Contraceptive Choices for Teens and Young Adults: Treatment of Menstrual Issues In Addition to Birth Control

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Agenda

• What to consider in choosing a contraceptive method for a teen or young adult
• Medical conditions treated using hormonal contraception
• Contraceptive methods in detail, from most effective to least effective
• Effects of contraception on menstrual bleeding

“Birth Control” used as treatment of medical conditions

• Menstrual problems
• Anemia due to iron deficiency
• Ovarian cysts
• Polycystic Ovarian Syndrome (PCOS)
• Endometriosis
• Benign breast disease (fibroadenomas, fibrocystic breast changes)
• Acne

“Birth Control” used as treatment of medical conditions

• Menstrual problems
• Anemia due to iron deficiency
• Ovarian cysts
• Polycystic Ovarian Syndrome (PCOS)
• Endometriosis
• Benign breast disease (fibroadenomas, fibrocystic breast changes)
• Acne
Current Published Guidelines

Medical eligibility criteria for contraceptive use

The Youth Risk Behavior Surveillance System (YRBSS): 2013
National Surveys Since 1991

Percentage of High School Students Who Ever Had Sexual Intercourse, 1991-2013

Percentage of High School Students Who Used a Condom at Last Sex, Among Those Sexually Active, 1991-2013

*During last sexual intercourse among the 34.0% of students nationwide who were currently sexually active.
†Based on linear and quadratic trend analyses using logistic regression models controlling for sex, race/ethnicity, and grade (p < 0.05). Significant linear trends (if present) across all available years are described first followed by linear changes in each segment of significant quadratic trends (if present).
Percentage of High School Students Who Used Birth Control Pills; an IUD or Implant; or a Shot, Patch, or Birth Control Ring, at Last Sex, Among Those Sexually Active, 2011-2013

National Youth Risk Behavior Surveys, 2011-2013

Percentage of High School Students Who Used Birth Control Pills, at Last Sex, Among Those Sexually Active, 1991-2013

National Youth Risk Behavior Surveys, 1991-2013

Percentage of High School Students Who Used Both a Condom During and Birth Control Pills; an IUD or Implant; or a Shot, Patch, or Birth Control Ring at Last Sex, Among Those Sexually Active, 2011-2013

National Youth Risk Behavior Surveys, 2011-2013

Problematic Menstrual Bleeding

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Menstrual flow</th>
<th>Interval between menses</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Menorrhagia&quot;</td>
<td>A lot of blood, or too long</td>
<td>Regular</td>
<td></td>
</tr>
<tr>
<td>&quot;Metrorrhagia&quot;</td>
<td>Normal</td>
<td>Irregular</td>
<td></td>
</tr>
<tr>
<td>&quot;Menometrorrhagia&quot;</td>
<td>A lot of blood, or too long</td>
<td>Irregular</td>
<td></td>
</tr>
</tbody>
</table>
Causes of Problematic Menstrual Bleeding

- Chronic medical illnesses
- Endocrine diseases
- Polycystic ovary syndrome
- STIs
- Forgotten tampon
- Polyps, other masses
- Abnormal pregnancy
- Poor nutrition or stress
- Competitive sports
- Or…”Dysfunctional uterine bleeding”

Menstrual Cycle

- Follicular phase
  - Ovulation
  - Luteal phase

Choosing a Method: Practicalities

- “The best method is the one that is medically appropriate and is used every time by the patient”
- Start as soon as possible
- Give enough to start, and make it easy to get more
- Follow-up, follow-up, follow-up
- Remember that pregnancy has risks too!
- STI prevention and screening go together with pregnancy prevention

Choosing a Method: What to consider?

- Medical and sexual history
- Contraceptive history
- Adolescent’s personal beliefs
- Partners’, family’s and friends’ beliefs
- Age, maturity (early, middle, late adol)
- Adolescent’s readiness:
  - Precontemplation, contemplation, action, maintenance, relapse
- Menstrual history and personal preferences
Efficacy of birth control methods

• “Perfect use failure rate”
  % of users who become pregnant during first year of correct and consistent use

• “Typical use failure rate”
  % of users who become pregnant during first year of actual use

Abstinence as a method

• The only method for 100% efficacy!
• But what is the “typical” failure rate?
• “Abstinence”… from what exactly?…
• Essential part of all contraceptive counseling
• Requires consistent commitment, assertiveness, self-confidence
• Concern is that adolescent could be unprepared at first sex
• Discuss scenarios, “ideal age”, access

Compare Efficacy for Contraception versus Menstrual Regulation

Contraception
- Implant
- IUDs: Mirena, Paragard
- Depo-Provera
- Combo Pill, patch, ring
- Progestin pill

Less blood
- Mirena, Depo-Provera, Progestin pill

More regular cycles
- Combo pill, patch, ring

Same or worse
- Paragard
- Implant
Most Effective Methods for Contraception

“LARCs”
- Efficacy of a method depends on:
  - inherent effectiveness of the method
  - how consistently and correctly the method is used
- LARC = long-acting reversible contraception
  - Implant and IUDs
- LARCs are considered first-line option for teens and young adults

Progestin implant (Nexplanon® or Implanon®):
25-70 mcg/day etonogestrel

<table>
<thead>
<tr>
<th>Time since placed</th>
<th>Etonogestrel release rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>at weeks 5-6</td>
<td>60-70 mcg/day</td>
</tr>
<tr>
<td>at end of Year 1</td>
<td>35-45 mcg/day</td>
</tr>
<tr>
<td>at end of Year 2</td>
<td>30-40 mcg/day</td>
</tr>
<tr>
<td>at end of Year 3</td>
<td>25-30 mcg/day</td>
</tr>
</tbody>
</table>

- Perfect use: 0.05%
- Typical use: 0.05%
- 3-year implant, 4cm x 2mm polymer rod
- Mechanism: thickens cervical mucus, suppresses ovulation, endometrial atrophy

Progestin implant (Nexplanon®):

- **Advantages**
  - private, long-acting
  - progestin-only method
  - amenorrhea in 22% of women at 2 years
- **Disadvantages**
  - irregular bleeding is common
    - 34% have bleed/spot that is infrequent
    - 7% have bleed/spot that is frequent
    - 18% have bleeding that is prolonged
  - cost effective only in the long-term
Progestin implant:
New start
• Place anytime that it’s reasonably certain that patient is not pregnant
• Anticipatory guidance
  – If placed > 5 days after last menses, then back-up method for next 7 days
  – irregular bleeding is common
  – possible mood changes, weight gain, headache, acne
  – condoms for STI prevention
  – return to fertility is rapid

Progestin intrauterine device (IUD):
20 mcg/day levonorgestrel (Mirena®)
• Perfect use: 0.2% Typical use: 0.2%
• 5-year device, polyethylene with medication reservoir
• Mechanism: thickens cervical mucus, may impair sperm capacitation and ovum migration, endometrial atrophy
• Expulsion rate: 4.5% at 5 years

Progestin IUD (Mirena®)
• Advantages
  – private, long-acting method
  – progestin-only method
  – menstrual flow decreases after 3-6 months
  – amenorrhea in 20% of women at 1 year
• Disadvantages
  – irregular bleeding during first 3-6 months
  – cost effective only in the long-term

Progestin IUD: New start
• Place anytime that it’s reasonably certain that patient is not pregnant
• screen and treat cervical/vaginal infections risk for pelvic inflammatory disease (PID) is peri-placement only
• Anticipatory guidance
  – If placed > 5 days after last menses, then back-up method for next 7 days
  – menstrual changes, awareness of strings
  – Condoms for STI prevention
  – return to fertility is rapid
Copper IUD: (Paragard®)

- Perfect use: 0.8%
- Typical use: 0.8%
- 10-year device, polyethylene with copper sleeves and fine copper wire wrapping
- **Mechanism**: spermicidal because copper ions inhibit sperm mobility
- **Expulsion rate**: 11.3% at 5 years

**Copper IUD: (Paragard®)**

- **Advantages**
  - private, long-acting method
  - no hormones at all
- **Disadvantages**
  - heavier menstrual bleeding, more cramps, leading to 12% discontinue by 1 year
  - cost effective only in the long-term

Copper IUD: New start

- Place anytime that it’s reasonably certain that patient is not pregnant
  - can also be used for purpose of emergency contraception
  - screen and treat cervical/vaginal infections before or during placement
  - risk for pelvic inflammatory disease (PID) is peri-placement
- **Anticipatory guidance**
  - menstrual changes, string checks
  - condoms for STI prevention
  - return to fertility is rapid

Reasonably Effective Methods for Contraception
### Progestin shot: 150 mg depot medroxyprogesterone acetate (DMPA) (Depo-Provera®)

- **Perfect use:** 0.3%  
- **Typical use:** 3%
- **Intra-muscular injection** given every 11-13 weeks
- **Mechanism:** suppress ovulation, thicken cervical mucous, endometrial atrophy

### Progestin shot: (Depo-Provera®)

- **Advantages**
  - progestin-only
  - 55% have amenorrhea at 1 yr of use
  - decreases risk of endometrial cancer
- **Disadvantages**
  - irregular bleeding: very common during first 3-6 months
  - weight gain: average gain of 5 lbs at 1 year, 14 lbs at 4 years, but worse in women starting at high weight already
  - bone density loss: partially recoverable

### Progestin shot: New start

- **Start asap with “quick start” method**
- **Anticipatory guidance**
  - timely appointments (11-13 weeks)
  - spotting/bleeding is most common reason for discontinuation
  - appetite and weight management
  - mood changes
  - condoms for STI prevention
  - return to fertility is approx 10 months (median time)

### Combined Oral Contraceptive Pills (OCPs): Estrogen + Progestin

- **Perfect use:** 0.3%  
- **Typical use:** 9%
- **Mechanism:** suppress ovulation, thicken cervical mucous
- **Monophasics**
  - Weeks 1-3: consistent dose of hormones  
  - Week 4: placebo pills
- **Biphasics or triphasics**
  - Weeks 1-3: consistent estrogen dose while progestin dose increases  
  - Week 4: placebo pills
### OCPs: Estrogen component

- Ethinyl estradiol (EE)
  - 50 mcg: this higher dose typically avoided
  - 30-35 mcg: most commonly prescribed
  - 20 mcg: less estrogen side effects, but recent concerns about decreased bone mineral density, may be less effective in overweight patients
- Mestranol
  - 50 mcg: equivalent to 35mcg EE dose

### OCPs: Benefits

- regulates menses
- relieves dysmenorrhea, menorrhagia
- decreases risk for ovarian, endometrial cancer
- minimizes ovarian cysts, benign breast disease, symptoms
- treatment for acne, hirsutism
- return to fertility is rapid

### OCPs: Side effects

- nausea
- breast tenderness
- "bloating"
- worsened headaches
- increased appetite
- mood swings, fatigue
- worsened depression
- increased blood pressure

- weight gain not supported by evidence


### OCPs: Risk of venous thromboembolism (VTE)

- Estimates of absolute risk for VTE in healthy, non-pregnant women
  - 0.5-3.01 per 10,000 woman-years in non-users
  - 1.5-18.1 per 10,000 woman-years in OCP-users
- VTE is more likely during 1st year of OCP use
  - risk decreases with longer duration of use
- Risk decreases with lower estrogen dose

OCPs: Risk of VTE

Patient counseling:
“ACHES”
Abd pain
Chest pain
Headache
Eye (vision) problems
Swelling

OCPs: Absolute contraindications (category 4), US medical eligibility criteria 2010

• Deep venous thrombosis
• Pulmonary embolism
• Cerebrovascular stroke
• Ischemic heart disease
• Cardiomyopathy
• Valvular heart disease
• Surgery with immobilization
• Severe hypertension more than 160/100
• Structural heart disease (pulm HTN, AFib, SBE)
• Liver disease: severe cirrhosis, active hepatitis, liver cancer

OCPs: Drug Interactions that may decrease efficacy

• Anticonvulsants
  – phenytoin, phenobarbital, CBZ, ethosuximide, topiramate, others
• Antifungals
  – griseofulvin, itraconazole, ketoconazole, fluconazole
• Antibiotics
  – Rifampin, but NOT tetracycline
• Herbal Preparations
  – St. John’s Wort

OCPs: New start

• Start asap, “Quick-start”
  – older approaches were “Sunday start”, “1st day start”

• Anticipatory guidance
  – logistics of interacting at the pharmacy
  – back-up method for 7 days
  – condoms for dual contraception, STI prevention
  – possible spotting, break-through bleeding
  – benefits and side effects, “ACHES”
  – opportunity to discuss smoking, weight
  – short-acting nature of pills
**OCPs: Missed pills**

- Help choose a consistent time each day to take the pill, how she will remember
- 1 missed pill
  - take ASAP
- 2 missed pills
  - take 1 ASAP and double up next day, use a backup method for 7 days
- 3 or more missed pills
  - call MD for urgent visit, reconsider options

**Birth control patch (Ortho-Evra®):**

- 20mcg/day EE and 150mcg/day norelgestromin
- 7-day transdermal patch
- Perfect use: 0.3%  Typical use: 9%
- Mechanism, contraindications, benefits, side effects: similar to OCPs
- Advantages: 7-day dosing, less break-through bleeding long-term
- Disadvantages: less efficacy if wt > 198 lbs

**Patch Counseling:**

*Where does it go?*

**FDA notice: Higher estrogen exposure, increased thromboembolism rates**

- Patch users have serum level of estrogen that is 20% lower than users of 35mcg EE pill, but are exposed to 60% more estrogen overall
- Area under the curve (AUC) is the critical factor for estrogen exposure
Patch: New start

- Anticipatory guidance: similar to OCPs
  - also: ok to swim, participate in active sports
- Help patient to choose the Patch “change day”
  - Weeks 1-3: change patch once a week
  - Week 4: leave it off, will have menses
- Where to place patch
  - anywhere except breast area
  - rotate skin sites to minimize skin sensitivity

Patch: Will it fall off?

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th># patches worn</th>
<th>Complete Detach</th>
<th>Partial Detach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraceptive studies</td>
<td>3,319</td>
<td>70,552</td>
<td>1.8 %</td>
<td>2.9 %</td>
</tr>
<tr>
<td>Centers with Warm Humid Climate (11 sites in Florida, Georgia, Louisiana)</td>
<td>325</td>
<td>4,877</td>
<td>1.7 %</td>
<td>2.6 %</td>
</tr>
<tr>
<td>Exercise study</td>
<td>30</td>
<td>87</td>
<td>1.1 %</td>
<td>0.0 %</td>
</tr>
</tbody>
</table>


Patch: Detachment

- Weeks 1-3: detachment for less than 48 hrs
  - may re-attach and continue same schedule
- Weeks 1-3: detachment for more than 48 hrs or uncertain
  - consider this as a new start
  - back-up method needed
- Week 4: patch left off for more than 7 days
  - consider this as a new start
  - back-up method needed
Birth control ring (NuvaRing®):
15 mcg/day EE and 120 mcg/day etonogestrel

• 21-day flexible plastic intravaginal ring
• Perfect use: 0.3%  Typical use: 9%
• Mechanism, contraindications, benefits, side
  effects: similar to OCPs
• Advantages: single ring for 3 weeks, less
  break-through bleeding long-term than OCPs
• Disadvantage: self-insertion

Ring: New start

• Anticipatory guidance: similar to OCPs
• One-size, flexible, transparent
• One ring per cycle
  – Weeks 1-3: wear one ring intravaginally
  – Week 4: remove ring, will have menses
• Expulsion rate: 2.6% of women
  – If ring has been out for more than 3 hrs,
    then consider this a new start

Ring: Pharmacology

• Medication release continues for at least 31
days
• Prescription for monthly ring could be used
  for either traditional cycles or extended-
cycling

Least effective for purpose of
contraception
**Barrier method: Condom**

- **Perfect Use:** 2%  
  **Typical Use:** 15%
- **Advantages**
  - only method for STI prevention
  - serves as dual method for contraception
  - don’t need prescription, free at some clinics
  - accessible to males
- **Counseling:** how to use, storage, consistency, lubricants
- **Breakage of failure up to ~3-5%**

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**Emergency Contraception (“EC”)**

<table>
<thead>
<tr>
<th>Medication</th>
<th>How to use as EC</th>
<th>Failure rate (at &lt;72 hr)</th>
<th>Pregnancies prevented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levonorgestrel</td>
<td>marketed as EC</td>
<td>1.1%</td>
<td>85%</td>
</tr>
<tr>
<td>OCPs</td>
<td>take higher doses</td>
<td>3.2%</td>
<td>57%</td>
</tr>
<tr>
<td>Copper IUD</td>
<td>doubly serves as EC</td>
<td>0.1%</td>
<td>&gt; 99%</td>
</tr>
</tbody>
</table>

- **Pregnancy test now and in 2 weeks**
- **Key message:** EC is **not** a birth control method
- **This is an opportunity to discuss new plan for more reliable long-term birth control method!**

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**EC: Levonorgestrel products**

- **Labeled specifically for use as EC**
  - levonorgestrel 1.5mg single tab (Plan B One-Step®)
  - Use up to 5 days after unprotected sex
- **Mechanism is to inhibit or delay ovulation**
  - evidence does **not** support these hypotheses:
    - altered cervical mucus, sperm function
    - any effect after fertilization
    - any effect after implantation

---

**Timing of Levonorgestrel EC dose**

<table>
<thead>
<tr>
<th>Hours after unprotected sex</th>
<th>Pregnancy Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-12</td>
<td>0.5%</td>
</tr>
<tr>
<td>13-24</td>
<td>1.5%</td>
</tr>
<tr>
<td>25-36</td>
<td>1.8%</td>
</tr>
<tr>
<td>37-48</td>
<td>2.6%</td>
</tr>
<tr>
<td>49-60</td>
<td>3.1%</td>
</tr>
<tr>
<td>61-72</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

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Timing of Levonorgestrel Dose:
Up to 5 days

EC: Levonorgestrel products

- **Side effects**: 25% nausea, 15% spotting
- **Absolute contraindications**: none
- **Failure**:
  - 1.1% preg rate when taken within 72hrs, translates to 85% of pregnancies prevented
  - no increase in birth defects or ectopic pregnancy

Access to EC

- Levonorgestrel product is over-the-counter without age restrictions
- “Advance provision” endorsed by AAP
  - practice of prescribing EC before it’s needed, as part of anticipatory guidance
- All sexually active adolescents should know about EC
  - especially when adolescents choose condoms as their sole birth control method
  - boys should be educated also

What can a pediatric provider do?

- Discuss sexuality and contraception early
- Help adolescents choose abstinence and delayed sex
- Provide access to contraceptive services
  - confidentiality as permitted in each state
  - developmentally appropriate
  - remember to include EC
  - be ready to refer when necessary
- Facilitate parent involvement
- Repeat messages with each visit


Contraceptive Efficacy

Compare Efficacy for Contraception versus Menstrual Regulation

Contraception

- Implant
- IUDs: Mirena, Paragard
- Depo-Provera
- Combo Pill, patch, ring
- Progestin pill

Less blood

- Mirena, Depo-Provera, Progestin pill

More regular cycles

- Combo pill, patch, ring

Same or worse

- Paragard
- Implant

Reference materials

Centers for Disease Control and Prevention guidelines for contraindications to contraception


Reference materials

Practical clinician reference for prescribing contraception


American Academy of Pediatrics guidelines

Reference materials

Websites for information about contraception, access to care, teen pregnancy, sexual behaviors, interventions, policy issues, state-level and national-level data

• http://www.cdc.gov/HealthyYouth/sexualbehaviors/state-facts.htm
• http://ec.princeton.edu
• http://www.guttmacher.org
• http://www.kingcounty.gov/healthservices/health/personal/famplan/providers.aspx
• http://www.thenationalcampaign.org
• http://www.plannedparenthood.org