breakfast: 2 wheat bread, egg and salami. Fasting was 80 and 1 hour post was 99
  - Lunch: whole grain pasta with chicken. Fasting was 72, 1 hour post was 80
  - Dinner: whole grain pasta only. Fasting was 104, 1 hour post 102
  - Chief complaint: “I’m always hungry”
- Nutrition intervention:
  - Have 2-3 snacks daily
  - Always have protein with carbohydrates
  - 25-35 lb total weight gain

First Follow-up, 3 weeks later

- 183.2 lbs, only gained 2 lbs
- She added snacks in between meals, but morning fastings have increased, averages 93-94 and her physician wants them under 90
- Intake:
  - Breakfast: ½ bagel with cream cheese, 2 slices of meat. Fasting was 94 and 1 hour post was 114
  - Snack: crackers and cheese
  - Lunch: whole grain pasta with chicken. Fasting 80-90
  - Snack: ½ hamburger with veggies, small amount of fries
  - Dinner: chicken and broccoli
  - Snack: yogurt with granola at 2200 hours
- Nutrition intervention:
  - Minimize/eliminate bagels
  - Move post-dinner snack up and/or decrease amount of CHO at post-dinner snack (decrease, not eliminate)

Second follow up, 4 weeks later

- 183.8 lbs, weight maintenance
- Her physician recommended she eliminate night snack altogether, and her numbers improved, but she was still hungry, so…..
- She moved both dinner and post-dinner snack earlier and now morning fasting 70-80

Carbohydrate ratio

- Usually:
  - 15 grams carbohydrates
  - 1 unit of insulin
- What is going to be easiest intervention for patient?

Summary of Nutrition intervention

- Small, frequent feedings
- Carbohydrate counting
  - Or just balancing high CHO sources with adequate protein and vegetables
- Other recs:
  - No juice or sugary beverages. Period
  - No fruit in the morning or at night

(Academy of Nutrition and Dietetics, 2021)

NUTRITION FOR THE INFANT

Breastfeeding

- Best nutrition for baby
  - Nutritional composition changes as baby ages
  - If not planning to/cannot breastfeed, use iron-fortified formula
- Bonding for Mother and Baby
- Helps contract uterus
- Natural birth control (not 100%)
  - Monthly ovulation is delayed
- Burns calories
  - Approximately 500 calories per day
  - 5-mile run
  - 1-hour workout class
  - 1-hour hiking up hills

(Brown, J. E. et al., 2010)

Feeding Timeline

Age (months, if full-term)	Developmental Milestones	Foods
0-4	Cuddles Sucks Roots for nipple	Breastmilk Iron-fortified Formula
4-6	Sits Opens for spoon Closes lips over spoon	Iron-fortified cereal (or iron-food) *mixed with breastmilk or formula *outside* of bottle
6-8	Holds food in mouth before swallowing	Well-cooked mashed vegetables Mashed, soft fruits
8-12	Picks up food, puts food in mouth Chews/grinds with jaw	Cut-up, well-cooked vegetables Diced, soft fruits Crackers, dry cereals Ground/chopped meats Cheese, eggs

(Academy of Nutrition and Dietetics, 2021) (Ellyn Satter Institute, 2019)

Other Feeding Tips

- Choking risk
  - Small foods such as grapes, nuts, hot dog
  - Hard, raw foods such as apples, green beans
  - Sticky foods such as peanut butter
- No honey: botulism
- Do not lay baby down for a nap with bottle
  - Dental caries
- When curves lips around cup and able to drink:
  - Whole milk (not during first year, should be formula/breastmilk)
  - Water
  - Do not give juice in a bottle
    - ✓ Offer fruits instead
    - ✓ Juice only for constipation, 0.5-1 oz twice daily (100% prune, apple, or grape)

(Academy of Nutrition and Dietetics, 2021) (Ellyn Satter Institute, 2019)

Allergies

- Old recommendation: do not introduce top allergenic foods within the first years of life
- New research: withholding top allergenic foods from baby's diet does not reduce risk of developing allergy
  - In some cases, babies who *did not* eat peanuts within first years had *greater* incidence of developing peanut allergy
- Top 8 Allergenic Foods
  - Dairy, soy, eggs, wheat, peanuts, tree nuts, fish, shellfish
  - When baby is developmentally ready, introduce one new food at a time, wait 3-5 days before introducing next food

- If breastfeeding, mom *does not* have to avoid these foods unless baby has already been diagnosed with the food allergy

What if my baby is lactose-intolerant?

(Du Toit et al., 2015)
(Fleisher et al., 2013)

Key takeaways

- The dietitian is a member of the multi-disciplinary team. All referrals are welcome and most nutrition clinics do not even require a referral.
- Both PCOS and GDM have carbohydrate intake as the main focus in the nutrition intervention, but weight management is also very important.
- Different food groups provide different nutrition to the body, so all are vital.
- There is a nutrition prescription for most medical conditions.
  - “Let food be thy medicine” –Hippocrates

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