

*Contraception:*  
What's out  
What's new  
What's coming

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With special thanks to:

Alison Edelman, MD, MPH, Jody Steinauer, MD, Phil Darney, MD, Mark Nichols, MD, and Jeffrey Jensen, MD, MPH for sharing slides and information for this presentation.

OHSU Family Planning Division and fellowship



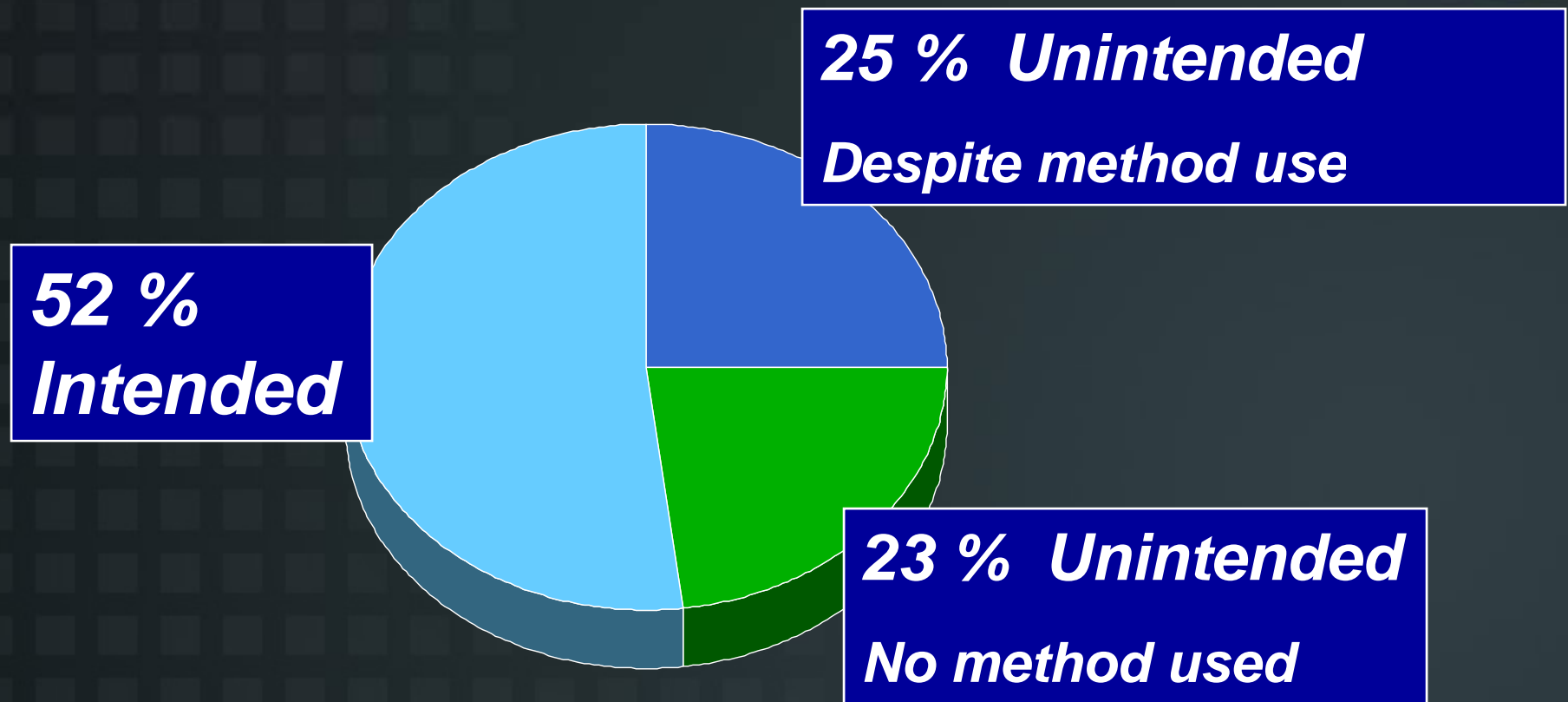
# Objectives

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- Off the market contraceptive methods
- Prescribing precautions
- New concepts with current contraceptives
- Future contraceptive methods

# 6.3 Million U.S. Pregnancies



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  $\geq$  35 yo
- Uncontrolled hypertension

What's out . . .

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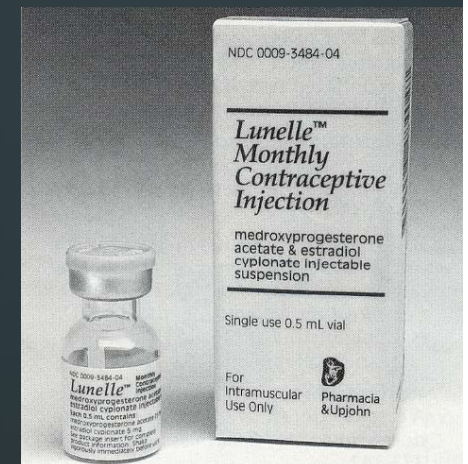
# What's out: Norplant

- 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





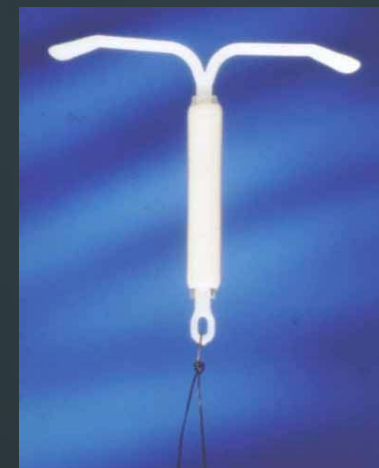
What's new. . .

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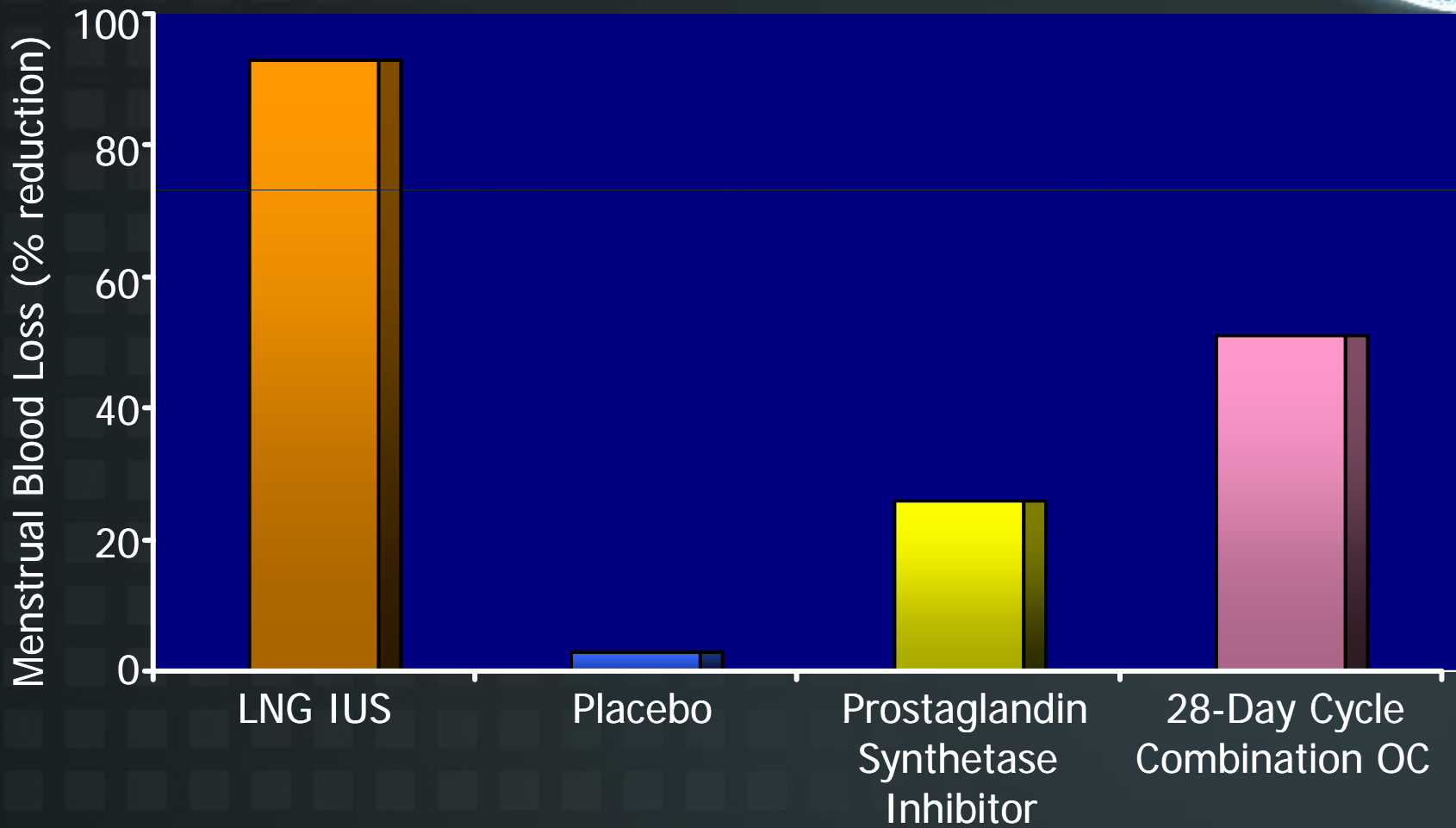


# What's new: Mirena

- 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



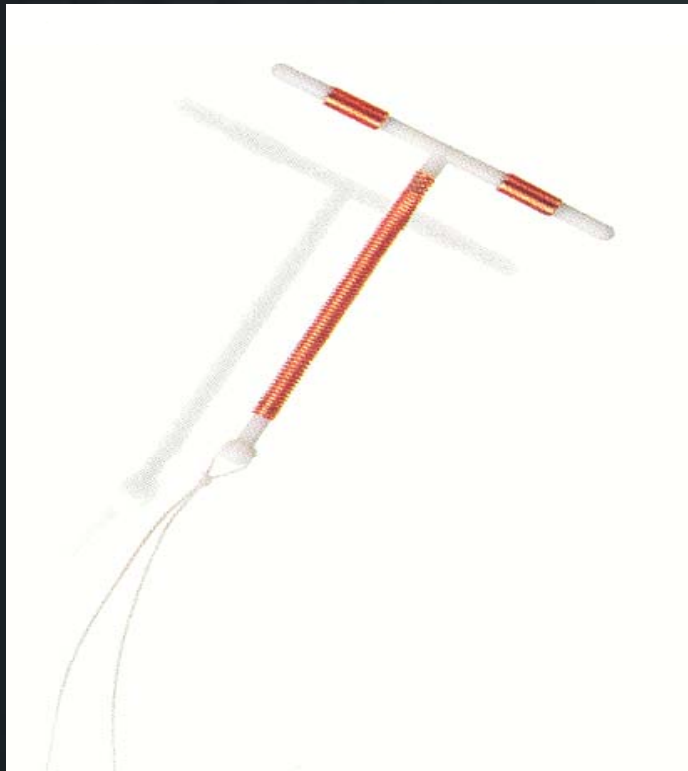
# Mirena: Percentage reduction in menstrual blood loss



# 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

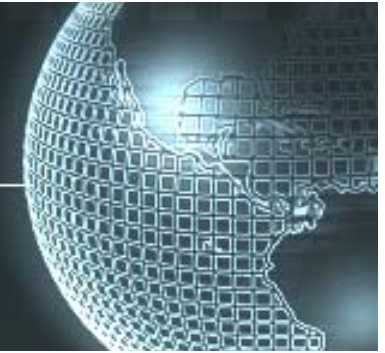
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- Nulliparous women (continued)
  - Expulsion and continuation rates similar to parous women<sup>1,2</sup>
- History of PID
- Non – monogamous
- History of ectopic pregnancy

<sup>1</sup>Duenas et al, 1996

<sup>2</sup>Wildmeersch et al, 1997

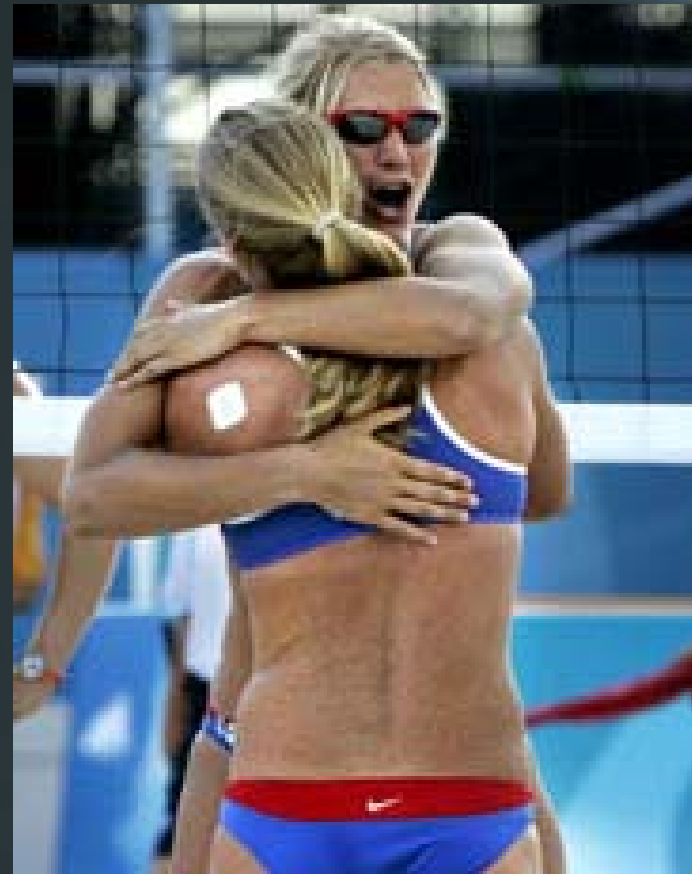
# FDA Label for Copper IUD



Old Label	Key Message FDA approved New Label
“ParaGard is recommended for women who have at least one child”	<i>ParaGard is appropriate for nulliparous women</i>
“ParaGard is recommended for women who are in a stable, mutually monogamous relationship”	<i>ParaGard is appropriate for women without a relationship requirement</i>
“ParaGard is recommended for women who have no history of PID”	<i>ParaGard is appropriate for women who have had PID in the past but current behavior does not make them at high risk for PID</i>

# What's new: Ortho-Evra Patch

- Transdermal system  
(20  $\mu\text{g}$  EE, 150  $\mu\text{g}$  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 1<sup>st</sup> cycle,  
breast tenderness in 1<sup>st</sup> and 2<sup>nd</sup>  
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  $\geq 90$  kg (198 lbs)
  - Caution with prescribing
    - Recommend another method
    - Use with condoms

Audet M, et al. JAMA 2001; Zieman M, et al Fertil Steril 2002



# 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



Norwegian Beach Volleyball team, Athens 2004  
<http://pub.tv2.no/nettavisen/english/article266805.ece>

# What's new: Nuvaring

- Contraceptive vaginal ring  
(15 $\mu$ g EE, 120 $\mu$ g 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

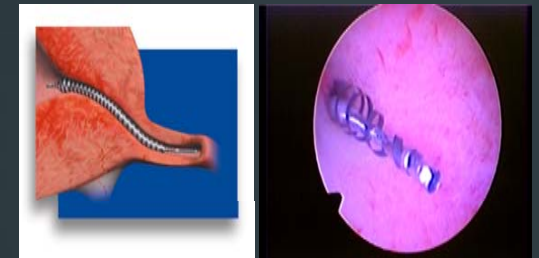
# What's new: Yasmin



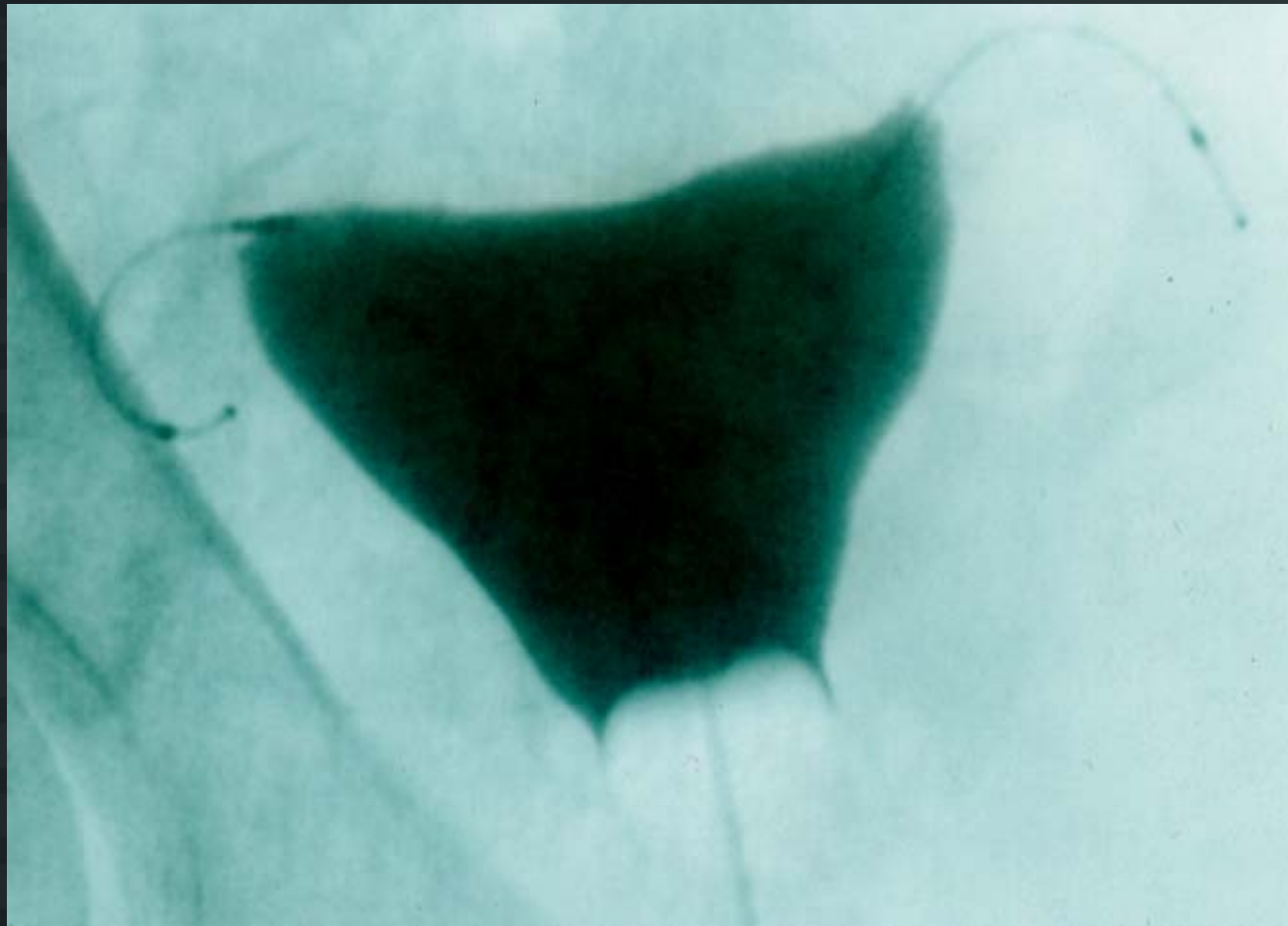
- 30 $\mu$ g EE and 3 mg Drospirenone
- Antimineralocorticoid analogue (equivalent to 25 mg Spironolactone)
- Antiandrogenic
- Efficacy = OCs
- Benefits over traditional OCs:
  - Decrease in initial weight gain (no overall change in weight)
- Precautions

# 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  $\mu\text{g}$  EE and 150  $\mu\text{g}$  levonorgestrel





# What's coming. . .

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# 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)

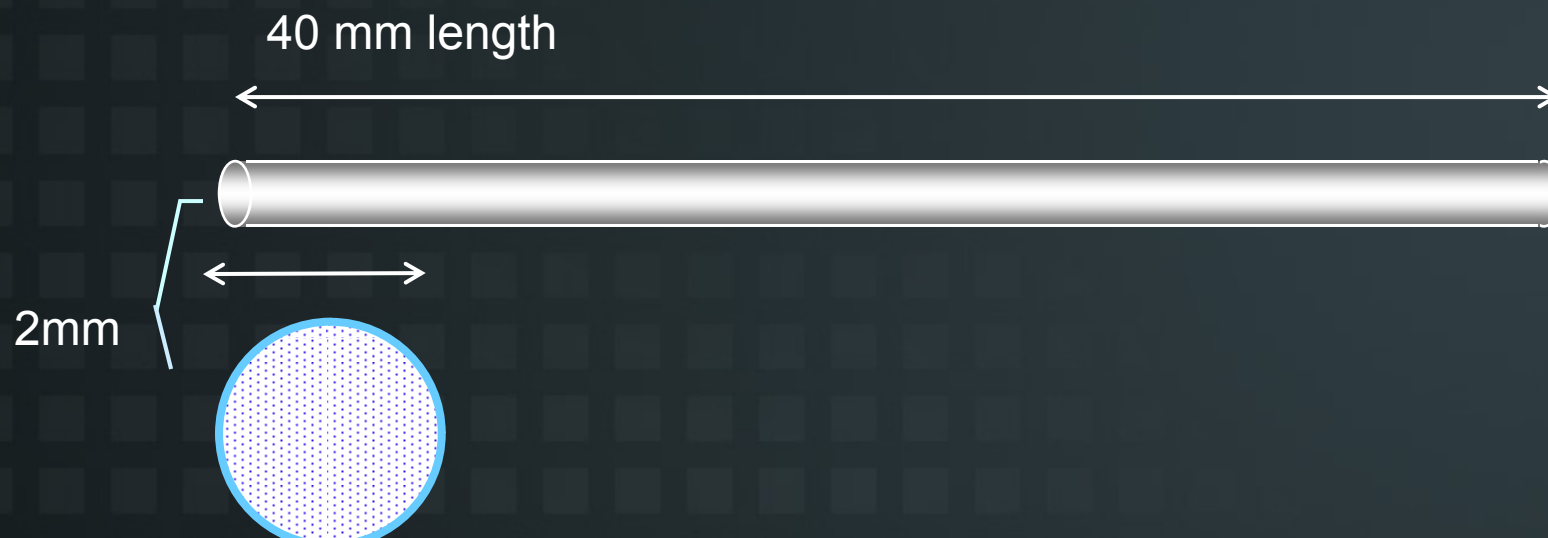


Jain J, et al, Contraception, 2004

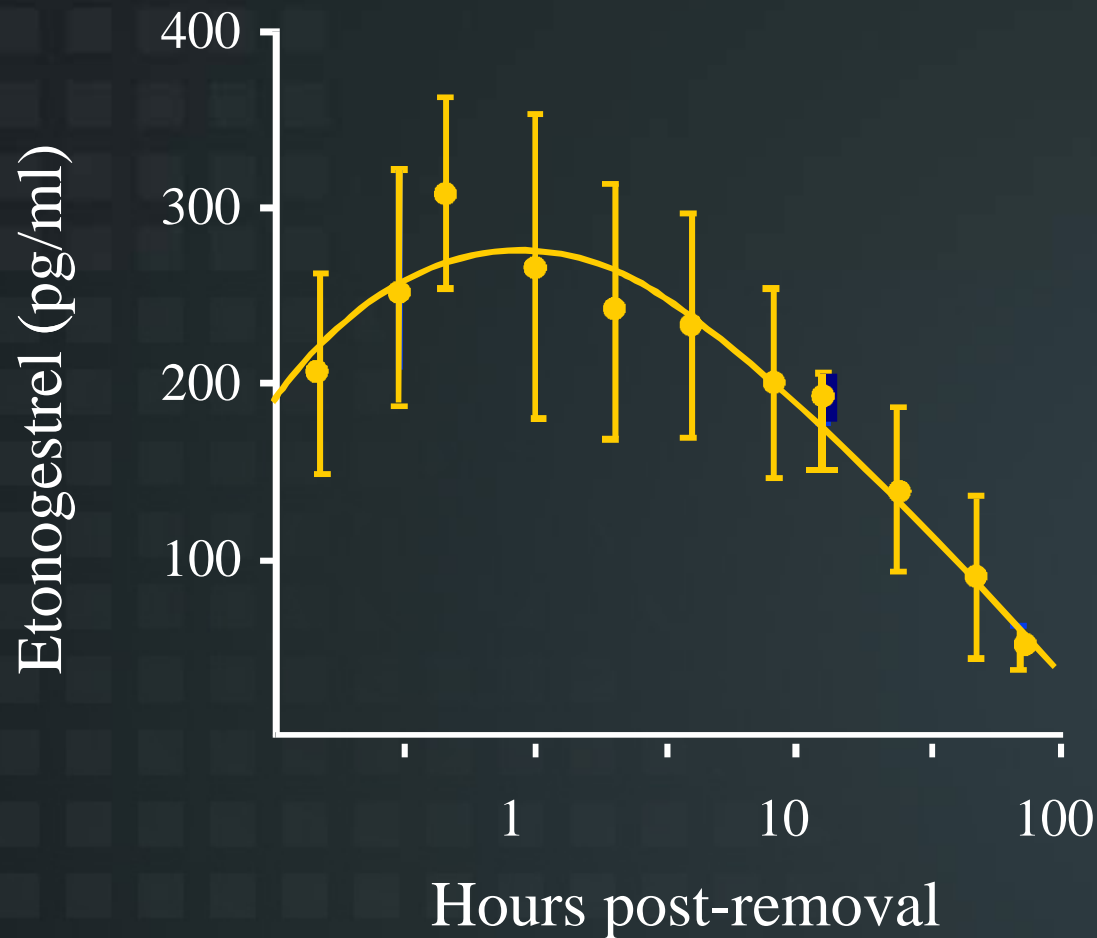
# What's coming: Implanon



- 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

# Implanon: insertion

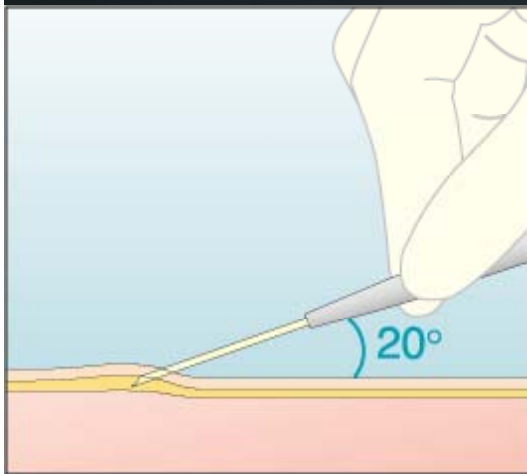
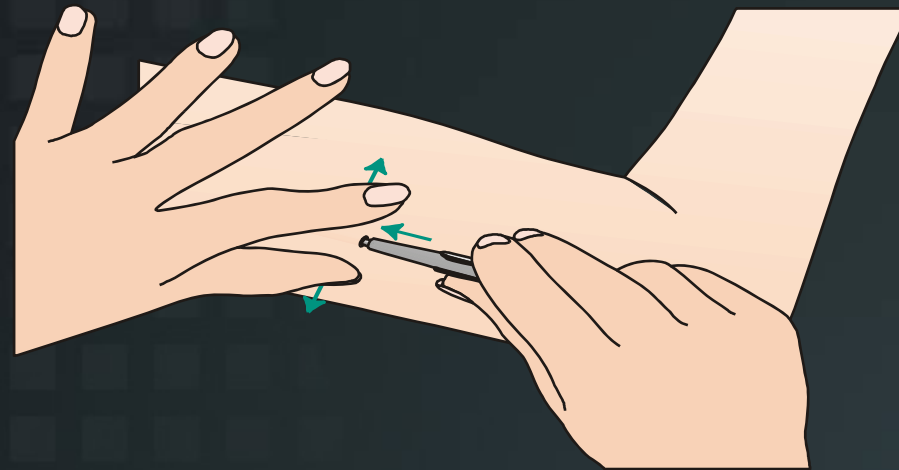


Fig. 2

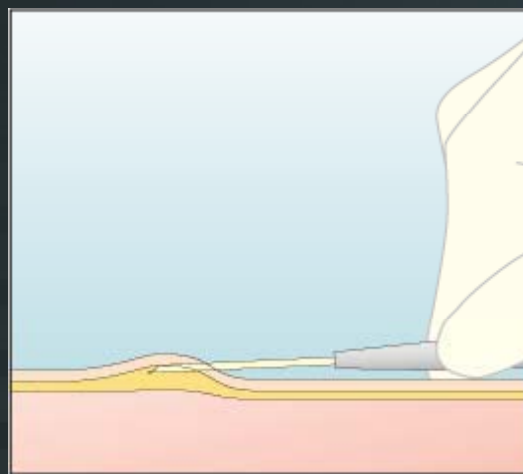


Fig. 3

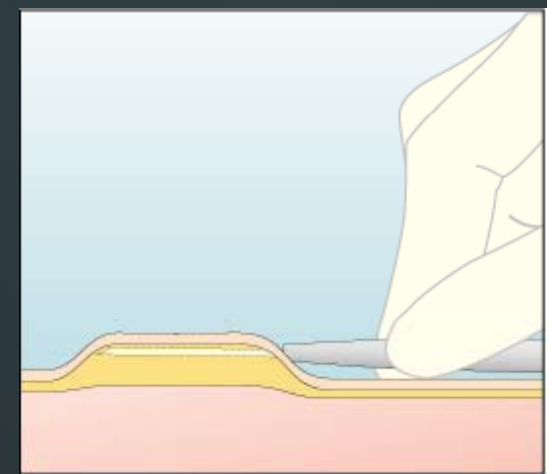


Fig. 4

# What's coming: male methods



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

# Other concepts. . .

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# New concepts: Menstrual Nirvana

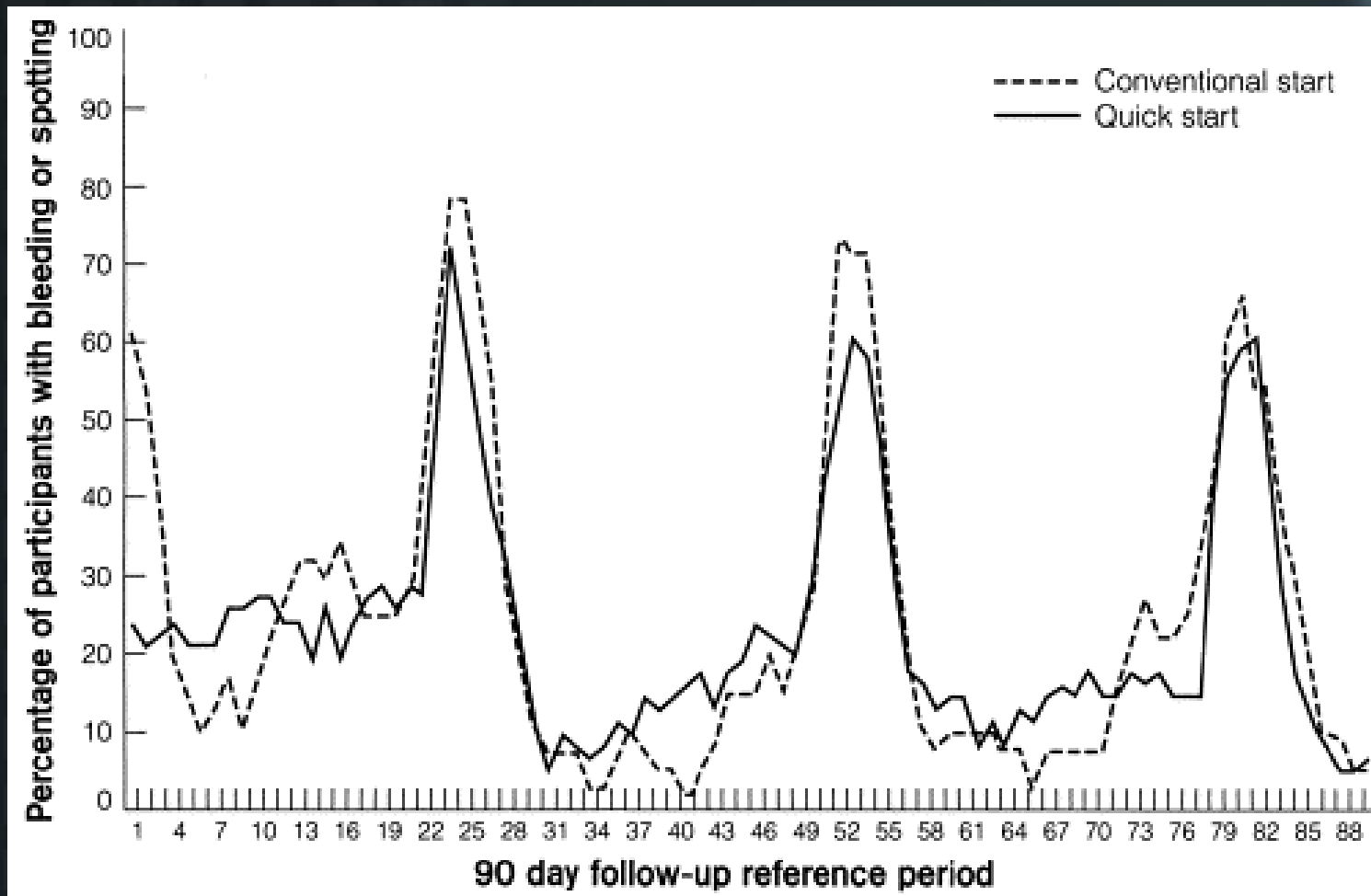


- Obtain with OCPs, Depo, Mirena, POP
- Extended or continuous dosing
  - EE dose doesn't make a difference
  - Norethindrone may be best progestin
  - Give 3-6 month trial
- Nuances
  - Irregular bleeding
  - Endometrium

Den Tonkelaar, Contraception 1999; Glasier, Contraception 2003; Miller, Ob Gyn 2001 and 2003; Kwiecien, Contraception 2003



# New concepts: Quickstart



Westoff 2002, 2003; Lara-Torre 2002

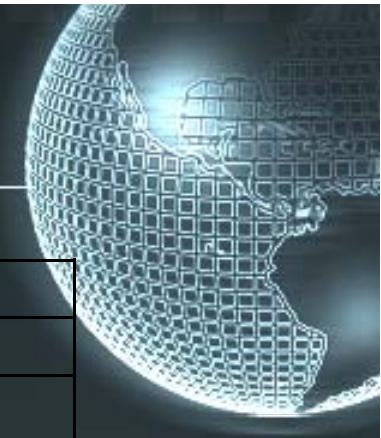
# Other concepts: DMPA & bone loss

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**FDA 'black box'  
warning**

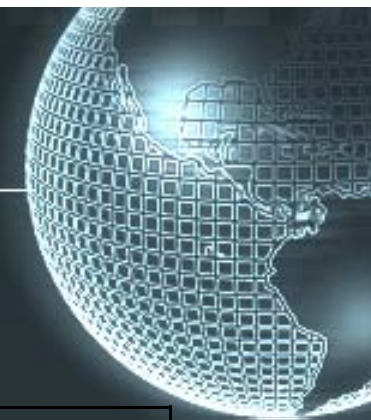
# DMPA use and BMD








Author, year	Location	Study Design	Participants (DMPA users)	BMD in DMPA users
Cundy et al, 1991 <sup>12</sup>	New Zealand	Cross-sectional	30 adults; median DMPA use 10 years	↓
Cromer et al, 1996 <sup>13</sup>	United States	Prospective cohort	15 adolescents; Up to 24 months of DMPA use	↓
Taneepanichskul et al, 1997 <sup>14</sup>	Thailand	Cross-sectional	50 adults, nonsmokers, BMI 23.9 (SD 3.9); mean DMPA use 59 months (SD 31)	↔
Gbolade et al, 1998 <sup>15</sup>	United Kingdom	Cross-sectional	185 adults; median DMPA use 5 years	↔
Tang et al, 1999 <sup>16</sup>	Hong Kong	Cross-sectional	67 adults, 1.5% smokers, BMI 24.9 (SD 3.6); median DMPA use 6 years (but all ≥ 5 years)	↓
Scholes et al, 1999 <sup>17</sup>	United States	Cross-sectional	183 'young' women (age 18-21); Up to 133 months of DMPA use	↓
Petitti et al, 2000 <sup>18</sup>	Multiple	Cross-sectional	350 adults, ≥ 24 month use of DMPA	↓
Berenson et al, 2004 <sup>19</sup>	United States	Prospective cohort	47 adults, 38 smokers, BMI 22 (SD 2.7); DMPA use 24 months	↓
Clark et al, 2004 <sup>20</sup>	United States	Prospective cohort	178 adults, 23% smokers, BMI 25 (SD 5.9); DMPA use 24 month observation	↓
Cromer et al, 2004 <sup>21</sup>	United States	Prospective cohort	29 adolescents; DMPA use 12 months	↓
Lara-Torre et al, 2004 <sup>22</sup>	United States	Prospective cohort	58 adolescents; DMPA use up to 24 months	↔
Scholes et al, 2004 <sup>23</sup>	United States	Cross-sectional	81 adolescents; median DMPA use 9 months	↔

Down red arrow = decrease in BMD; Horizontal blue double ended arrow = no difference in BMD between Depo users and non-users

# BMD recovery after DMPA



Author, year	Location	Study Design	Participants (DMPA users)	BMD in DMPA users
Cundy et al, 1994 <sup>9</sup>	New Zealand	Prospective cohort	14 adults stopping DMPA versus 22 adults using DMPA. Median DMPA use 10 years.	 *in those that stopped DMPA
Cundy et al, 2002 <sup>24</sup>	New Zealand	Prospective cohort	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
Cundy et al, 2003 <sup>25</sup>	New Zealand	Prospective cohort	DMPA use for $\geq 2$ years, randomized to estrogen (19 adults) versus placebo (19 adults)	 *in estrogen arm
Cromer et al, 2005 <sup>26</sup>	United States	Prospective cohort	DMPA use for 24 months randomized to placebo (36 adolescents) versus estrogen (69 adolescents)	 *in estrogen arm
Scholes et al, 2005 <sup>6</sup>	United States	Cross-sectional and Prospective cohort	80 Adolescents using DMPA (71% discontinued DMPA). Median DMPA use 12 months.	 *in those that stopped DMPA

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](http://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



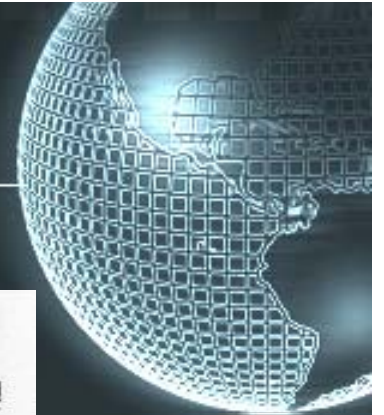
# Contraceptives & Obesity



- 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)



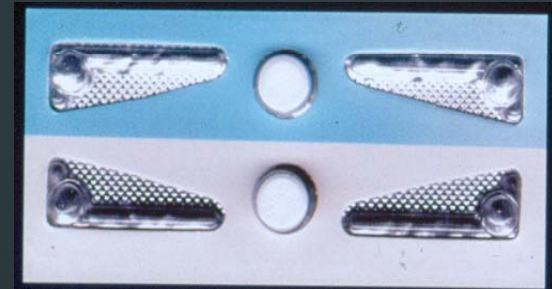
# New Concepts: EC



*“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



Plan B

# New concepts: IUDs & the nulliparous

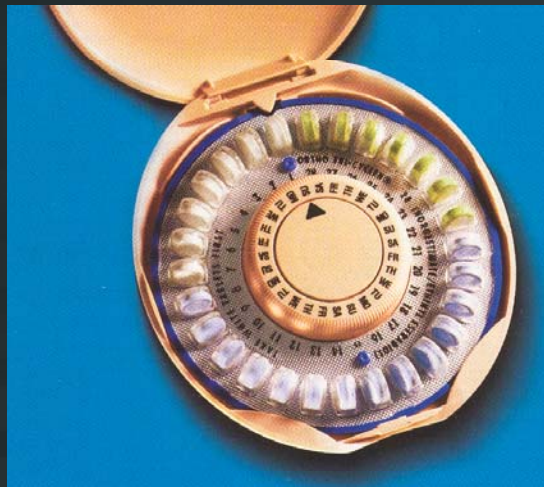


- Fear of infertility
- Monogamy not a criteria

Grimes, Lancet 2000; Hubacher, et al, NEJM 2001

# New concepts: PWOP\*

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



\*Planned Parenthood terminology  
Stewart F, JAMA, 2001

# New concepts: Spermicides



## WARNING:

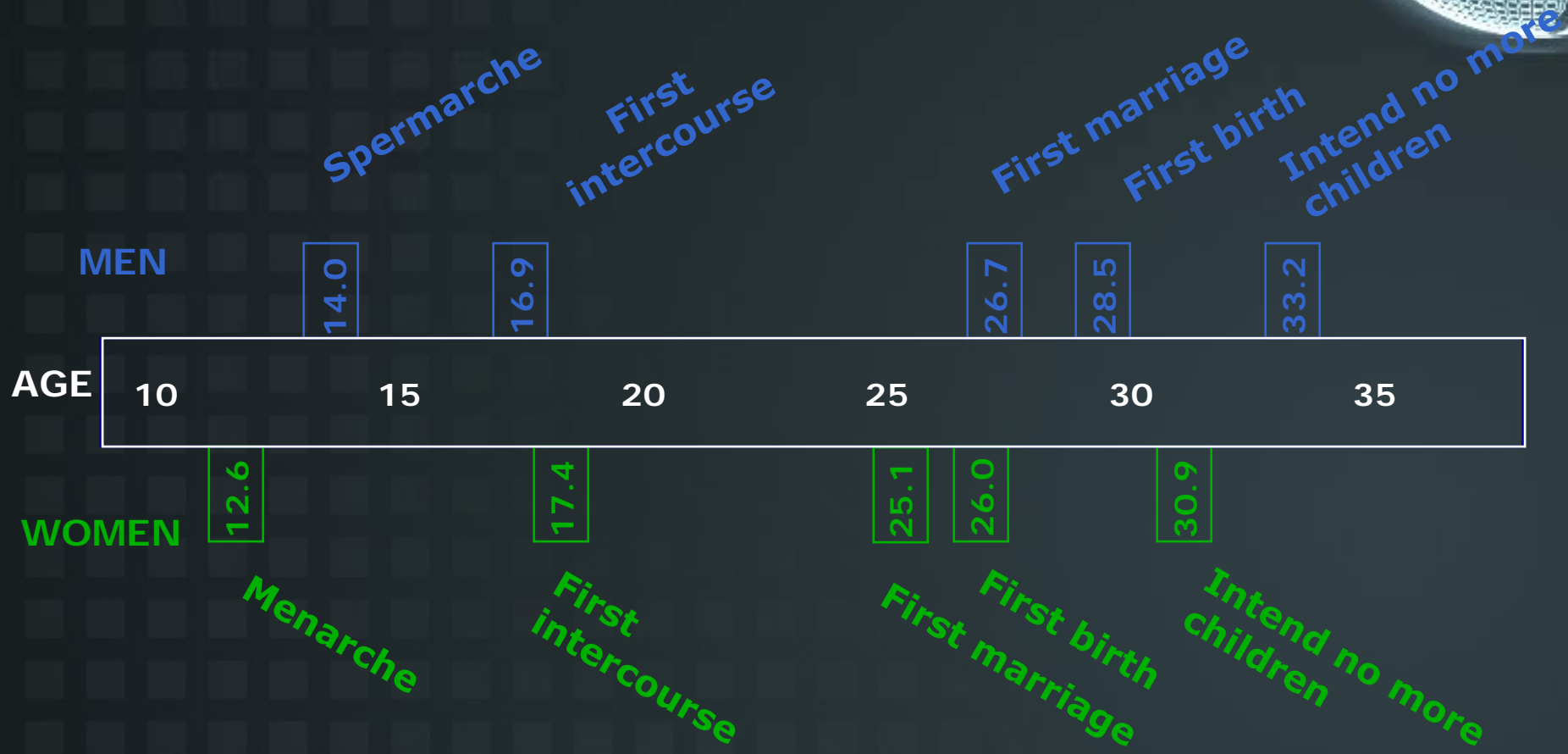
- Spermicides containing Nonoxynol-9 are no longer recommended for use, as N-9 may increase transmission of HIV and STIs

Van Damme, et al, Lancet 2002

# A note about Teen Contraception. . .



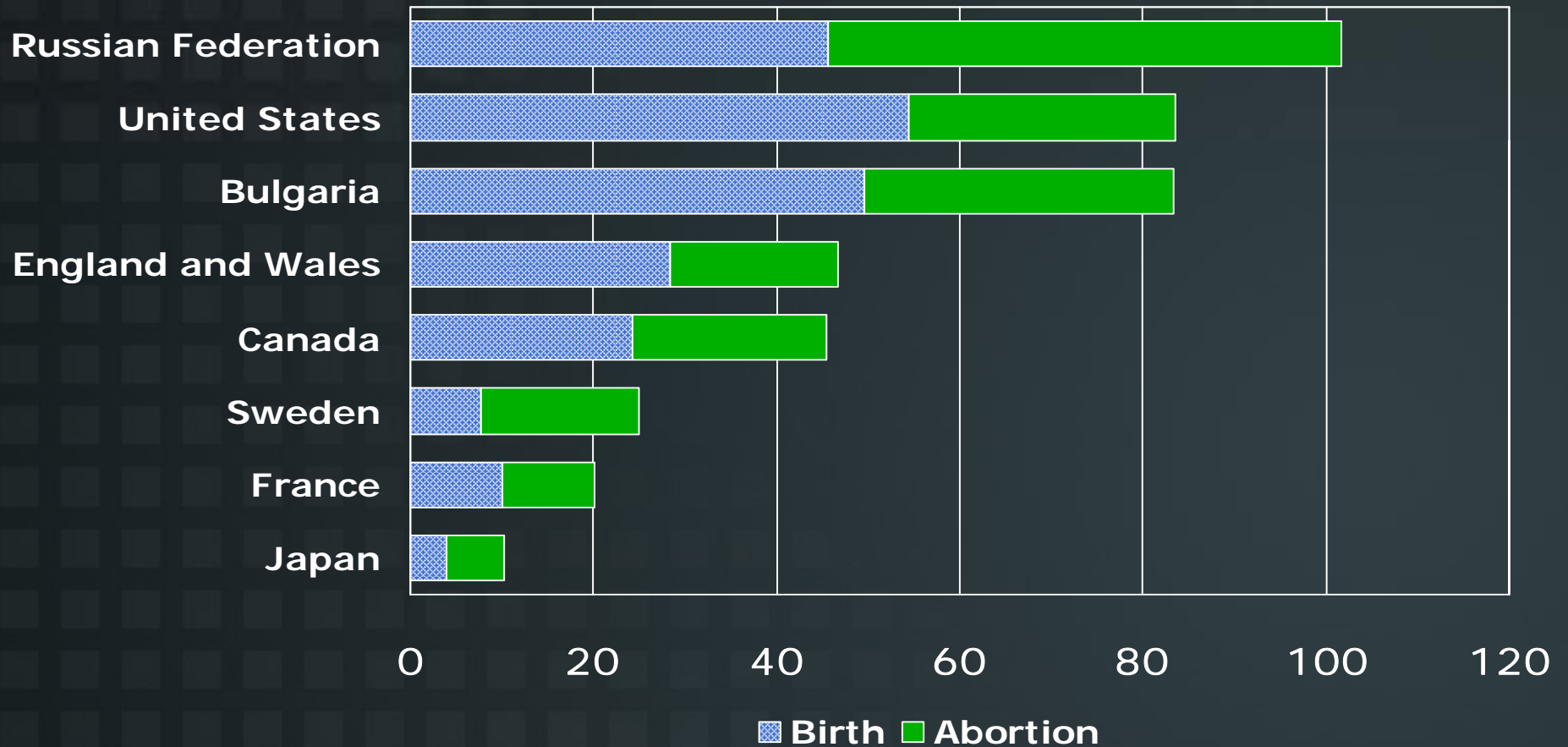
# Young people are at high risk of unintended pregnancy and STDs



# U.S. teenagers have higher rates of pregnancy, birth and abortion than teenagers in most other developed countries



## Pregnancy rate





...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

# 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



# Choosing a birth control.....