Dyslidemia: Contraceptive Choices - LDL

Robert A Wild, MD, MPH, PhD, FNLA, ABCL

Professor and Vice Chair Ob/Gyn Medicine, Family & Preventive Medicine, Biostatistics & Clinical Epidemiology

Oklahoma University Health Sciences Center
Disclosures

- Consultant: FDA, WHI, ORWH, NIH
- Research Grants: NICHD, RMN
- Board Positions: NLA, ABCL
- Editorial Boards: Journal of Clinical Lipidology, Menopause, Fertility and Sterility
Objectives

• The practitioner will be able to **list the contraceptive options** available to a person with **high LDL cholesterol**

• The practitioner will be able to **discuss non contraceptive issues important in optimum contraceptive choice** for a person with **high LDL cholesterol**
26 y.o. married pre-K teacher

Gravida 1 Para 1 Caucasian

irregular menses all of her life

Given Lo Estrin Fe post partum C/S - child 8 mos.

Had Gestational diabetes, GB ‘spasms’ no stones

Frustrated - not helping her hirsutism & menses - still hit or miss

Father high cholesterol ‘taking medication for it’, no CVD, MGM DM, MGF stroke

Wants to know about Metformin for PCOS? Wants children after gets in shape
BP 116/68,

BMI 34.67, 195 lbs waist = 43”

Acanthosis Nigricans, intertrigo, Yeast infections

Hirsutism

HsCRP=10.1, TSH.505, HgA1C=5.1%, SHBG 61nmol/L, Vit D 19.8 ng./mL, CMP nl

ovaries nl except 3.5 cm ‘cyst’

stay at home mom with 2 teenagers
LIPID PROFILE

- Cholesterol 274 mg/dL
- LDL 201 mg/dL
- VLDL 14 mg/dL
- TG 66 mg/dL
- Non HDL 215 mg/dL
- Apo B 134 mg/dL
- HDL-C 14 mg/dL
- Small remnants 8 mg/dL
Management?

- dietary advice?
- exercise advice?
- lipid management advice?
- contraceptive Advice?

other considerations
  Fam Hx
  PCOS
  MetS?
  Hirsutism
  GB?
  AN
  irreg. menses
  Contraceptive Efficacy
**Contraception: CVD Risk**

- Combined oral contraceptive (COC) - estrogenic, progestational, androgenic anti-estrogenic and anti-androgenic effects - COMPLICATED*

- (Ethinyl-Estradiol, Mestranol)
  - Different doses
  - Dose is related to risk
  - Few 50 ug pills available - still needed
  - Multiple types of progestin and doses
Contraception: CVD Risk

• Estrogenic component increases Tg and HDL-C, lowers LDL-C

• Androgenic progestin raises LDL-C and lowers HDL-C (norgestrel and levonorgestrel) - Progestational effect is neutral
## Contraception ~ Lipid Response mixed studies!

<table>
<thead>
<tr>
<th>Contraception Type</th>
<th>HDL</th>
<th>LDL</th>
<th>TG</th>
<th>L(a)</th>
<th>ApoB</th>
</tr>
</thead>
<tbody>
<tr>
<td>COC 30ug EE, 150ug desogestrel</td>
<td>+7mg/dL +2mg/dL</td>
<td>-2mg/dL -8mg/dL</td>
<td>+30mg/dL +13mg/dL</td>
<td>n.c.</td>
<td>+3mg/dL</td>
</tr>
<tr>
<td>Vaginal ring 2.7mg EE/11.7mg Ethinogestrel</td>
<td>+1mg/dL 2mg/dL</td>
<td>-1mg/dL +10mg/dL</td>
<td>+5mg/dL +15mg/dL</td>
<td>n.c.</td>
<td>+16mg/dL</td>
</tr>
<tr>
<td>COC 1.5mg E2/2.5mg Megestrol or Desogestrel 3mgm</td>
<td>-9mg/dL</td>
<td>+4.2mg/dL</td>
<td>+13mg/dL</td>
<td>-2 mg/dL</td>
<td></td>
</tr>
<tr>
<td>COC 30ugEE/10ug Levonorgestrel</td>
<td>-9mg/dL</td>
<td>-10mg/dL</td>
<td>+20mg/dL</td>
<td>+2mg/dL</td>
<td></td>
</tr>
<tr>
<td>Implanon</td>
<td>+8mg/dL</td>
<td>+20mg/dL</td>
<td>-2mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COC EE35ug/Norgestimate .25mg</td>
<td>-2mg/dL</td>
<td>+4.2mg/dL</td>
<td>+20mg/dL</td>
<td>-2mg/dL</td>
<td></td>
</tr>
<tr>
<td>LNG-IUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lipid Response</th>
<th>HDL</th>
<th>LDL</th>
<th>TG</th>
<th>L(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+7mg/dL</td>
<td>+2mg/dL</td>
<td>-8mg/dL</td>
<td>+13mg/dL</td>
<td>+3mg/dL</td>
</tr>
<tr>
<td>-7mg/dL</td>
<td>-2mg/dL</td>
<td>+2mg/dL</td>
<td>-10mg/dL</td>
<td>+16mg/dL</td>
</tr>
<tr>
<td>+2mg/dL</td>
<td>+1mg/dL</td>
<td>+10mg/dL</td>
<td>+20mg/dL</td>
<td></td>
</tr>
<tr>
<td>-2mg/dL</td>
<td>-1mg/dL</td>
<td>-10mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+10mg/dL</td>
<td>-1mg/dL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+13mg/dL</td>
<td>+13mg/dL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2 mg/dL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+16mg/dL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Contraception: CVD Risk

• 2nd generation POTENTIALLY less thrombotic risk than 3rd or 4th generation?
• Newer data low dose - graded risk stroke, MI ~ steroid load
• absolute risk very small
  - stroke ~21.4/100,000 person  MI ~10.1
  30-40ug EE 2.2 , 2.3 x  greater RR
  20ug EE 0.9 to 1.7
  small differences by progestin type
• More estrogenic - more Triglyceride raising…greater risk of pancreatitis when baseline Tg >250 mg/dL - 500 mg/dL
Contraception and CVD Risk

- Transdermal or vaginal OC ~ risks as combined oral contraceptive (COC)
- Greater risk of thrombosis in Pg compared to thrombotic risk of the contraceptive
- Barrier methods and IUDs - lipid neutral

http://www.cdc.gov/reproductivehealth/UnintendedPregnancy/USMEC.htm
Contraception and CVD Risk

• Known Hyperlipidemia LNG-2? , Cu-1

• COC increase thrombotic risk 4x, with Factor V Leiden 7x , Pg. 5x , Factor V Leiden + Pg 15-35x!
  – No evidence IUD thrombotic LNG-2 (?) , Cu-1

• CDC and WHO compendium for medical conditions is the best resource for recommendations with co-morbidities!

http://www.cdc.gov/reproductivehealth/UnintendedPregnancy/USMEC.htm
### Summary Chart of U.S. Medical Eligibility Criteria for Contraceptive Use

**Updated June 2012.** This summary chart only contains a subset of the recommendations from the US MEC. For complete guidance, see: [http://www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm](http://www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm)

**Key:**
1. No restrictions (method can be used)
2. Advantages generally outweigh theoretical or proven risks
3. Theoretical or proven risks usually outweigh the advantages
4. Unacceptable health risk (method not to be used)

Most contraceptive methods do not protect against sexually transmitted infections (STIs). Consistent and correct use of the male latex condom reduces the risk of STIs and HIV.

#### Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sub-condition</th>
<th>Copper-IUD</th>
<th>LNG-IUD</th>
<th>Progestin-only pill</th>
<th>Progestin + patch</th>
<th>Progestin + ring</th>
<th>Progestin + implant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&gt;18, &lt;40 &amp; &lt;25</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Anatomic abnormalities</td>
<td>b) Other abnormalities</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Metabolic abnormalities</td>
<td>a) Thalassemia</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nephropathy/retinopathy/vascular disease</td>
<td>a) History of DVT/PE not on anticoagulant therapy</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mental health</td>
<td>a) History of psychotic disorder</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>MS</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hyperlipidemias</td>
<td>a) Adequately controlled</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>a) History of high blood pressure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>History of breast disease</td>
<td>a) Undiagnosed mass</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hypercoagulability</td>
<td>a) DVT/PE and established anticoagulant therapy for at least 3 months</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>History of venous thrombosis (DVT)/Pulmonary embolism (PE)</td>
<td>a) History of DVT/PE not on anticoagulant therapy</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cervical ectropion</td>
<td>a) History of high blood pressure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ovarian cysts</td>
<td>a) History of high blood pressure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>a) History of high blood pressure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**http://www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm**
CDC compendium for medical conditions best resource for recommendations with comorbidities

**BOX. Categories for Classifying Intrauterine Devices**

1 = A condition for which there is no restriction for the use of the contraceptive method.
2 = A condition for which the advantages of using the method generally outweigh the theoretical or proven risks.
3 = A condition for which the theoretical or proven risks usually outweigh the advantages of using the method.
4 = A condition that represents an unacceptable health risk if the contraceptive method is used.
...US Medical Eligibility for Contraceptive Use

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sub</th>
<th>COC Patch</th>
<th>POP</th>
<th>P-Inj</th>
<th>Implant</th>
<th>LNG IUD</th>
<th>CU IUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyper-lipidemia</td>
<td></td>
<td>2/3*</td>
<td>2*</td>
<td>2*</td>
<td>2*</td>
<td>2*</td>
<td>1*</td>
</tr>
</tbody>
</table>
CONTRACEPTIVE RECOMMENDATIONS

• http://www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm

• http://www.who.int/reproductivehealth/publications/family_planning/MECguidelinePart-2.pdf?ua=1
Management?

- Dietary advice?
- Exercise advice?
- Lipid management advice?
- Contraceptive advice?

Other considerations
- Fam Hx
- PCOS
- MetS?
- Hirsutism
- GB?
- AN
- irreg. menses
- Contraceptive Efficacy
Summary

• Contraceptive Choices should not be in a vacuum
• Risk is driven by efficacy and thrombotic risk and other considerations
• Pregnancy is riskier than most contraceptive Choices
• IUDs are ‘for the most part’ lipid neutral
Take Home

• Her CVD risk includes her ob/gyn history

• Optimum choice should be safety, individual patient focused for compliance

• More than LDL lowering

• http://www.cdc.gov/reproductivehealth/UnintendedPregnancy/USMEC.htm
Objectives

• The practitioner will be able to list the **contraceptive options** available to a person with **mixed dyslipidemia**

• The practitioner will be able to discuss non contraceptive issues important in optimum contraceptive choice for a person with **mixed dyslipidemia**
Contraception

• 36 y.o. Gravida 2 Para 2 Mexican American stay at home mom

• 2 teenagers

• She conceived in spite of PMHx PCOS
Contraception

- Pregnancies complicated by gestational diabetes and preeclampsia both children premature NICU Both ADD

- 10 yr. history of type2 diabetes mellitus, hypertension

- Prior smoker, family history of premature atherosclerosis
Contraceptive?

- Irregular menses all of her life recently *hasn’t had one for 4 mos* one before that was 6 mos prior

- Medications: Losartan 100 mg daily, metformin 1,000 mg twice daily, 2 OTC omega-3-capsules daily
- BP 136/74, BMI 34 Kg/m²
- Labs glucose 130 mg/dL, HgA1C 7.3%, Cholesterol 195 mg/dL, TG 375 mg/dL, HDL Cholesterol 40 mg/dL, nonHDL Cholesterol 155 mg/dL LDL-cholesterol 110 mg/dL
Contraceptive Management

Her internist tells ‘needs to go on a diet and to exercise more’, didn’t measure lipids

Refers her to an Ob/Gyn because ‘he doesn’t do pelvic exams’ and ‘doesn’t give contraceptives because they increase her risk of CVD’

The patient now self refers to you for further evaluation and management
Questions for Discussion

1. Risk for CVD?
   1. How determine?

2. Data regarding lipids changes with Combined Oral Contraceptive (COC)?

4. Data regarding COC and CVD risk?
5. Data regarding other forms of contraception and CVD risk?

6. Data regarding PCOS and CVD risk?
7. Data regarding gestational diabetes and CVD risk for her and her children later in life?

8. Data regarding preeclampsia and CVD risk for her and her children later in life?

9. At risk for cancer?

10. Give a statin? Vitamins?

11. Other lipid lowering agents?
Contraceptive Choices
Contraception

CVD RISK

Diabetes with ≥2 risk factors
VERY HIGH RISK
Hypertension, low HDL-C
(40mg/dL)

Diabetes 0-1 major ASCVD risk factors HIGH RISK, PCOS, Hypertension, prior smoker, family history premature ASCVD both sides

Lipid Targets? Lipid Goals?
Contraception: CVD Risk

- Combined oral contraceptive (COC) - estrogenic, progestational, androgenic, anti-estrogenic and anti-androgenic effects - COMPLICATED*

- (Ethinyl-Estradiol, Mestranol)
  - Different doses
  - Dose is related to risk
  - Few 50 ug pills available - still needed
  - Multiple types of progestin and doses
Contraception: CVD Risk

• Estrogenic component increases Tg and HDL-C, lowers LDL –C

• Androgenic progestin raises LDL-C and lowers HDL-C (norgestrel and levonorgestrel) - Progestational effect is neutral
## Contraception ~ Lipid Response
### mixed studies!

<table>
<thead>
<tr>
<th>Method</th>
<th>HDL</th>
<th>LDL</th>
<th>TG</th>
<th>Lp(a)</th>
<th>ApoB</th>
</tr>
</thead>
<tbody>
<tr>
<td>COC 30ug EE, 150ug desogestrel</td>
<td>+7mg/dL</td>
<td>-2mg/dL</td>
<td>+30mg/dL</td>
<td>n.c.</td>
<td>+3mg/dL</td>
</tr>
<tr>
<td>Vaginal ring 2.7 mg EE/11.7mg Ethinylestradiol</td>
<td>+2mg/dL</td>
<td>-8mg/dL</td>
<td>+13mg/dL</td>
<td>-2mg/dL</td>
<td>+16mg/dL</td>
</tr>
<tr>
<td>COC 1.5mg E2/2.5mg norethisterone or desogestrel</td>
<td>+1mg/dL</td>
<td>-1mg/dL</td>
<td>+5mg/dL</td>
<td>-2mg/dL</td>
<td>+15mg/dL</td>
</tr>
<tr>
<td>Implanon COC 30ug EE/10ug Levonorgestrel</td>
<td>-9mg/dL</td>
<td>+4.2mg/dL</td>
<td>+13mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNG-IUS COC EE35ug/Norgestimate .25mg</td>
<td>-9mg/dL</td>
<td>-10mg/dL</td>
<td>+20mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+8mg/dL</td>
<td>+2mg/dL</td>
<td>-2mg/dL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Contraception: CVD Risk

- 2nd generation POTENTIALLY less thrombotic risk than 3rd or 4th generation?
- Newer data low dose - graded risk stroke, MI ~ steroid load
- absolute risk very small
  - stroke ~21.4/100,000 person  MI ~10.1
  - 30-40ug EE 2.2, 2.3 x greater RR
  - 20ug EE 0.9 to 1.7
  - small differences by progestin type

- More estrogenic - more Triglyceride raising...greater risk of pancreatitis when baseline Tg \( \geq 250 \, \text{mg/dL} \) - 500 mg/dL
### Summary Chart of U.S. Medical Eligibility Criteria for Contraceptive Use

**Updated June 2012.** This summary sheet only contains a subset of the recommendations from the USMEC. For complete guidance, see: http://www.cdc.gov/reproductivehealth/unintendedpregnancy/USMECTL.htm

Most contraceptive methods do not protect against sexually transmitted infections (STIs). Consistent and correct use of the male latex condom reduces the risk of STIs and HIV.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Indication</th>
<th>Copper-IUD</th>
<th>Combined pill, patch, ring</th>
<th>Progestin-only pill</th>
<th>IUCD</th>
<th>DNG-OVD</th>
<th>Copr-ED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>0-14</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18-45</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>46-64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Anatomic abnormalities</strong></td>
<td>0-14</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18-45</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>46-64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Breast disease</strong></td>
<td>0-14</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18-45</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>46-64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Menarche to &lt;18 with past or present</strong></td>
<td>0-14</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18-45</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>46-64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Cervical or endometrial neoplasia</strong></td>
<td>0-14</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18-45</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>46-64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Depressive disorders (DM)</strong></td>
<td>0-14</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18-45</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>46-64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;64</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note:** The table above represents a subset of the recommendations from the USMEC. For complete guidance, see: http://www.cdc.gov/reproductivehealth/unintendedpregnancy/USMECTL.htm

---

**http://www.cdc.gov/reproductivehealth/unintendedpregnancy/usmec.htm**
**CDC compendium for medical conditions best resource for recommendations with comorbidities**

<table>
<thead>
<tr>
<th>BOX. Categories for Classifying Intrauterine Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = A condition for which there is no restriction for the use of the contraceptive method.</td>
</tr>
<tr>
<td>2 = A condition for which the advantages of using the method generally outweigh the theoretical or proven risks.</td>
</tr>
<tr>
<td>3 = A condition for which the theoretical or proven risks usually outweigh the advantages of using the method.</td>
</tr>
<tr>
<td>4 = A condition that represents an unacceptable health risk if the contraceptive method is used.</td>
</tr>
</tbody>
</table>
### US Medical Eligibility for Contraceptive Use

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sub</th>
<th>COC Patch</th>
<th>POP</th>
<th>P-Inj</th>
<th>Implant</th>
<th>LNG IUD</th>
<th>CU IUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperlipidemia</td>
<td></td>
<td>2/3*</td>
<td>2*</td>
<td>2*</td>
<td>2*</td>
<td>2*</td>
<td>1*</td>
</tr>
</tbody>
</table>
CONTRACEPTIVE RECOMMENDATIONS


- http://www.who.int/reproductivehealth/publications/family_planning/MECguidelinePart-2.pdf?ua=1
Lipids and PCOS

• Most widely used criteria
  – Rotterdam, Androgen Excess Society
  – (at least 2: androgen excess, ovulatory dysfunction, or polycystic ovaries by U/S)
  – High prevalence of dyslipidemia and metabolic syndrome
    • any age!
  – Poor Obstetrical Risk with or without MetS
  – Dx. in Adolescence and at Menopause (new cases) challenging
# TABLE 1. Diagnostic criteria for PCOS

<table>
<thead>
<tr>
<th>Criteria</th>
<th>NIH 1990 &quot;classic&quot;</th>
<th>Rotterdam 2003</th>
<th>AE-PCOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oligomenorrhea&lt;sup&gt;a&lt;/sup&gt;</td>
<td>+</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Clinical or biochemical hyperandrogenism&lt;sup&gt;b&lt;/sup&gt;</td>
<td>+</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Polycystic ovaries on ultrasound&lt;sup&gt;c&lt;/sup&gt;</td>
<td>+/-</td>
<td>+/-</td>
<td>+/-</td>
</tr>
</tbody>
</table>

NIH, Presence of both oligomenorrhea and clinical/biochemical hyperandrogenism; Rotterdam, any two of the above criteria; AE-PCOS, presence of clinical/biochemical hyperandrogenism and one other criterion.

<sup>a</sup> Eight or less menses per year.

<sup>b</sup> Acne or hirsutism or androgenic alopecia.

<sup>c</sup> Ovarian volume >10 ml and/or >12 follicles less than 9 mm in size in at least one ovary.

Dyslipidemia, treatment targets and options for women with PCOS?

• Screening
  – All - lipid and glucose testing
  – Re-evaluation every 2 years (AE, ADA) (No data)

• Targets:
  – Met Syndrome targets – NCEP III
  – AE Society Consensus Conference
## Consensus Statement Androgen Excess and Polycystic Ovary Syndrome (AE-PCOS) Society

### TABLE 2. PCOS risk categories and lipid target values

| Risk                                                                 | LDL target values, mg/dl (mmol/liter)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCOS</td>
<td>≤130 (3.37)</td>
</tr>
<tr>
<td>PCOS with obesity, hypertension, dyslipidemia, cigarette smoking, IGT, subclinical vascular disease</td>
<td>≤130 (3.37)</td>
</tr>
<tr>
<td>PCOS with MBS</td>
<td></td>
</tr>
<tr>
<td>High risk</td>
<td>≤100 (2.59)</td>
</tr>
<tr>
<td>PCOS with MBS and other risk factors; with T2DM, or in presence of overt vascular and/or renal disease</td>
<td>≤70 (1.81)</td>
</tr>
</tbody>
</table>

---

*Values are based on at least 12-h fasting lipid determinations. Predictive utility for CVD events based on nonfasting lipoprotein lipid values has not yet been clearly validated.*

*To convert mg/dl to mmol/liter, divide by 39.*

*Odds of CVD increase with number of MBS components and with other risk factors, including smoking, poor diet, physical inactivity, obesity, family history of premature CVD (<55 yr of age in male relative, <65 yr of age in female relative) and subclinical vascular disease.*

---

Treatment options for women with PCOS

- **Treatment**
  - Diet and exercise
  - Metabolic syndrome/Diabetes therapy
  - Metformin, Glyburide, Glitazones (weight gain and ?Risk), insulin
  - Statins lower testosterone and nonHDL and LDL
    - If not at risk for Pregnancy - See Pg. Classifications
  - All other agents
    - If not at risk for Pregnancy – See Pg. Classifications
  - Diagnosis and treatment of polycystic ovary syndrome: an Endocrine Society clinical practice guideline
Risk for CVD with Preeclampsia

- RR for hypertension 3.70 (2.70, 5.05) 14 yrs.
- Ischemic heart disease 2.16 (1.86, 2.52) 12 yrs.
- Stroke 1.81 (1.45, 2.27) 10.4 yrs.
- VTE 1.79 (1.37, 2.33) 4.7 yrs.

Pre-eclampsia and risk of cardiovascular disease and cancer in later life: systematic review and meta-analysis BMJ 2007
Risk for CVD with GDM

- GDM 1.51 (1.07, 2.14)
- Smoking 2.23 (2.01, 2.48)
- Obesity 1.98 (1.71, 2.29)
- Chronic hypertension 5.10 (3.1, 18)

Gestational diabetes mellitus and later cardiovascular disease: a Swedish population based case–control study Fadi, H et al. BJOG 2014, Nov 121(12);1530-36
Contraception

- BEST CHOICE?
Summary

• COC - with high Triglycerides obesity may not be best choice
• Consider pt focused issues
• Contraception still an issue women over 40
• Gynecological\Obstetrical Factors affect CVD risk
TAKE HOME

• Consult compendium CDC
• Be responsive to patients concerns

• Tailor contraceptive choice by risk and likelihood of compliance