Adolescents with PCOS in a busy clinical practice: Making the most of your 15 minutes

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Financial Disclosures

- Dr. Sass and Dr. Huguelet do not have any relevant financial relationships with any commercial interests to disclose.

Learning Objectives

- Highlight benefits and drawbacks of different diagnostic criteria of PCOS pertaining to adolescents.
- Review variability in evaluation and management of PCOS in adolescents among clinicians in different disciplines.
- Describe strategies for the assessment, treatment and prevention of long-term morbidities of PCOS in adolescents.
- Construct a virtual toolkit of essential components for caring for adolescents with PCOS.
13yo presents to your clinic complaining of irregular menses. Menarche almost 2 years ago. Sometimes skips periods, now hasn’t had a period for the past 4 months. Denies sexual activity.

Review of systems notable for 12 pound weight gain over past 3 months. She admits to very little activity outside of gym class at school.

Past medical and surgical histories negative.

Family history: Father with Type 2 diabetes. Mother with hypothyroidism.

“Normal” adolescence
- Weight gain at puberty
- Irregular menses
- Acne

What suggests PCOS?
- Overweight
- Oligomenorrhea
- Family history of diabetes mellitus

Most common endocrinopathy in reproductive aged women, (5-10% adults)

Common presenting symptoms in teens
- Irregular periods
- History ovarian “cysts”
- Weight gain
- Acne

Additional symptoms, more common in adults
- Hirsutism
- Alopecia
- Fertility impairment
- Insulin resistance
These are more common in teens....

Sass, Amy, 4/7/2015
Pathophysiology of PCOS

- Disordered gonadotropin release
- Dysregulation of steroid synthesis
- Hyperinsulinemia

Short & Long-term Comorbidities

**Short-term**
- Insulin resistance
- Hypertension
- Dyslipidemia
- Non-alcoholic fatty liver disease
- Depression
- Obstructive sleep apnea

**Long-term**
- Infertility
- Type 2 Diabetes mellitus
- Cardiovascular disease
- Endometrial carcinoma

Potential opportunity to mitigate risks with early intervention and management

Diagnostic Criteria for PCOS

**NIH 1990**
- Chronic anovulation
- Clinical and/or biochemical signs of hyperandrogenism

**Rotterdam 2003**
- Clinical anovulation
- Biochemical signs of hyperandrogenism
- Ovarian morphology

**AE-PCOS Society 2006**
- Clinical anovulation
- Biochemical signs of hyperandrogenism
- Ovarian morphology

Both criteria needed

*Must rule out other etiologies (e.g., congenital adrenal hyperplasia)*
### Diagnostic Criteria: Strengths and Limitations

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Androgen Excess</td>
<td>• Included as a component in all major classifications</td>
<td>• A major clinical concern for patients</td>
</tr>
<tr>
<td></td>
<td>• A major clinical concern for patients</td>
<td>• Animal models employing androgen excess resemble but do not fully mimic human disease</td>
</tr>
<tr>
<td></td>
<td>• Measurements performed only in blood concentration after a single meal of meal consumption.</td>
<td>• Tissue sensitivity is not assessed.</td>
</tr>
<tr>
<td>Ovulatory Dysfunction</td>
<td>• Included as a component in all major classifications</td>
<td>• A major clinical concern for patients</td>
</tr>
<tr>
<td></td>
<td>• A major clinical concern for patients</td>
<td>• Infertility a common clinical complaint</td>
</tr>
<tr>
<td></td>
<td>• Normal ovulation varies over a woman's lifetime</td>
<td>• Ovulatory dysfunction is difficult to measure objectively</td>
</tr>
<tr>
<td>Polycystic Ovarian Morphology</td>
<td>• Historically associated with syndrome</td>
<td>• Technique dependent</td>
</tr>
<tr>
<td></td>
<td>• Hypothetically associated with hyperandrogenism to ovarian stimulation</td>
<td>• Standardized measurements</td>
</tr>
</tbody>
</table>

### Case Presentation

- **PE:** Ht 64in, Wt 125 lbs, BMI 22.2 (87%ile)
- **BP:** 120/60, HR 85
- **Skin:** Inflammatory acne on forehead/cheeks, few terminal hairs on upper lip and chin
- **Breasts:** SMR 4
- **Abd:** no striae, soft, non-tender, no HSM
- **GU:** SMR 4, no clitoromegaly

**What labs do you order?**
Other hirsutsm? Acanthosis nigricans?

Sass, Amy, 4/7/2015
Controversies about diagnosis of PCOS in adolescents

Prospective cohort study, 244 unselected post-menarchal girls in Australia
Mean age 15.2, 91% Caucasian

Methods:
- History: Menstrual diaries
- PE: BMI and F-G scores
- Labs: Total T and SHBG, Free T calculated
- Imaging: Transabdominal ultrasound

Results
- Menstrual irregularities 51.7%
- Hirsutism* 8.2%
- Acne, mild 48%
- Acne, severe 21%
- Top 5% free T 45.6 pmol/l
- Top 10% free T 34.5 pmol/l
- PCO morphology 35.4%
- BMI, overweight 21%
- BMI, obese 8%

* F-G score ≥ 5

Conclusions
3.1% met criteria for PCOS
18.5% met criteria for PCOS
5% met criteria for PCOS

Diagnostic features of PCOS used in adult women may be of limited use in adolescents.
Menstrual dysfunction is common post-menarche
- Year 1: 85% of cycles anovulatory
- Year 2: 59% of cycles anovulatory
- Year 6: 25% of cycles anovulatory

Limited resolution of trans-abdominal ultrasound imaging of the ovary

Multi-follicular ovarian morphology is normal in teens

20-70% of healthy teens have acne

No standardized F-G score in teens, develops slowly, teens hide it

Case Presentation

Labs:
- TSH: 1.35 uIU/mL
- Testosterone, total: 45 ng/dL (30-50)
- Testosterone, free: 12 pg/mL (1.1-6.3)
- DHEAS: 252 µg/dL (22-372)

Any other labs?

Clinical variability in diagnosis and management

Retrospective chart review of teens, 11-18yo, who were evaluated for PCOS over 2 years

Identified by ICD-9 codes for PCOS, hypersecretion of androgens, irregular menses, hirsutism, oligomenorrhea

260 teens: 144 Endocrine, 9 GYN, 108 Ado Med
Do you want to report 17 OHP?
Sass, Amy, 4/7/2015
Clinical variability in diagnosis and management

Results

No difference in androgen labs, except 17-OH. 41% endo, 56% GYN, 10% AM. Pelvis US: 89% GYN, 9% AM, 24% endo. P < 0.0001

Diagnosis

Treatment

Metformin

OCPs

58% Endo, 14% GYN, 5% AM. 43% GYN, 58% AM, 24% Endo. P < 0.0001

Summary: Inconsistent diagnosis and treatment - reflecting lack of standardized care for adolescents. May lead to adverse health outcomes for women.

PCOS Diagnosis in Teens: Endocrine Society Guidelines

- Diagnosis PCOS remains one of exclusion but should be based on the presence of clinical and/or biochemical evidence of hyperandrogenism (after the exclusion of other pathologies) in the presence of persistent oligomenorrhea.
- Aim of the laboratory evaluation is to provide biochemical evidence of PCOS and rule out other causes of hyperandrogenism and oligomenorrhea (when clinically suspected):
  - Nonclassic congenital adrenal hyperplasia
  - Androgen-secreting neoplasms
  - Hyperprolactinemia
  - Thyroid dysfunction
  - Cushing’s syndrome

J Clin Endocrinol Metab 98(12): 4564-4594
Late breaking news…

- “A thorough medical history, physical examination and appropriate laboratory assessment are essential to provide the information necessary to exclude other disorders associated with androgen excess.”
- (Epub ahead of print)
- Clinical Practice Committee members representing NASPAG (A. Bonny, V. Gomez-Lobo), Androgen Excess-PCOS Society, Pediatric Endocrine Society and international pediatric endocrine societies: Australia, Asia Pacific, African, European, Japanese, Latin American.

PCOS-lab evaluation

- Recommended labs:
  - Total testosterone (most commonly elevated androgen)
  - Free Testosterone (variability in assays)
  - Dehydroepiandrosterone sulfate (DHEAS) (elevated in 20-30% women with PCOS)
  - TSH
  - Prolactin
  - 17-OH progesterone (diurnal variation)
  - Androstenedione (may miss up to 9% teens with PCOS)

Metabolic effects-obesity and insulin resistance

- Prevalence of obesity among US adolescents is ~21%
- Obesity itself is associated with ovulatory dysfunction in adolescents
  - Suppresses gonadotropins
  - Increases insulin resistance
  - Increases androgen levels
- Insulin resistance and hyperinsulinemia peak in mid-puberty for all adolescents and subsequently decreases

Rosenfield RL, Adolescent Anovulation: Maturational Mechanisms and Implications. JCEM, 2013
http://www.cdc.gov/HealthyYouth/obesity/facts.htm
Metabolic Consequences of PCOS in teens: obesity, IR, DM2

- Prevalence of obesity among teens with PCOS >60%
- Obese teens with PCOS have marked insulin resistance and a 5-10x increased risk of developing DM2
- Prevalence of IGT among US adolescents/women with PCOS=30-35%; prevalence of DM2=3-10%
- Prevalence of IGT among non-obese women with PCOS=10-15%; prevalence of DM2=1-3%
- Periodic screening with OGTT for women with PCOS to detect early abnormalities in glucose tolerance

Periodic screening with OGTT for women with PCOS to detect early abnormalities in glucose tolerance

Metabolic Syndrome in Adolescents

Table 1. Criteria for the Metabolic Syndrome*

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waist circumference, cm</td>
<td>&gt;102</td>
<td>&gt;80</td>
</tr>
<tr>
<td>Triglycerides, mg/dL</td>
<td>&gt;150</td>
<td>&gt;190</td>
</tr>
<tr>
<td>HDL cholesterol, mg/dL</td>
<td>&lt;40</td>
<td>&lt;50</td>
</tr>
<tr>
<td>Fasting glucose, mg/dL</td>
<td>&gt;126</td>
<td>&gt;200</td>
</tr>
<tr>
<td>Blood pressure, mm Hg</td>
<td>&gt;140</td>
<td>&gt;90</td>
</tr>
</tbody>
</table>

4% of all US teens and 30% of obese adolescents meet criteria.

Clinical Characteristics of Patients Who Met Diagnostic Criteria for PCOS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Denominator</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irregular menses</td>
<td>100</td>
<td>187/187</td>
</tr>
<tr>
<td>Elevated total testosterone</td>
<td>61%</td>
<td>105/171</td>
</tr>
<tr>
<td>Elevated free testosterone</td>
<td>19%</td>
<td>6/31</td>
</tr>
<tr>
<td>Elevated LDL cholesterol</td>
<td>19%</td>
<td>6/31</td>
</tr>
<tr>
<td>Elevated triglycerides</td>
<td>36%</td>
<td>11/31</td>
</tr>
<tr>
<td>Elevated fasting glucose</td>
<td>27%</td>
<td>9/34</td>
</tr>
<tr>
<td>Elevated HbA1c</td>
<td>20%</td>
<td>12/60</td>
</tr>
<tr>
<td>Hypertension</td>
<td>4%</td>
<td>7/187</td>
</tr>
<tr>
<td>Hypertriglyceridemia</td>
<td>19%</td>
<td>6/31</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>30%</td>
<td>9/30</td>
</tr>
<tr>
<td>Weight &gt;200 lbs</td>
<td>27%</td>
<td>9/34</td>
</tr>
<tr>
<td>Waist circumference &gt;200 cm</td>
<td>4%</td>
<td>7/187</td>
</tr>
</tbody>
</table>

* CDC 2002 BMI-for-age percentiles

** CDC 2002 Waist, Hip, Blood Pressure

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Metabolic labs ordered by different subspecialists for work up of PCOS

<table>
<thead>
<tr>
<th>Metabolic Markers</th>
<th>Endocrine % (n)</th>
<th>Gynecology % (n)</th>
<th>Adolescent Medicine % (n)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting glucose</td>
<td>22 (32)</td>
<td>44 (4)</td>
<td>40 (43)</td>
<td>.0070</td>
</tr>
<tr>
<td>Fasting insulin</td>
<td>24 (34)</td>
<td>22 (2)</td>
<td>19 (21)</td>
<td>.7305</td>
</tr>
<tr>
<td>Hemoglobin A1C</td>
<td>33 (47)</td>
<td>22 (2)</td>
<td>27 (29)</td>
<td>.6008</td>
</tr>
<tr>
<td>Lipids</td>
<td>16 (25)</td>
<td>22 (2)</td>
<td>51 (55)</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

# patients per specialist: 144 Endocrine, 108 Adol Med, 9 GYN


Metabolic Consequences of PCOS in teens—obesity, cardiovascular disease

- Increased abdominal adipocity is assoc. with hyperandrogenemia and increased metabolic risk
- Some evidence that metabolic syndrome (MBS) is increased in teens with PCOS and is related to androgen excess, other studies suggest a primary link with increased BMI.
  - 244 girls with PCOS (NIH criteria) 11.8% incidence of MBS
- Measure BMI, consider waist circumference


Cardiovascular Disease Risk

- Women with PCOS have higher prevalence of dyslipidemia
- Hypertension is a less consistent abnormality
- Anatomic evidence of coronary and other vascular disease has been documented
- Despite increased prevalence of CV risk factors in women with PCOS—there are limited longitudinal studies demonstrating event rates

- Measure BP, fasting lipid panel, screen patients with risk stratification schema (next slide)
Cardiovascular disease risk: Cardiovascular risk stratification in women with PCOS:

- **At risk**—PCOS women with any of the following risk factors:
  - Obesity (especially increased abdominal adiposity)
  - Cigarette smoking
  - Hypertension
  - Dyslipidemia (increased LDL and/or non-HDL cholesterol)
  - Subclinical vascular disease
  - Impaired glucose tolerance
  - Family history of premature cardiovascular disease (55 yo age in male relative; 65 y of age in female relative)

- **At high risk**—PCOS women with:
  - Metabolic syndrome
  - T2DM
  - Overt vascular or renal disease, cardiovascular diseases
  - OSA

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PCOS and Psychological Problems

- Multiple studies demonstrate an increased prevalence of depressive sx, higher lifetime incidence of a major depressive episode and recurrent depression for women with PCOS
  - Independent of BMI, androgen levels, hirsutism, acne, infertility
  - Higher rates of anxiety and panic disorders and eating disorders (binge eating disorder) have also been observed

- Screen adolescents with PCOS for depression and anxiety by history and provide referral for treatment
- Validated office based tools eg. PHQ9

http://www.agencymeddirectors.wa.gov/Files/depressoverview.pdf

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PCOS and Sleep-disordered breathing/Obstructive Sleep Apnea (OSA)

- High prevalence of OSA in women with PCOS—thought to be a function of hyperandrogenism and obesity
- After controlling for BMI, women w/PCOS 30x more likely to have sleep-disordered breathing and 9x more likely to have daytime sleepiness
- Treatment of OSA improved insulin sensitivity and reduced diastolic blood pressure in young obese women with PCOS
- Screen overweight/obese adolescents with PCOS for sx of OSA (snoring, breath holding during sleep). Refer to sleep medicine provider for polysomnography and treatment
PCOS-discussing the diagnosis

• How do you explain what PCOS is to your patients?

PCOS-Pick Your Points-some examples

• “Now we know why your periods have been irregular (and you have extra hair growth, worse acne and the dark skin on your neck….)”
• “PCOS sounds complicated but it’s a common hormone problem that many women have—the science part is about having an elevated level of “androgens” (e.g. testosterone) and being overweight which make your ovaries not release an egg every month. The good news is that you can lower your androgens with some healthy weight loss.”
• “It’s also important to know that young women who have PCOS and are overweight are at risk of getting diabetes (too much sugar in the blood) and heart disease (high blood pressure and problems with blood vessels that can lead to heart attacks and strokes). Sometimes it’s hard to care about things that might happen in the future right now, but these things can become big problems as you get older. The good news is that you can also lower your risk of these things with some healthy weight loss.”

PCOS-Pick Your Points-some examples

• “I know that you’re not thinking about getting pregnant right now but for some women with PCOS it can take them longer to get pregnant than other women who don’t have PCOS. Some teens with PCOS will hear this and think that they can’t get pregnant and that is totally not true! If you have sex, you need to use condoms….”
• “If you Google ‘PCOS’ you’ll find lots of stuff on-line. I can recommend some websites that my other patients have told me were helpful to them for more info and cool to check out.”
PCOS Resources

- General patient information:
  - NASPAG patient education
  - Center for Young Women’s Health
    - http://youngwomenshealth.org/2014/02/25/polycystic-ovary-syndrome/
    - *most comprehensive resource includes nutrition info
  - The Endocrine Society

First Line Treatment-Lifestyle

- Exercise: improves weight loss, reduces cardiovascular risk factors and diabetes risk factors, improves hyperandrogenemia.
- Nutrition: develop long term healthy eating habits to promote weight loss and healthy weight management.
- Intervention trials in adolescents with PCOS have shown benefits: improvements related to hirsutism, ovulation, quality of life, sleep lipid profile, adipocytokine levels and insulin resistance however most are limited by short duration <6mos.

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• Energy Economics:
  • Nutrition:
    ✓ Energy going in: Obtain a quick dietary recall: specific intake: meals/snacks, sugared drinks-what, when, how does she get it?
    ✓ Find the vice: “Are you a salty, sweet or both?”
    ✓ Family resources and food environment-what’s in the cupboard, healthy vs. junk, fresh vs. processed, milk fat, who prepares the food, cultural foods, eating venue, fast food frequency
    ✓ Emotional eating: grazes when bored or depressed, binging?
  • Exercise:
    ✓ Energy going out: Ask about physical activity: PE, sports, recreational, independent, job
    ✓ Barriers to activity: safety, $$$, responsibilities, self confidence
  ✓ Sedentary activity: screen time hours/day

Lifestyle Counseling: sugared beverages

20 oz bottle soda: 240 cals= 46 min.walk to burn it off

Americans drink 45 gallons of soda each year=35 pounds of sugar!

Estimated Calorie Needs per Day by Age, Gender, and Physical Activity Level

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (Years)</th>
<th>Sedentary</th>
<th>Moderately Active</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>2–3</td>
<td>1000–1200</td>
<td>1400–1600</td>
<td>1800–2000</td>
</tr>
<tr>
<td>Female</td>
<td>4–8</td>
<td>1000–1400</td>
<td>1400–1800</td>
<td>1800–2200</td>
</tr>
<tr>
<td>14–18</td>
<td>1800–2200</td>
<td>2000</td>
<td>2400</td>
<td></td>
</tr>
<tr>
<td>19–30</td>
<td>2000–2600</td>
<td>2500–3000</td>
<td>2900</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4–8</td>
<td>1200–1400</td>
<td>1400–1800</td>
<td>1900–2200</td>
</tr>
<tr>
<td>14–18</td>
<td>2000–2400</td>
<td>2400–2800</td>
<td>2500–3000</td>
<td></td>
</tr>
<tr>
<td>19–30</td>
<td>2400–2800</td>
<td>2600–3000</td>
<td>3000</td>
<td></td>
</tr>
</tbody>
</table>

Daily calories breakdown: 30% fat, 15-20% protein, 50-55% carbs

• Small changes can make a difference.
• Family change in exercise/nutrition habits—better likelihood of success.
• What do you like to do?
• Identify and troubleshoot barriers
• Set specific goals, frequent follow-up and then address progress.

Exercise

This Girl Can celebrates the women who are doing their thing no matter how they do it, how they look or even how sweaty they get. They’re here to inspire us to wiggle, jiggie, move and prove that judgement is a barrier that can be overcome.

https://www.youtube.com/user/thisgirlcanuk
<table>
<thead>
<tr>
<th><strong>First Line Treatment-Hormonal Contraception</strong></th>
<th><strong>Metformin</strong></th>
<th><strong>Metformin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dual goal: treat hyperandrogenism and provide contraception</td>
<td>• Enhances peripheral tissue sensitivity to insulin</td>
<td>• Utility to treat IGT or MBS (not just obesity)</td>
</tr>
<tr>
<td>• Combined Hormonal Contraception (CHC)</td>
<td>• Inhibits hepatic gluconeogenesis</td>
<td>• Weight loss (~2.7kg) in some adult studies but not significant in meta-analysis</td>
</tr>
<tr>
<td>• Progestin: suppresses LH levels and therefore ovarian androgen production</td>
<td>• Incr. update/utilization of glucose by muscle</td>
<td>• No additional weight loss benefit for women actively participating in weight loss lifestyle programs</td>
</tr>
<tr>
<td>• Estrogen: increases SHBG reduces bioavailable androgens</td>
<td>• Reduces: plasma insulin levels, Testosterone</td>
<td>• Data is limited in teens with PCOS but 2 RTCs showed improvements in hyperandrogenemia, ovulation, dyslipidemia experimental but promising</td>
</tr>
<tr>
<td>• Some evidence that extended-cycle use offers better hormonal suppression/prevents rebound ovarian function during pill-free interval</td>
<td>• Side effects: GL</td>
<td>• May increase ovulatory frequency simultaneous contraception should be prescribed</td>
</tr>
<tr>
<td>• CHC use increases HDL levels most promising metabolic effect in PCOS as low HDL may be the critical link between PCOS and MBS</td>
<td>• Not approved for treatment of PCOS</td>
<td>• Not approved for treatment of PCOS</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th><strong>Metformin</strong></th>
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</table>
**Metformin**

- RCT to assess risk-benefit ratio of lifestyle therapy combined with and without metformin over 6 mos in obese adolescents with PCOS

<table>
<thead>
<tr>
<th></th>
<th>Metformin</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start (n)</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Mean Age yrs</td>
<td>16.1</td>
<td>15.4</td>
</tr>
<tr>
<td>Mean BMI kg/m²</td>
<td>37.1</td>
<td>35.9</td>
</tr>
<tr>
<td>Finish 6 mos (n)</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

-Ladson G et al. Fertil Steril 2011;95:2595-8-

**OARS: A structure for putting motivational interviewing into practice**

- **Open-ended questions.** Avoid asking questions that can be answered with a “yes” or “no.” Broad questions allow patients maximum freedom to respond without fear of a right or wrong answer. It can be as simple as, “What’s been going on with you since we last met?” Another question, appropriate for almost anyone, would be, “If you had one habit that you wanted to change in order to improve your health, what would that be?”

- **Affirmations.** Never underestimate the power of expressing empathy during tough spots or in celebrating patients’ accomplishments. When you review patients’ goals, take joy in their success and show your joy.

-Stewart EE, Fox CH: Encouraging patients to change unhealthy behaviors with motivational interviewing. Fam Pract Manag 2011;13(3):21-5-

- **Reflective listening.** Patients often have the answers; the physician’s role is to help guide them. Reflective listening involves letting patients express their thoughts and then, instead of telling them what to do, capturing the essence of what they have said, with the purpose of eliciting conversation and helping them arrive at an idea for change. Reflecting patients’ statements and feelings back to them reinforces self-efficacy, and it allows the conversation to keep moving forward.
OARS: A structure for putting motivational interviewing into practice

- **Summaries.** Summaries involve recap what the patient has said, calling attention to the salient elements of the discussion and allowing the patient to correct any misunderstandings and add anything that was missed. Summaries can occur throughout the visit but are particularly helpful in bringing the visit to a close. It is often effective to end a summary with an open-ended statement such as “I am wondering what you’re feeling at this point” or “I am wondering what you think your next step should be.”

- **Using these techniques, you can help the patient identify a specific and achievable goal.** The patient must affirm that he or she will actually accomplish the goal, not just try. Ask the patient to state the goal (this helps to confirm agreement), and then write it in the chart, letting the patient know that you will review it together at the next visit, or perhaps by phone or e-mail between visits.

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**Summary**

- BMI, BP, (waist circumference)
- Total/free Testosterone, DHEAS, (prolactin, 17-OHP, androstenedione)
- OGTT (HgBA1C)
- Lipid panel (ideally fasting)
- Screen for Cardiovascular Disease Risk Factors
- Screen for depression
- Screen for OSA

Rx: 1st line: Lifestyle changes to promote weight loss—exercise most important +/- combined hormonal contraception