

Contraception for Women with Chronic Conditions

Society of General Internal Medicine

May 2009

Why YOU should discuss contraception...

- Contraception allows women to plan for pregnancy
- Especially important with chronic medical conditions

*Do you have time to visit
another specialist?*

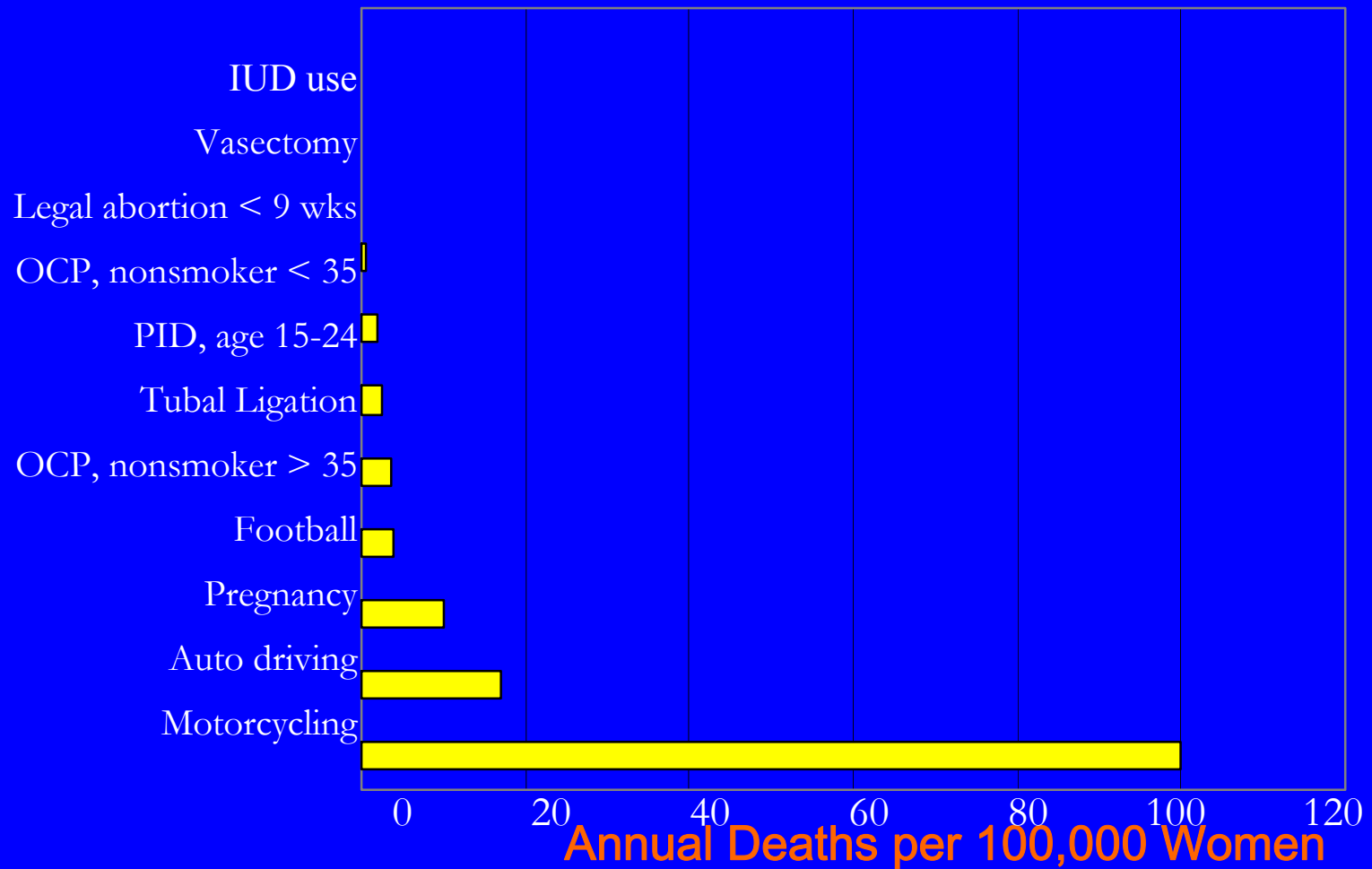
Mom's diabetes was poorly controlled

=Sad Baby

Objectives

- Identify scenarios in which estrogen increases risk
- Counsel on the efficacy and side-effect profiles of non-estrogen-contraceptives
- Discuss contraceptive options for women with diabetes, hypertension, migraines, and immunosuppression
- **Answer YOUR questions**

Voluntary Risks in Perspective



Trussell J. Contraception. 2006

Hatcher et al. Contraceptive Technology, 1998

Reproductive Risks in Perspective

Pregnancy	1/10,000
VTE in OCP smoker, >35	1/250,000
VTE in OCP nonsmoker	1/500,000
IUD use	<1/1,000,000

World Health Organization. *Cardiovascular disease and steroid hormone contraception. Report of a Scientific Group*. Geneva, Switzerland: World Health Organization; 1998 [WHO Technical Report Series, No. 877]; Overton C, Katz M. *Practitioner*. 1999;243(1599):502; Chang J. *Morbidity and Mortality Weekly Report*. 2003

Objectives

- **Identify scenarios in which estrogen increases risk**

Estrogen increases risk of clot

- Which of the following increase risk of vascular disease?
 - Smoking
 - Age>40
 - Obesity
 - Diabetes
 - Hypertension
 - Hyperlipidemia
 - Renal insufficiency
 - Migraine with aura
 - SLE

Should estrogen
be avoided?

Estrogen increases risk of clot

- Which of the following increase risk of vascular disease?
 - Smoking
 - Age>40
 - Obesity
 - Diabetes
 - Hypertension
 - Hyperlipidemia
 - Renal insufficiency
 - Migraine with aura
 - SLE
 - All of the above

I don't know...

WHO's Medical Eligibility Criteria for Contraceptive Use

- Provides guidance on “who can use what”
- Recommendations of expert Working Group that met in Geneva, April 2008
 - Free, 186-page document
 - Updated prior editions: 2004, 2000, 1996
 - Google “WHO MEC”
<http://who.int/reproductive-health/publications/mec/>

WHO MEC conditions include?

- Smoking
- Age>40
- Obesity
- Diabetes
- Hypertension
- Hyperlipidemia
- Renal insufficiency
- Migraine with aura
- SLE

WHO MEC conditions include

- Smoking
- Age>40
- Obesity
- Diabetes
- Hypertension
- Hyperlipidemia
- Renal insufficiency
- Migraine with aura
- SLE
- ALL OF THE ABOVE!

WHO MEC conditions include

- Smoking
- Age>40
- Obesity
- Diabetes
- Hypertension
- Hyperlipidemia
- Renal insufficiency
- Migraine with aura
- SLE
- ALL OF THE ABOVE

And MORE

- DVT/PE
- Known thrombotic mutations
- Superficial venous thrombosis
- Ischemic heart disease
- Stroke
- Valvular heart disease
- Gall bladder disease
- Viral hepatitis
- Cirrhosis
- Thalassemia
- Sickle cell
- Fe-deficiency anemia
- Drugs which affect liver enzymes
- Antibiotics
- Headaches
- Epilepsy
- Depressive disorders
- Thyroid disorders
- HIV
- Antiretrovirals

And MORE!

WHO Medical Eligibility Criteria for Contraceptive Use

Category

- 1 No restriction for use of the method
- 2 Advantages of using the method generally outweigh the theoretical or proven risks
- 3 Theoretical or proven risks usually outweigh the advantages of using the method
- 4 Unacceptable health risk if the contraceptive method is used

Category Interpretations

Category

1

Use the method

2

Generally use the method.

3

Not usually recommended unless
other methods are not available
or acceptable.

4

Method not to be used.

Use the method

Do not use the method

<p>LOW-DOSE COMBINED ORAL CONTRACEPTIVES (COCs) < 35 µg of ethinylestradiol</p>	<p>COCs do not protect against STI/HIV. If there is risk of STI/HIV (including during pregnancy or postpartum), the correct and consistent use of condoms is recommended, either alone or with another contraceptive method. Male latex condoms are proven to protect against STI/HIV.</p>	
<p>CONDITION</p>	<p>CATEGORY I=Initiation C=Continuation</p>	<p>CLARIFICATIONS / EVIDENCE</p>
<p>CARDIOVASCULAR DISEASE</p>		
<p>Multiple risk factors for arterial cardiovascular disease (such as older age, smoking, diabetes and hypertension)</p>	<p>3/4</p>	<p>Clarification: When a woman has multiple major risk factors, any of which alone would substantially increase the risk of cardiovascular disease, use of COCs may increase her risk to an unacceptable level. However, a simple addition of categories for multiple risk factors is not intended; for example, a combination of two risk factors assigned a category 2 may not necessarily warrant a higher category.</p>
<p>Hypertension</p>		
<p>For all categories of hypertension, classifications are based on the assumption that no other risk factors for cardiovascular disease exist. When multiple risk factors do exist, risk of cardiovascular disease may increase substantially. A single reading of blood pressure level is not sufficient to classify a woman as hypertensive.</p>		
<p>a) History of hypertension, where blood pressure CANNOT be evaluated (including hypertension in pregnancy)</p>	<p>3</p>	<p>Clarification: Evaluation of cause and level of hypertension is recommended, as soon as feasible. Evidence: Women who did not have a blood pressure check before COC use had an increased risk of acute myocardial infarction and stroke.(15-19)</p>
<p>b) Adequately controlled hypertension, where blood pressure CAN be evaluated</p>	<p>3</p>	<p>Clarification: Women adequately treated for hypertension are at reduced risk of acute myocardial infarction and stroke as compared with untreated women. Although there are no data, COC users with adequately controlled and monitored hypertension should be at reduced risk of acute myocardial infarction and stroke compared with untreated hypertensive COC users.</p>

Why are pills so popular?

- If estrogen should be avoided with
 - Smoking
 - Age>40
 - Obesity
 - Diabetes
 - Hypertension
 - Hyperlipidemia
 - Renal insufficiency
 - Migraine with aura
 - SLE
 - All of the above

True or False?

Estrogen-containing contraceptives are more effective than progestin-only contraceptives.

False!

- With typical use, estrogen-containing contraceptives are LESS effective than most progestin-only contraceptives

<u>Progestin only</u>		<u>Estrogen + Progestin</u>
Mirena IUD	>	Pill, patch, or ring
Implanon	>	Pill, patch, or ring
Depo-Provera	>	Pill, patch, or ring
Progestin-only Pills	=	Pill, patch, or ring

Why's estrogen so popular?

- Decreases spotting
- Allows regular withdrawal bleed

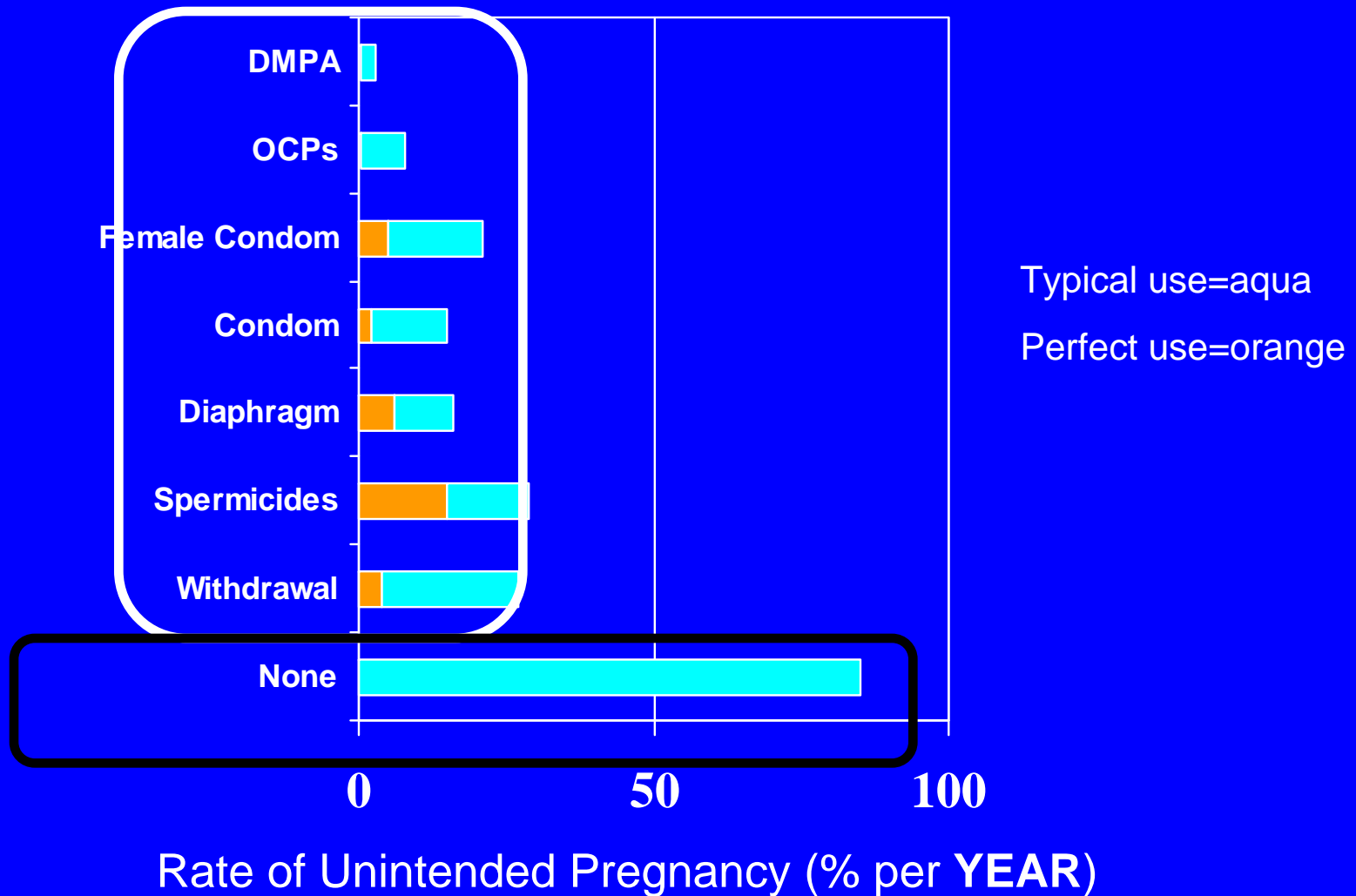
Don't we need to bleed?

- No!
- For generations, women breastfed multiple babies and had very few periods.

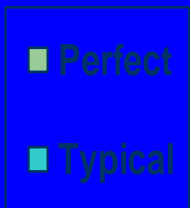
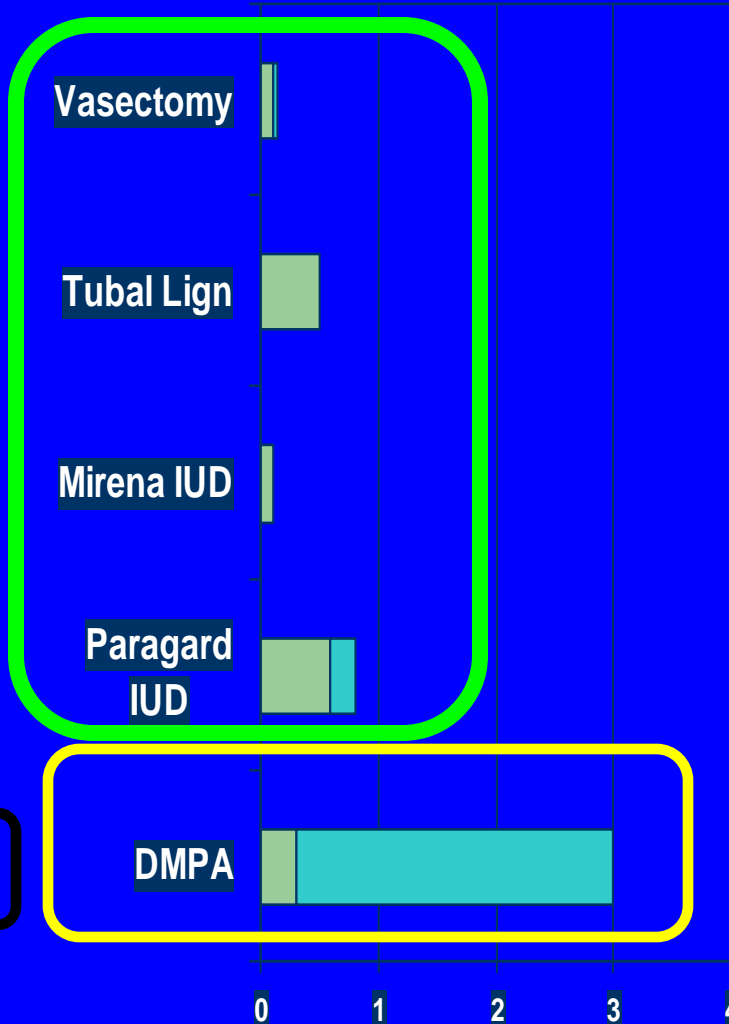
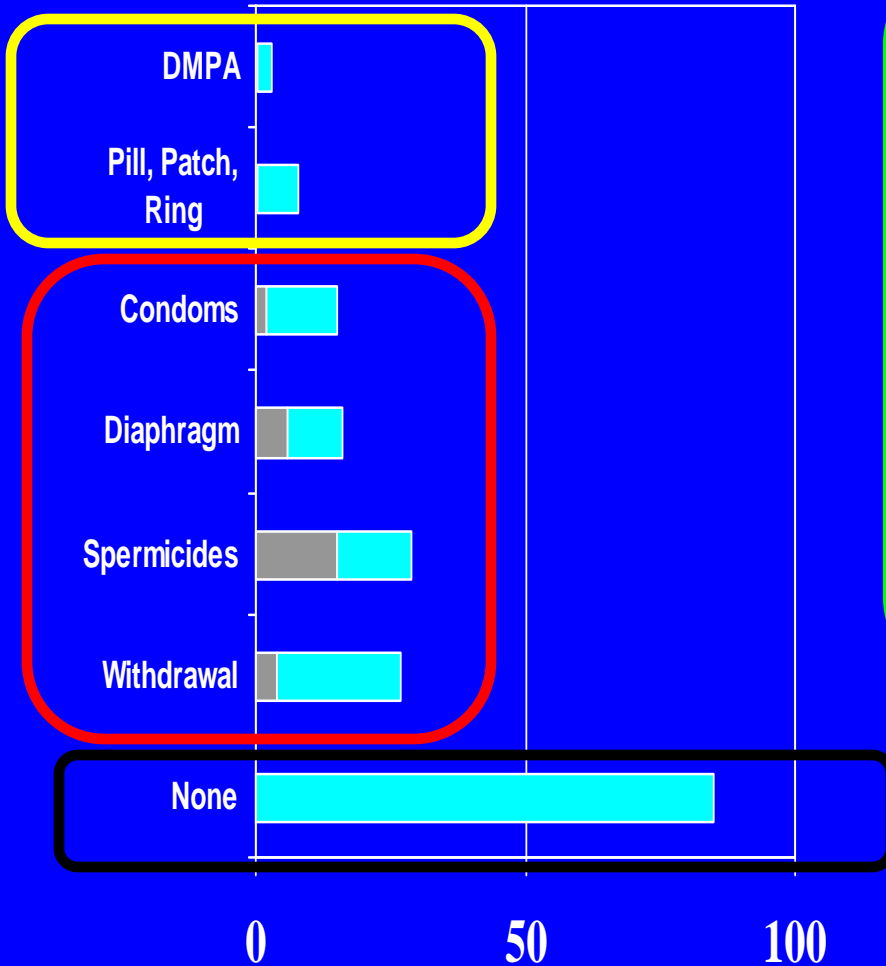
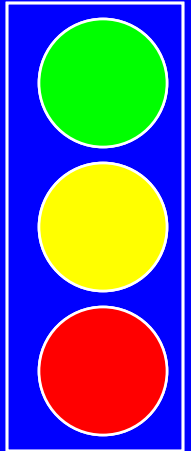
Choosing a Contraceptive Method

- Lifestyle & Partners
- Desire for future fertility
- Response to an unplanned pregnancy
- Risk pregnancy poses to mom's health
- Risk to fetus of disease and/or meds
- Side effects of contraceptive method
 - Contraindications to estrogen?
- Risks to contraceptive efficacy
 - Meds that induces hepatic enzymes?
 - Malabsorption?
- *Cumulative* Risk of method failure

Using Contraception? Yes or No?

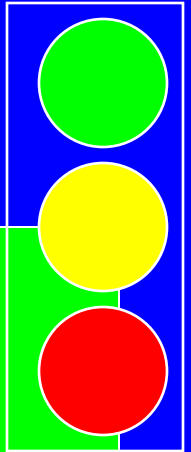


Contraceptive Efficacy



Rate of Unintended Pregnancy (% per YEAR)

Options by Efficacy



- IUDs and Implants

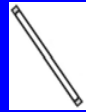
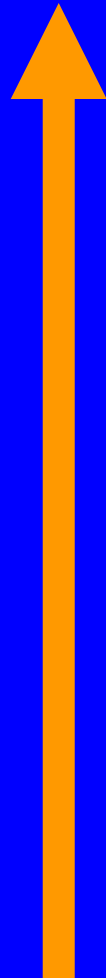
- Estrogen+Progestin
 - Pills, patch, ring

- Progestin only
 - Pills, injection

- Barriers

Typical effectiveness of contraceptive methods

More effective



Implant



Vasectomy



Female Sterilization



IUD

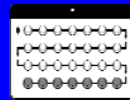
Less than 1 pregnancy per 100 women in one year



Injectables



LAM



Pills

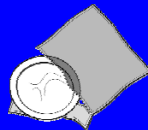


Patch



Ring

About 3-8 pregnancies per 100 women in one year



Male Condoms



Female Condoms



Diaphragm



Sponge



Fertility-Awareness Based Methods



Withdrawal



Emergency Contraception



Spermicide

Less effective

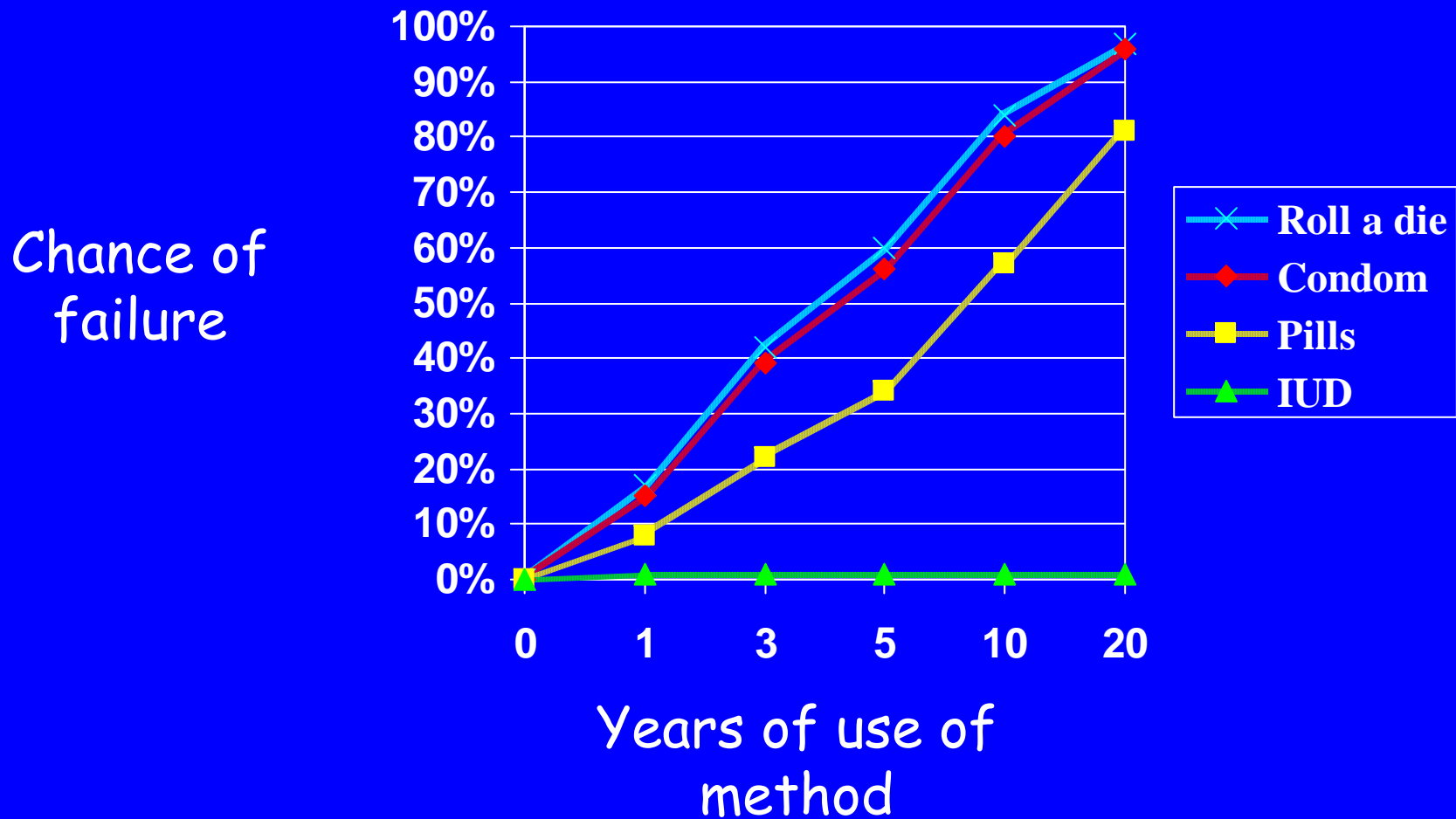
About 30 pregnancies per 100 women in one year

adapted with permission from the WHO 2006

Cumulative failure rates

	1 year	3 year	5 year
IUD	1%	1%	1%
Pills	8%	22%	34%
Condom	15%	39%	56%
Role a die	17%	42%	60%

Cumulative Failure Rates with Typical Contraceptive Use

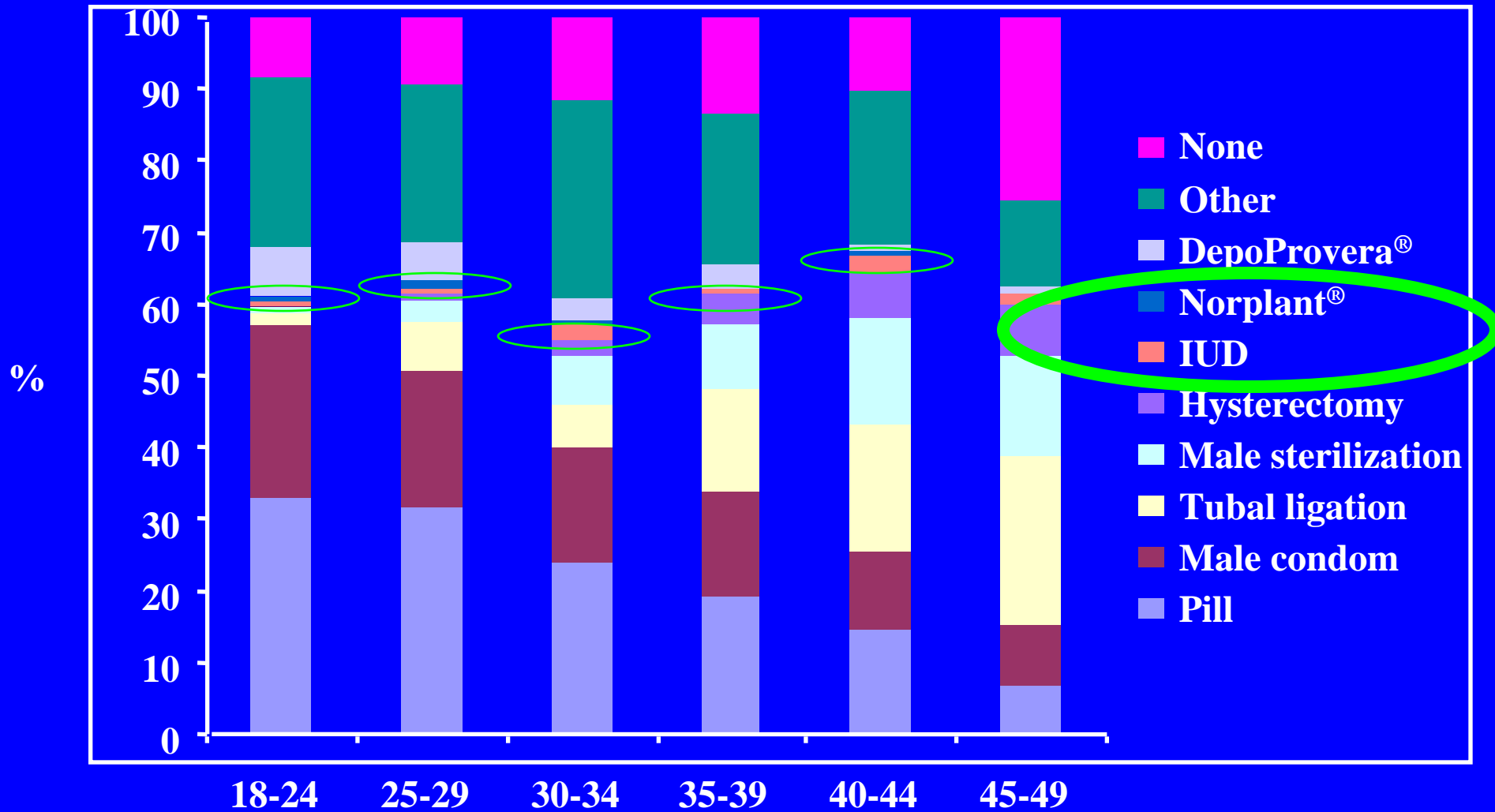


Cumulative failure rates

“During a lifetime of use of reversible methods, the typical woman will experience 1.8 contraceptive failures”

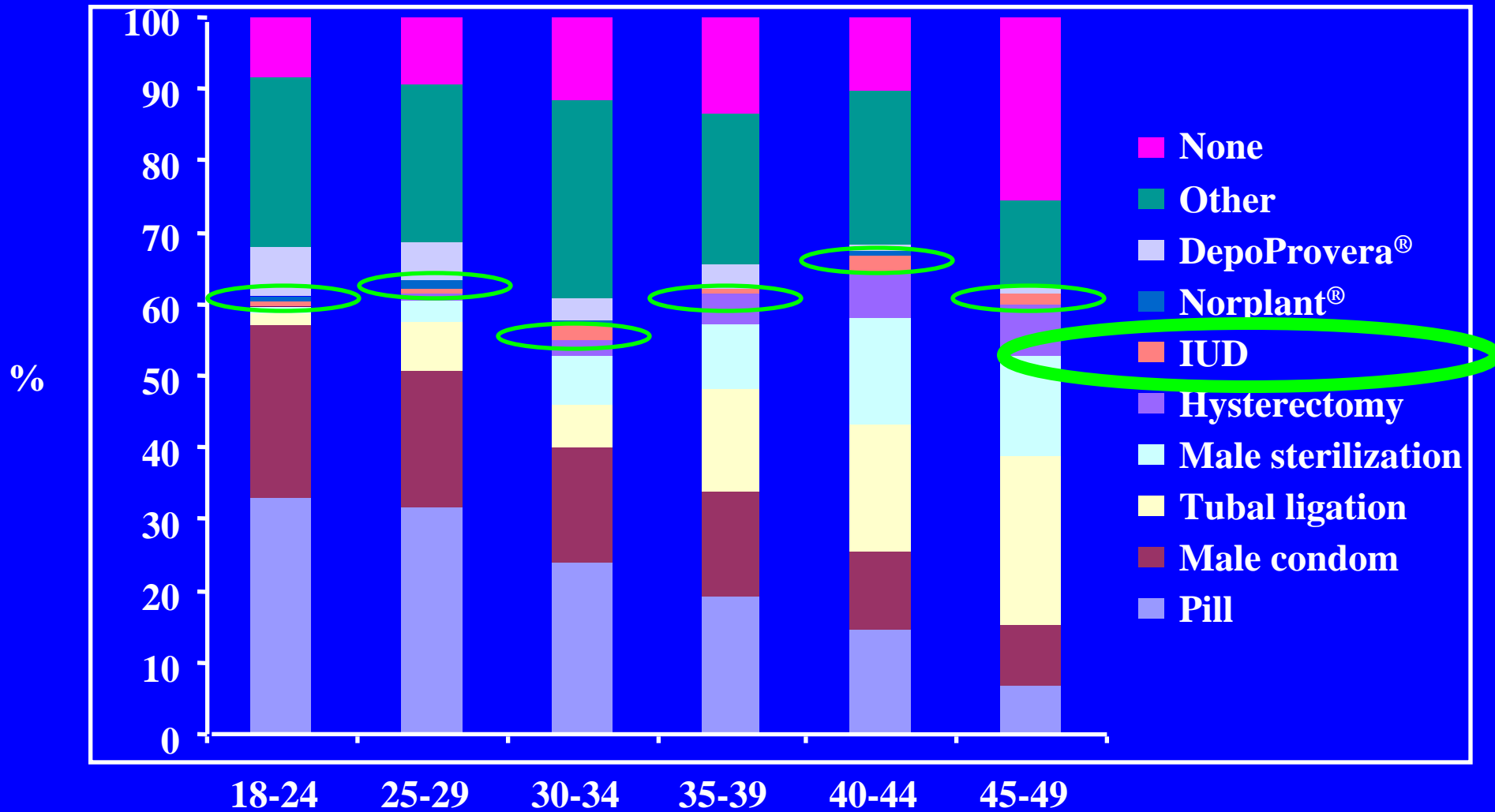
Trussell J & Vaughan B, Fam Plann Perspect 1999

Highly effective contraception is underused



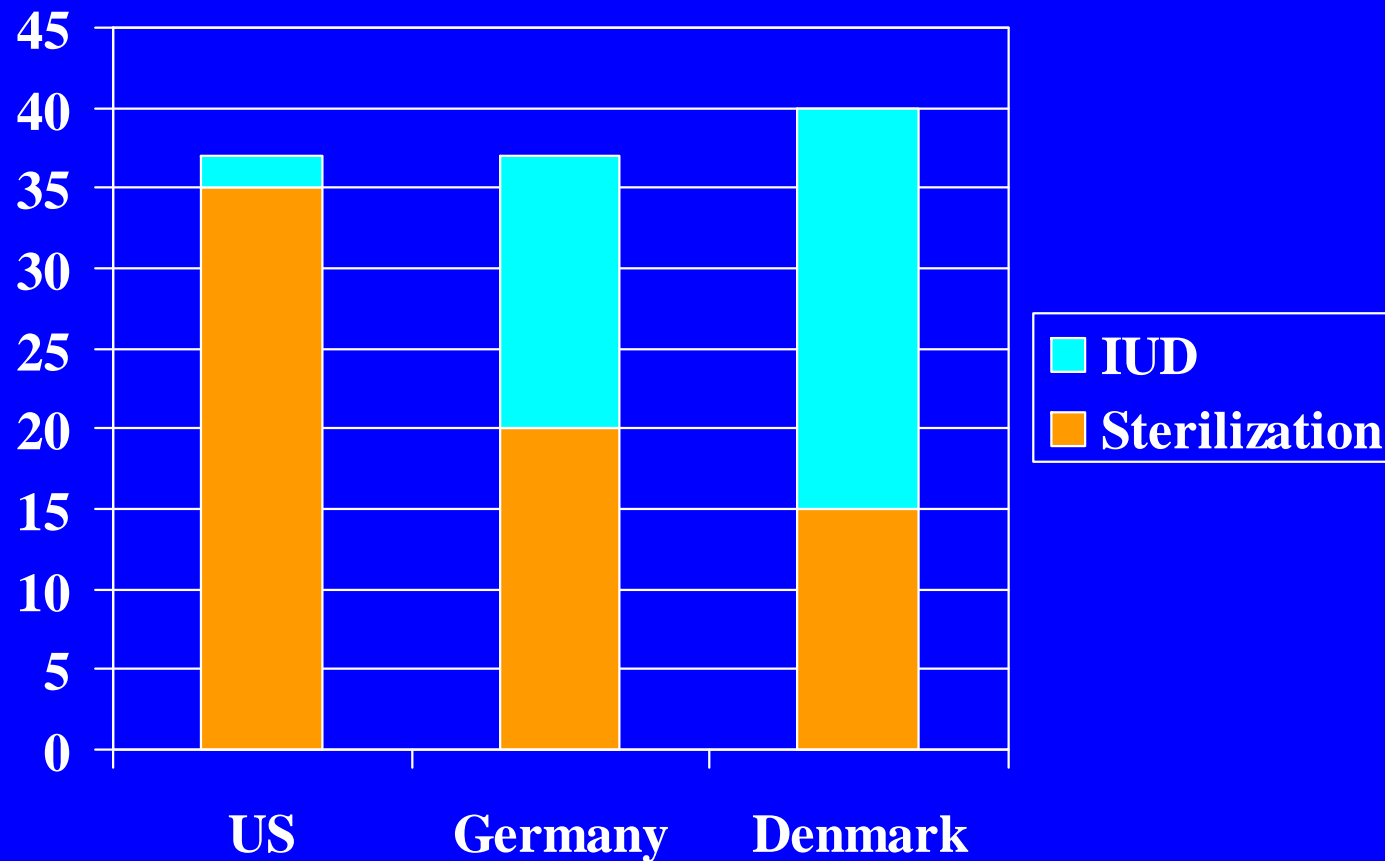
2000 Gallup Survey

Only 1-2% of American Women use IUDs



2000 Gallup Survey

No less interest in long term methods

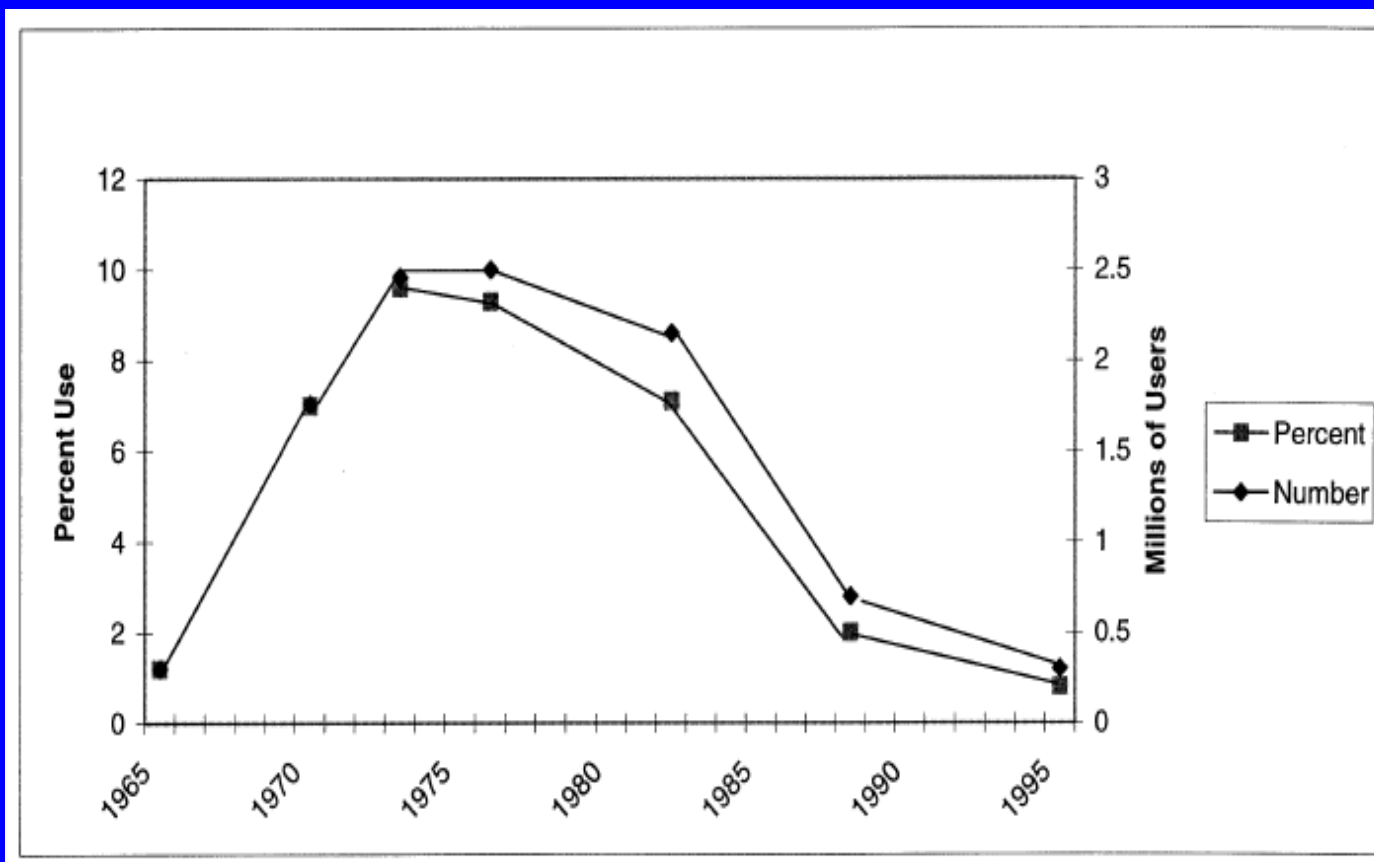


Worldwide

150,000,000 women
are currently using an IUD

d'Arcangues C. Contraception. 2007 Jun

IUD use in the US, 1965-1995



One of these things
is not like the others!

Older plastic IUDs

Current
medicated IUDs

A red oval outline containing the text "Dalcon shield".

Dalcon
shield

Modern Intrauterine Devices (IUDs)

- Mirena -levonorgestrel
 - Labeled for 5 years
 - Effective in studies up to 7
 - Amenorrhea
 - Irregular spotting/bleeding
- Paraguard “copper T”
 - Labeled for 10 years
 - Effective in studies for 12-20 years
 - Heavier cramping/bleeding with menses

Sivin I. Contraception. 2007

Ronnergdag Acta Obstet Gynecol Scand. 1999

Inki P Contraception. 2007

The Dalcon Shield was bad

- Relatively high failure rate
- 5x increased risk of PID vs. other IUDs
- >200,000 infections
- Infertility
- 18 deaths

Lee, Ob Gyn, 1983
Cox, JFPRHC, 2003

Modern IUDs are good

- Highly effective
- No increase in PID
- Infection is rare
 - Prophylactic antibiotics are unnecessary
- Fertility is maintained
- No death due to an IUD since 1977

Grimes DA Schulz KF

Cochrane Database Syst Rev. 2001

Not New Technology

Copper T (Paragard®)

- Available in US for the last 20 years
 - FDA approved in 1984, marketed in 1988

Levonorgestrel-releasing IUD (Mirena®)

- Developed in 1976
- Studied clinically since 1978
- Used in Finland since 1990
- FDA approved in January 2001

If *Apple* made IUDs

Mirena

The iPod

Since 2001

Paragard

The Macintosh II

Since 1988

Subdermal Implants

- Norplant®- 5 rods-gone
- Implanon®--FDA approved July 2006
 - Single-rod, 4 cm by 2mm
 - Disposable trochar facilitates insertion
 - Good for 3 years
 - 2.5 million users in 30 countries since 1998

Implanon

- Sustained release of low doses of progestin
- Suppresses ovulation
- More suppression than Norplant
- FSH, estradiol levels normal
- Thickens cervical mucus

**Contraception for
my patients
with Chronic Conditions**

Society of General Internal Medicine

May 2009

What's the best choice?

Case 1

- Evelyn, 21 year old woman, G1T1
- PMH: Type 1 Diabetes x 10 years
- Meds: insulin, lisinopril, aspirin, lovastatin
- No tobacco or alcohol
- Physical Exam:
 - BP=130/80 P=72
 - Decreased sensation of monofilament
- Physical Exam:
 - HgA1c=9.0

Risks to mom

- Diabetes with evidence of end organ damage implies increased risk of vascular disease
- Estrogen may exacerbate this vascular disease

Risks to baby

- Hyperglycemia (and hypoglycemia)
- Lisinopril
- Lovastatin

Risks/Benefits related to methods

- IUDs, implants (WHO MEC=1/2)

- Pills, patch, ring (WHO MEC=3/4)
 - *Avoid estrogen's increased risk of clot given risk of vascular disease*

- DMPA (WHO MEC=2)
 - *Likely comfortable with self injecting SC-DMPA*

- Barriers (WHO MEC=1)

What's the best choice?

Case 2

- Gail, 38 year old woman, G3, P2, S1
- PMH: Hypertension
- PSH: s/p gastric bypass
- Meds:
 - Hydrochlorothiazide, atenolol, benazepril
- No tobacco or alcohol
- Physical Exam:
 - BP=145/85 P=60 Weight=180 lb BMI=30

Risks to mom

- Hypertension
- Obesity
- Increased risk of vascular disease

Risk to baby

- Hypertension
- Obesity
- Benazepril

Risk to Contraceptive Efficacy

- Obesity
 - Patch less effective when women are >80kg
 - Pills may also be less effective
 - typical use failure from 7%→11%
 - Nuvaring data is limited
 - DMPA and Implanon look ok
- Gastric Bypass may decrease oral absorption

Risks/Benefits related to methods

- IUDs, implants

- Pills, patch, ring

- *Avoid estrogen's increased risk of clot given risk of vascular disease*
- *Pills and patch may be less effective*

- DMPA or progestin-only pill

- Barriers

What's the best choice?

Case 3

- Helen, 24 year old woman, G1, P1
- PMH: Headache with visual changes
- Medications: Cafergot prn
- No tobacco or alcohol
- Physical Exam:
 - BP=110/75 P=70 BMI=25

Risks to mom

- Migraine Headache with transient neurologic symptoms carries an increased risk of stroke

Risk to baby

- Ergotamine medications

Risks/Benefits related to methods

- IUDs, implants (WHO MEC=1)
- Pills, patch, ring (WHO MEC=4)
 - *Avoid estrogen given risk of stroke*
- DMPA or progestin-only pill
- Barriers (WHO MEC=1)

What's the best choice?

Case 3a

- Helena, 24 year old woman, G1, P1
- PMH: Headache with NO visual changes
- Medications: ibuprofen prn
- No tobacco or alcohol
- Physical Exam:
 - BP=110/75 P=70 BMI=25

Risks to mom

- Unintended pregnancy

Risk to baby

- Lack of pre-conception folate supplement
- Ibuprofen may increase risk of miscarriage

Risks/Benefits related to methods

- IUDs, implants (WHO MEC=1)

- Pills, patch, ring (WHO MEC=2)

- DMPA or progestin-only pill (WHO MEC=1)

- Barriers (WHO MEC=1)

What's the best choice?

Case 4

- Francine, 23 year old woman, G2, P1, T1
- PMH: HIV
- Meds: HAART
- No tobacco or alcohol
- Physical Exam:
 - BP=123/80 P=80

Risks to mom

- Interactions with medications

Risk to baby

- HIV
- Potentially limited lifespan of mom

Risks/Benefits related to methods

- IUDs & Implants
 - Paragard may increase vaginal blood loss
- Pills, patch, ring
 - Consider impact of HAART on hepatic enzymes
- DMPA
 - Minimal interaction with meds
- Barriers

What's the best choice?

Case 5

- Olivia, 36 year old woman, G0,P0
- s/p renal transplant
- Meds: benazepril, lovastatin, tacrolimus
- Exam:
 - BP=123/76 HR=67 BMI=27

Risks to mom

- Increased risk of vascular disease persists!
- Risk of infection (or rejection)

Risk to baby

- ACE-I (benazepril)
- Statins (lovastatin)
- Tacrolimus

Risks/Benefits related to methods

- IUDs & Implants
 - If low risk for cervical infection
 - *WHO MEC=2*

- Pills, patch, ring
 - Avoid vascular risk
- DMPA or progestin-only pill

- Barriers

What's the best choice?

Case 6

- Cara, 27 year old woman, G2,P0,T2
- PMH: Bipolar affective disorder,
 - HSV2
 - Suicide attempt
- Meds: lithium
- Tobacco: 1 pack/day
- Physical Exam:
 - BP=120/80 P=72 BMI=26
 - Genital warts

Risks to mom...

- Manic sexual risk taking
- Tobacco
- Post-partum depression...suicide

Risks to baby

- Lithium
- Tobacco
- HSV2

Risks/Benefits related to methods

- IUDs & Implants

- Pills, patch, ring

- Increase vascular risk...ok for smokers <35 y

- DMPA

- If mood is affected, you're stuck for 3 months

- Barriers

- Hard to remember when manic

What's the best choice?

Case 7

- Karen, 27 year old woman, G1, P0, T1
- PMH: seizures
- Meds: phenytoin

- Physical Exam:
 - BP=120/80 P=68 BMI=27

Risks to mom

- Seizures

Risk to baby

- Seizures
- Medications

Risks/Benefits related to methods

- IUDs & Implants

- Pills, patch, ring

- medications that induce CYP3A decrease estrogen levels

- DMPA

- Decreases seizure frequency

- Barriers

What's the best choice?

Case 8

- Laneesha, 19 year old woman, G0,
- PMH: sickle cell
- Meds: MS contin and vicodan

- Physical Exam:
 - BP=120/80 P=68 BMI=26

Risks to mom

- Pain crises
- Anemia
- Stroke

Risk to baby

- Medications

Risks/Benefits related to methods

- IUDs & Implants

- Pills, patch, ring, DMPA
 - Continuous use decreases anemia and crises

- DMPA

- Barriers

What's the best choice?

Case 9

- Olivia, 32 year old woman, G0,P0
- On Hemodialysis for 2 years
- Meds: benazepril, lovastatin, aspirin
- Exam:
 - BP=138/76 HR=67 BMI=27

Risks to mom

- End stage renal disease increases risk of vascular disease
- Complicates adjustment to fluid shifts associated with pregnancy
- Decreased production of erythropoetin leads to anemia
- Secondary hyperparathyroidism can weaken bones

Risk to baby

- ACE-I (benazepril)
- Statins (lovastatin)

Risks/Benefits related to methods

- IUDs & Implants

- Pill, patch, ring
 - Avoid estrogen given vascular risk
- DMPA shot

- Barriers

What's the best choice?

Case 10

- Beatriz, 27 year old woman, G0
- PMH: rheumatic fever
- PSH: aortic valve replacement
- Meds: coumadin
- Physical Exam:
 - BP=120/80 P=72 BMI=26
 - Regular rate and rhythm, +click

Risks to mom

- Clotting?
- Bleeding?

Risk to baby

- Coumadin

Risks/Benefits related to methods

- IUDs & Implants

- *Paragard may increase menorrhagia*

- Pills, patch, ring

- Estrogen increases risk of clot...tho' when anticoagulated this effect may be negligible

- DMPA

- Ovulation suppression to avoid hemoperitoneum

- Barriers

What's the best choice?

Case 11

- Melissa, 23 year old woman, G2, P0, S2
- PMH: Lupus, deep venous thrombosis
- Meds: cyclophosphamide, prednisone, calcium, hydrochlorothiazide, atorvastatin, coumadin
- Physical Exam:
 - BP=135/85 P=68 BMI=26
 - Rash, missing 3 toes

Risks to mom

- Lupus increases risk of vascular disease
- Pregnancy can precipitate a lupus flare
- Anemia
- Osteoporosis

Risk to baby

- Lupus flare
- Medications

Risks/Benefits related to Method

- Barriers

- Pills, patch, ring

- *Avoid estrogen given vascular risk*

- DMPA shot

- *May further decrease bone mineral density*

- IUDs & Implants

- *Paragard may increase anemia*

What's the best choice?

Case 12

- Janine, 28 year old woman, G1, P1,
- PMH: pulmonary hypertension
- Meds: Bosentan
 - oxygen when sleeps
- Physical Exam:
 - BP=120/75 P=89 RR=18 BMI=24

Risks to mom

- Pregnancy carries a 36% risk of mortality
- Increased risk of pulmonary thrombosis due to slow flow in pulmonary vasculature

Risk to baby

- Bosentan is teratogenic in animals
- Hypoxia is bad for babies

Risks/Benefits related to Method

- Barriers

- Pills, patch, ring

- *Avoid estrogen which may increase risk of thrombosis*
- Bosentan induces liver enzymes and may affect hormone levels

- DMPA

- IUDs & Implants

Options by Efficacy

- **Abstinence**
 - cycle beads, rhythm method, natural family planning
- **Barriers + Emergency Contraception**
 - male condom, female condom, diaphragm,
 - cervical cap, sponge, spermicides
- **Combined Hormonal**
 - pill, patch, ring
- **Progestin Only**
 - pill, injection
- **Intra-Uterine Devices and Implants**
 - levonorgestrel, copper T
- **Surgical** (essure, tubal ligation, vasectomy)
- **Abortion** (medication, aspiration)

If she needs to see an
internist...



She might need an IUD

Internist's Usual Device



Questions?