Contraception: What’s out What’s new What’s coming

Bliss Kaneshiro, MD
Family Planning Fellow
Department of Obstetrics & Gynecology
Oregon Health & Science University
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OHSU Family Planning Division and fellowship
Objectives

- Off the market contraceptive methods
- Prescribing precautions
- New concepts with current contraceptives
- Future contraceptive methods
6.3 Million U.S. Pregnancies

- 52% Intended
- 25% Unintended
  Despite method use
- 23% Unintended
  No method used

Source: Henshaw *Fam Plann Persp* 1998
Prescribing Precautions
(Estrogen-related)

- H/O thrombotic disease in self or family
- CVD (with/without diabetes, SLE)
- Breast cancer
- Endometrial Cancer
- Unexplained vaginal bleeding
- Migraines with focal neurological signs
- Hepatic dysfunction, carcinoma, adenoma
- Smoking ≥ 35 yo
- Uncontrolled hypertension
What’s out: Norplant

- 6 implants, releasing levonorgestrel.
- Effective for 5 years
  (7 years if < 154 lbs)
- Efficacy: 99% (typical & perfect use)
- Compliance: high!!
- Problems: irregular bleeding, surgical removal
What’s out: Lunelle

- Monthly injection (Estradiol cypionate + Medroxyprogesterone)
- Efficacy: 97 % Typical use
- Side effects: similar to OCPs
- Compliance: > OCPs
What’s new...
What’s new: Mirena

• Levonorgestrel releasing intrauterine system (20 mcg/day)
• Effective for 5+ years
• Efficacy: 99.9% (typical & perfect use)
• Side effects: irregular bleeding
• Adverse events:
  – perforation < 1%
  – Expulsion 4.9%
  – PID

Toivonen J, Ob Gyn, 1991:77;261-4
Mirena: Percentage reduction in menstrual blood loss

- LNG IUS: 100% reduction
- Placebo: 0%
- Prostaglandin Synthetase Inhibitor: 40%
- 28-Day Cycle Combination OC: 20%

Intrauterine Devices (IUDs)

Expanded patient profile
IUDs: No longer contraindicated in.....

- Nulliparous women
  - IUD insertion, not IUD use is associated with PID
    - Cochrane Database
    - Systematic Review (Grimes et al)
    - ACOG Practice Bulletin 59

- IUDs do not cause future infertility
  - Hubacher et al (2001)
    - Case control study of 1895 women
  - Daling et al, Cramer et al
IUDs
No longer contraindicated in

- Nulliparous women (continued)
  - Expulsion and continuation rates similar to parous women\(^1,2\)
- History of PID
- Non-monogamous
- History of ectopic pregnancy

\(^1\)Duenas et al, 1996
\(^2\)Wildmeersch et al, 1997
## FDA Label for Copper IUD

<table>
<thead>
<tr>
<th>Old Label</th>
<th>Key Message</th>
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</thead>
<tbody>
<tr>
<td>“ParaGard is recommended for women who have at least one child”</td>
<td><em>ParaGard is appropriate for nulliparous women</em></td>
</tr>
<tr>
<td>“ParaGard is recommended for women who are in a stable, mutually monogamous relationship”</td>
<td><em>ParaGard is appropriate for women without a relationship requirement</em></td>
</tr>
<tr>
<td>“ParaGard is recommended for women who have no history of PID”</td>
<td><em>ParaGard is appropriate for women who have had PID in the past but current behavior does not make them at high risk for PID</em></td>
</tr>
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</table>
What’s new: Ortho-Evra Patch

• Transdermal system
  (20 μg EE, 150 μg norelgestromin)

• Change weekly x 3,
  1 week off for menses

• Efficacy: 99% (perfect use)

• Side effects: similar to OCPs except increase nausea,
  breakthrough bleeding in 1st cycle, breast tenderness
  in 1st and 2nd cycles

• Compliance


Norwegian Beach Volleyball team, Athens 2004
http://pub.tv2.no/nettavisen/english/article266805.ece
Ortho-Evra Patch: other issues

- Detachment < 2%
- Allergies (ok with Latex-allergic)
- Lint ring
- Body weight
  - 1/3 treatment failures in women weighing ≥ 90 kg (198 lbs)
  - Caution with prescribing
    - Recommend another method
    - Use with condoms

The Patch Scare

- 17 deaths reported by media
  - only 6 substantiated

- 4 million US users (2.2 million woman-yrs use)

- DVT risk equal to OCs

Grimes 2004

Norwegian Beach Volleyball team, Athens 2004
http://pub.tv2.no/nettavisen/english/article266805.ece
What’s new: Nuvaring

- Contraceptive vaginal ring
  (15µg EE, 120µg etonorgestrel)

- 1 ring x 3 weeks, 1 week off

- Efficacy: 99% (perfect use)

- Side Effects: similar to OCPs except more vaginal discharge

- Compliance
Nuvaring: other issues

• Average size (54mm)
• Sex
  – Ok to remove but no longer than 3 hours
  – 68% of partners *never/rarely* feel ring
    (94% did not *object* to the ring)
  – 83% of women *never/rarely* feel ring
• Tampon use
• Antimycotic vaginal medication

Dieben, et al Ob Gyn, 2002;
Verhoevan C, et al Contraception 2004
What’s new: Yasmin

• 30µg EE and 3 mg Drospirenone
• Antimineralocorticoid analogue (equivalent to 25 mg Spironolactone)
• Antiandrogenic
• Efficacy = OCs
• Benefits over traditional OCs:
  – Decrease in initial weight gain (no overall change in weight)
• Precautions
What’s new: Essure

- Transcervical sterilization
- Efficacy 99.8% (over 3 years)
- Benefits
  - No incision
  - Office based
- Precautions
  - Non-reversible
  - Must have training in hysteroscopy
  - Risks of hysteroscopy
  - Successful bilateral placement 88% (first attempt)
Essure: follow-up
What’s new: Seasonale

• Only FDA-approved OC for continuous use dosing
• 30 μg EE and 150 μg levonorgestrel

What’s coming...
What’s coming: Depo-low

- Subcutaneous injection
- Lower dose formula
  (150 mg/mL vs. 104mg/0.65mL)
- Ovulation suppression for 13 weeks
- Return to fertility (97% at 1 year)

Jain J, et al, Contraception, 2004
What’s coming: Implanon

- Progestin-only single rod implant
- 40 mcg/day etonogestrel
- Effective for 3 years
- Efficacy: 99.9%
Implanon: return to fertility

>90% ovulation within 1 month post removal

Contraception 1993; 47: 251
Implanon: insertion
What’s coming: male methods

- Hormonal contraception: inhibition of spermatogenesis
  - Testosterone
  - Testosterone with GnRH antagonist
  - Progestins

- Immunocontraception

Jensen JT, Current Women’s Health Reports, 2002
Other concepts. . .
New concepts: Menstrual Nirvana

• Obtain with OCPs, Depo, Mirena, POP
• Extended or continuous dosing
  – EE dose doesn’t make a difference
  – Norethindrone may be best progestin
  – Give 3-6 month trial
• Nuances
  – Irregular bleeding
  – Endometrium

New concepts: Quickstart

Westoff 2002, 2003; Lara-Torre 2002
Other concepts: DMPA & bone loss

FDA ‘black box’ warning
## DMPA use and BMD

<table>
<thead>
<tr>
<th>Author, year</th>
<th>Location</th>
<th>Study Design</th>
<th>Participants (DMPA users)</th>
<th>BMD in DMPA users</th>
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<tbody>
<tr>
<td>Cundy et al, 1991&lt;sup&gt;12&lt;/sup&gt;</td>
<td>New Zealand</td>
<td>Cross-sectional</td>
<td>30 adults; median DMPA use 10 years</td>
<td>Down red arrow = decrease in BMD</td>
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<tr>
<td>Cromer et al, 1996&lt;sup&gt;13&lt;/sup&gt;</td>
<td>United States</td>
<td>Prospective cohort</td>
<td>15 adolescents; Up to 24 months of DMPA use</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Taneepanichskul et al, 1997&lt;sup&gt;14&lt;/sup&gt;</td>
<td>Thailand</td>
<td>Cross-sectional</td>
<td>50 adults, nonsmokers, BMI 23.9 (SD 3.9); mean DMPA use 59 months (SD 31)</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Gbolade et al, 1998&lt;sup&gt;15&lt;/sup&gt;</td>
<td>United Kingdom</td>
<td>Cross-sectional</td>
<td>185 adults; median DMPA use 5 years</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Tang et al, 1999&lt;sup&gt;16&lt;/sup&gt;</td>
<td>Hong Kong</td>
<td>Cross-sectional</td>
<td>67 adults, 1.5% smokers, BMI 24.9 (SD 3.6); median DMPA use 6 years (but all ≥ 5 years)</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Scholes et al, 1999&lt;sup&gt;17&lt;/sup&gt;</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>183 ‘young’ women (age 18-21); Up to 133 months of DMPA use</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Petitti et al, 2000&lt;sup&gt;18&lt;/sup&gt;</td>
<td>Multiple</td>
<td>Cross-sectional</td>
<td>350 adults, ≥ 24 month use of DMPA</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Berenson et al, 2004&lt;sup&gt;19&lt;/sup&gt;</td>
<td>United States</td>
<td>Prospective cohort</td>
<td>47 adults, 38 smokers, BMI 22 (SD 2.7); DMPA use 24 months</td>
<td>Down red arrow = decrease in BMD</td>
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<td>Clark et al, 2004&lt;sup&gt;20&lt;/sup&gt;</td>
<td>United States</td>
<td>Prospective cohort</td>
<td>178 adults, 23% smokers, BMI 25 (SD 5.9); DMPA use 24 month observation</td>
<td>Down red arrow = decrease in BMD</td>
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<tr>
<td>Cromer et al, 2004&lt;sup&gt;21&lt;/sup&gt;</td>
<td>United States</td>
<td>Prospective cohort</td>
<td>29 adolescents; DMPA use 12 months</td>
<td>Down red arrow = decrease in BMD</td>
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<tr>
<td>Lara-Torre et al, 2004&lt;sup&gt;22&lt;/sup&gt;</td>
<td>United States</td>
<td>Prospective cohort</td>
<td>58 adolescents; DMPA use up to 24 months</td>
<td>Down red arrow = decrease in BMD</td>
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<tr>
<td>Scholes et al, 2004&lt;sup&gt;23&lt;/sup&gt;</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>81 adolescents; median DMPA use 9 months</td>
<td>Horizontal blue double ended arrow = no difference in BMD between Depo users and non-users</td>
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# BMD recovery after DMPA

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<tr>
<th>Author, year</th>
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<tr>
<td>Cundy et al, 1994⁹</td>
<td>New Zealand</td>
<td>Prospective cohort</td>
<td>14 adults stopping DMPA versus 22 adults using DMPA. Median DMPA use 10 years. *in those that stopped DMPA</td>
<td></td>
</tr>
<tr>
<td>Cundy et al, 2002²⁴</td>
<td>New Zealand</td>
<td>Prospective cohort</td>
<td>Postmenopausal women (11 DMPA past-users with no HRT, 5 DMPA past-users with HRT, 15 DMPA never-users with no HRT) *in HRT arm</td>
<td></td>
</tr>
<tr>
<td>Cundy et al, 2003²⁵</td>
<td>New Zealand</td>
<td>Prospective cohort</td>
<td>DMPA use for ≥ 2 years, randomized to estrogen (19 adults) versus placebo (19 adults) *in estrogen arm</td>
<td></td>
</tr>
<tr>
<td>Cromer et al, 2005²⁶</td>
<td>United States</td>
<td>Prospective cohort</td>
<td>DMPA use for 24 months randomized to placebo (36 adolescents) versus estrogen (69 adolescents) *in estrogen arm</td>
<td></td>
</tr>
<tr>
<td>Scholes et al, 2005⁶</td>
<td>United States</td>
<td>Cross-sectional and Prospective cohort</td>
<td>80 Adolescents using DMPA (71% discontinued DMPA). Median DMPA use 12 months. *in those that stopped DMPA</td>
<td></td>
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Up green arrow = increase in BMD
DMPA Recs

• WHO 2005 Response:
  
  – No restriction on the use of DMPA or on the duration of use, among women aged 18 to 45
  
  – Among adolescents (menarche to < 18) and women over 45, the advantages of using DMPA generally out-weigh the theoretical safety concerns regarding fracture risk. Review risk/benefits with patient

www.who.int/reproductive-health/family_planning/bone_health.html.
DMPA Recs

• Average DMPA patient
  – No current recs for estrogen add-back
  – No current recs for BMD measurements
  – Recommend life-style changes (stop smoking, increase exercise, Calcium, Vit D).

• High risk adolescents
Other concepts:

Contraceptives & Obesity

• No impact of weight on efficacy:
  – Barrier methods
  – Sterilization
  – Depo-Provera (& Depo Subq)
  – IUDs (Copper T and Mirena)

• Suspected decrease in efficacy (but still reasonable to prescribe!!):
  – OrthoEvra Patch

• Unknown effect (but still reasonable to prescribe!!):
  – Oral contraceptives
  – Nuvaring
  – Implanon

Contraceptives & Obesity

• Limited number of obese women studied

• Hormonal contraception prevents more pregnancies than NO contraception

• Contraception in an obese woman is safer than a pregnancy (BEWARE of co-morbidities)
“Don’t get me wrong. I think the morning after pill is great. It’s just that right now my problem is lining up something for the night before.”
New Concepts: EC

- Progestin-only (0.75 mg levonorgestrel)
- Simplified dosing regimen
- Decreases risk of pregnancy by 86%
- Ok – up to 5 days, ideally within 72 hours
- Advance Provision
- Only 1 contraindication

New concepts: IUDs & the nulliparous

- Fear of infertility
- Monogamy not a criteria

New concepts: PWOP*

• Avoiding barriers to contraception
• Pills (patch, ring, Depo) without a pelvic exam

*Planned Parenthood terminology
Stewart F, JAMA, 2001
WARNING:

• Spermicides containing Nonoxynol-9 are no longer recommended for use, as N-9 may increase transmission of HIV and STIs

A note about Teen Contraception. . .
Young people are at high risk of unintended pregnancy and STDs.

The Allan Guttmacher Institute
U.S. teenagers have higher rates of pregnancy, birth and abortion than teenagers in most other developed countries.

The Allan Guttmacher Institute
...but U.S. teenagers have higher rates of unintended pregnancy and STDs because they

- Are less likely to use contraceptives
- Have shorter relationships
- Have more sexual partners

The Allan Guttmacher Institute
What accounts for lower teenage pregnancy and STD rates in other countries?

• Clear and unambiguous prevention messages
• Strong condemnation of teenage parenthood
  – Societal supports for young people
  – Greater reproductive health services
  – Comprehensive sex education

The Allan Guttmacher Institute
Choosing a birth control.....