

Contraception in Adolescents and Young Adults with a Chronic Illness

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Objectives

At the conclusion of this presentation, the participant will be able to:

- Describe the epidemiology of adolescent pregnancy
- Counsel adolescents (especially adolescents with chronic illnesses) on the array of contraceptive choices
- Counsel patients on using emergency contraception

Chronic Illness in the Adolescent/YA

◆ 2011 US survey of Children's Health:

12-17 y/os: 17.5% one chronic condition and 13.3% ≥ 2

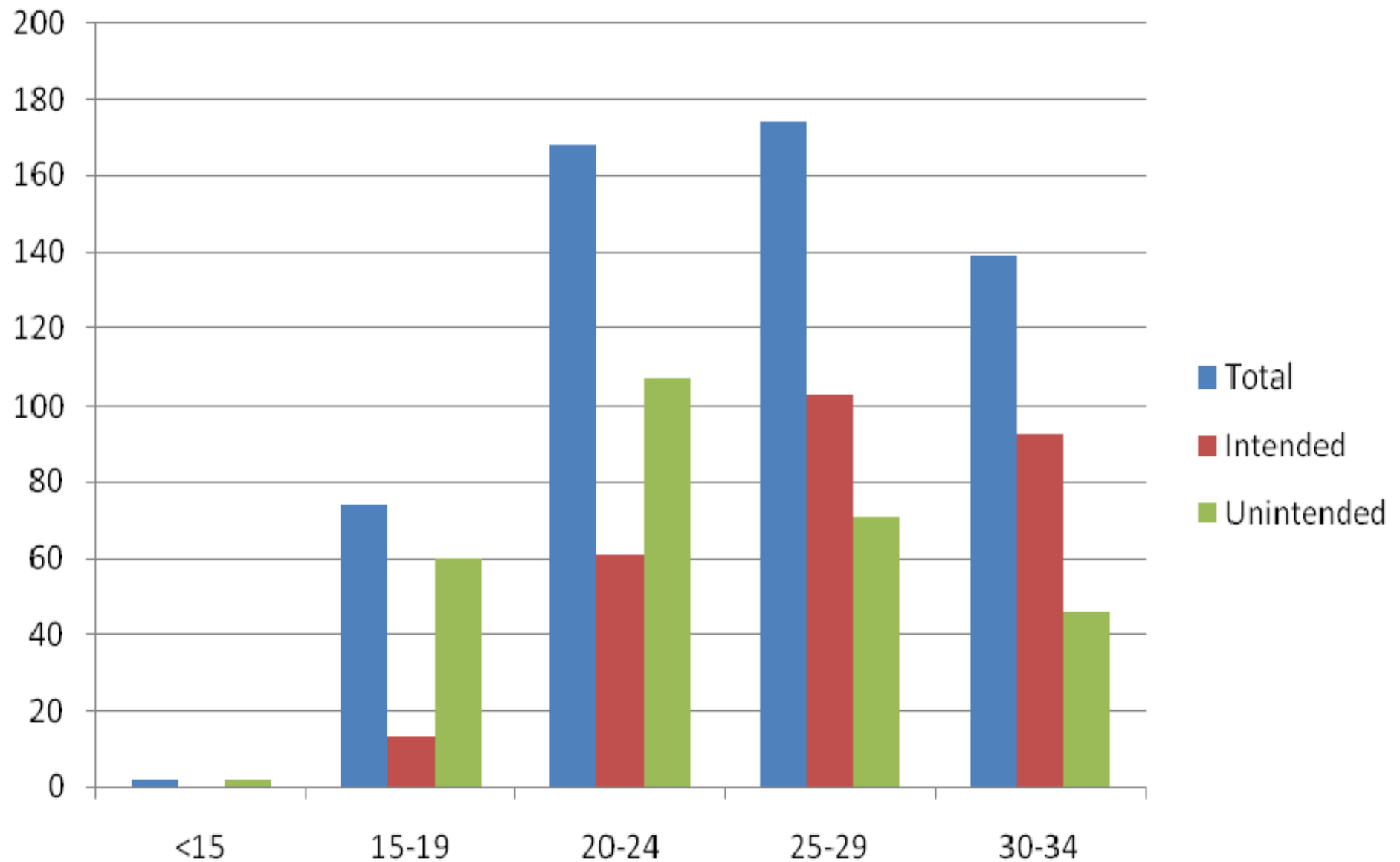
◆ 2009 CHIS Survey (physical or mental health disability)

18-25: Males 15.9%, Females 18.1%

◆ Leading causes chronic conditions adolescents 10-17:

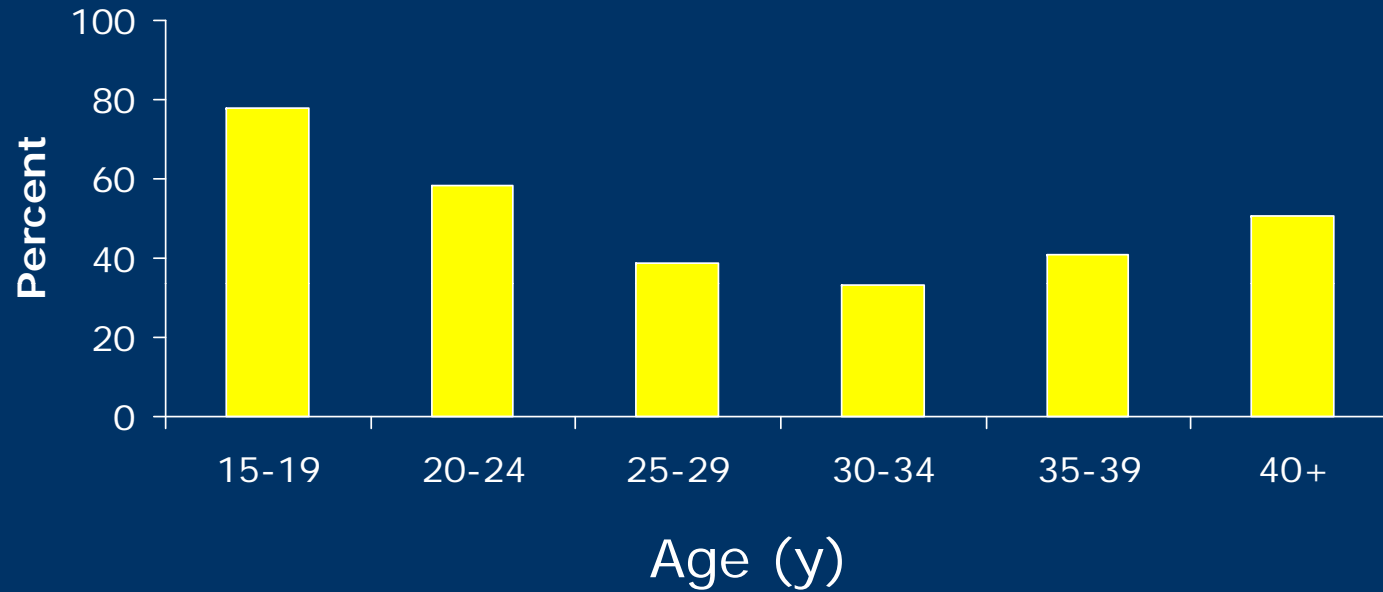
- Asthma: 46.8/1,000 adolescents
- Musculoskeletal impairments: 20.9/1,000
- Heart disease: 17.4/1,000
- Arthritis: 8.7/1,000
- Epilepsy: 3.3/1,000
- Diabetes: 1.5/1,000
- Sickle cell disease: 0.9/1,000
- Mental health disorders also leading cause of disabilities

PREGNANCY RATES (PER 1,000 WOMEN) BY AGE GROUP AND INTENTION, U.S., 2006



The Need for Contraception

Unintended Pregnancies (%) by Age



- 2-3% reproductive-age women have elective abortions each yr
- Over 40% of American women have had an abortion

Henshaw SK. *Fam Plann Perspect.* 1998;30:24-29, 46.

Effects on Developmental Tasks

- Independence: May prolong dependence on parents. Middle adolescence difficult time.
- Sexuality: Many teens with a chronic illness or disability are sexually active and have concerns about sexual attractiveness, normalcy of reproductive system, fertility, contraception safety. Neglected area.
- When CI is added to increased risk taking of AYA negative consequences can be increased (STIs)
- Some teens can have more risk taking behaviors as their CI and energy improves.
- Fertility: May be affected, but in many diseases, fertility and unintended pregnancy is still present.

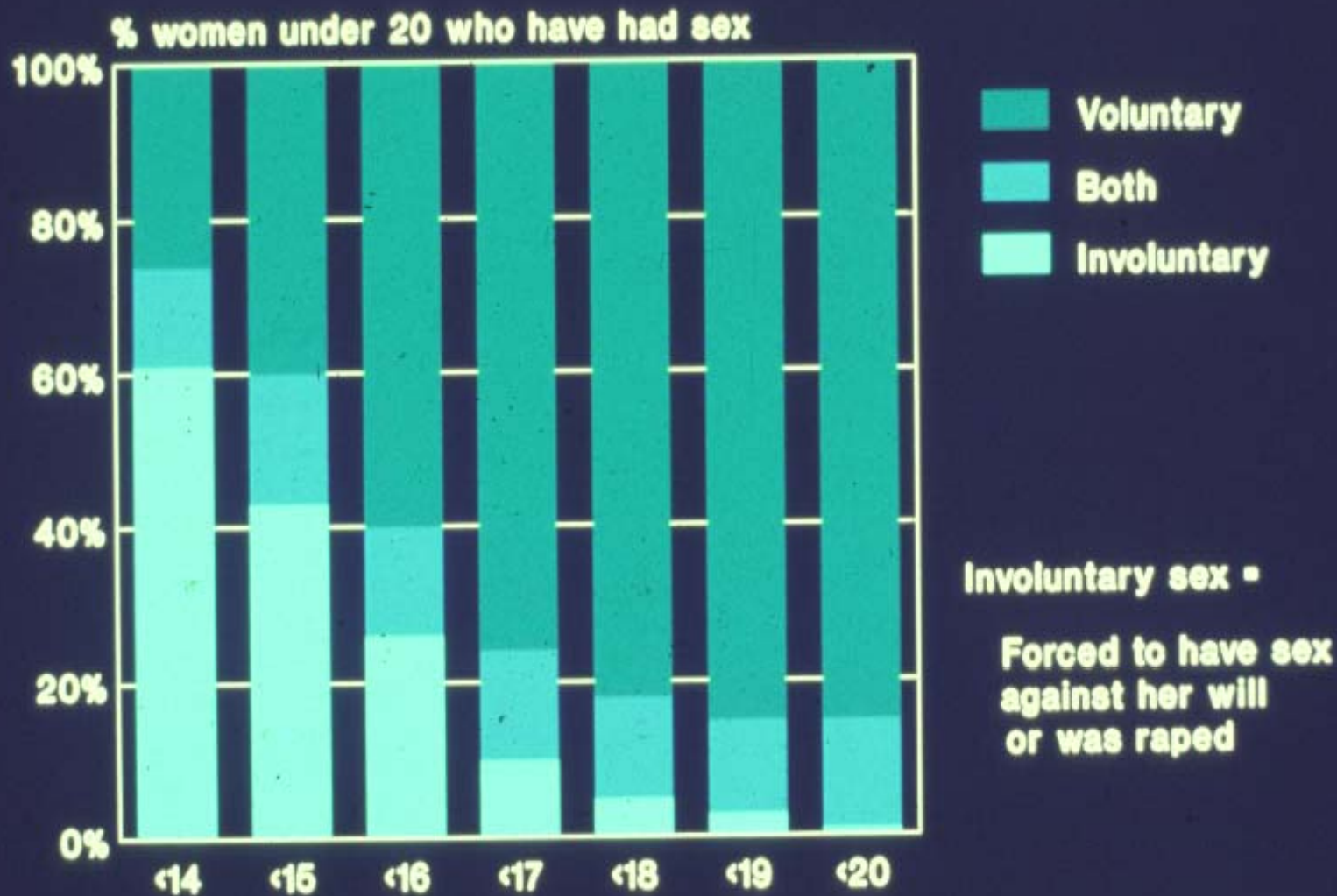
Prevalence of Sexual Activity among Chronically Ill Adolescents

Study Population	Age Range (yr)	Sexually Active (%)
School-Based, Minnesota Males – visible conditions Females – visible conditions	13 – 18 13 – 18	49 42
Inner-City, NY, Various Diseases	14 - 17	33
Tertiary Care Centers, N. Carolina, Sickle cell disease	12 – 19	51
Tertiary Care Centers, N. Carolina, Cystic Fibrosis	12 – 19	28

Prevalence of Sexual Activity among Chronically Ill Adolescents

- Suris (1996): No age difference age first intercourse those with a CI versus those without.
- Cheng and Udry (2002): Physically disabled youth – No difference by age 16 of SA between disabled youth and non-disabled youth
- May be some delay in onset of SA in those diseases that affect sexual maturation.

The younger a sexually experienced teen, the more likely sex was involuntary



Involuntary sex =

**Forced to have sex
against her will
or was raped**

AGI

AGI, Sex and America's Teenagers, 1994

Interactions Chronic Illness and Contraception

**Chronic
Illness**



Contraception

**Chronic
Illness**



Fertility

**Chronic
Illness**



Pregnancy

Interactions Chronic Illness and Contraception

**Chronic
Illness**



Contraception

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Fertility

**Chronic
Illness**



Pregnancy

Interactions Chronic Illness and Contraception

**Chronic
Illness**



Contraception

**Chronic
Illness**



Fertility

**Chronic
Illness**



Pregnancy

Contraception and Chronic Disease

Guiding Principles

- Usually pregnancy is greater risk than contraception.
- A contraindication to OCs is usually a contraindication to pregnancy
- Most women do not have a medical problem that contraindicates use of the pill
- If possible contraindications exist, consultation regarding contraceptive advice is needed

Mortality Risk

Activity	Risk per Year
SMOKING 1 PPD	1 IN 200
MOTORCYCLING	1 IN 1,000
AUTOMOBILE DRIVING	1 IN 6,000
POWER BOATING	1 IN 6,000
ROCK CLIMBING	1 IN 7,500
FOOTBALL	1 IN 25,000
CANOEING	1 IN 100,000
USING TAMPONS	1 IN 350,000
USING IUD	1 IN 100,000
UISING BARRIER METHODS	NONE
OCP'S NON SMOKER	1 IN 63,000
OCP'S SMOKER	1 IN 16,000
PREGNANCY CONTINUING	1 IN 10,000
PREGNANCY TAB – 9 WKS	1 IN 400,000
PREGNANCY TAB 9-12 WKS	1 IN 100,000

Pill Safety: 39 Year Follow-up

- 46,112 women followed for up to 39 years
 - 378,006 women-years in never-users
 - 819,175 women-years in ever-users
- **Significantly lower rate of death in prior OC users from:**
 - Any cause (12% reduction)
 - All cancers
 - all circulatory diseases, ischemic heart disease, and all other diseases

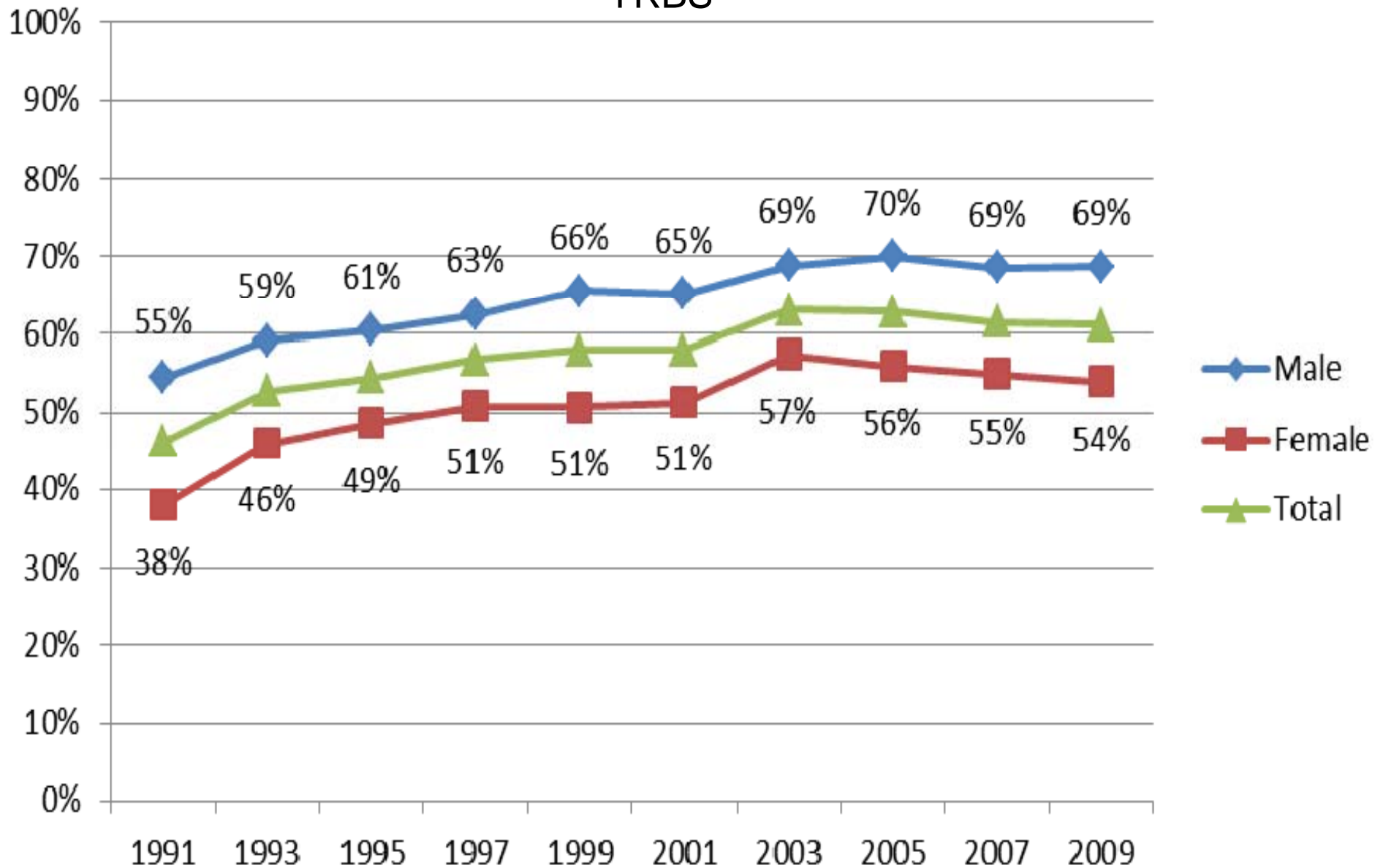
Sheik-ESQ

The Condom

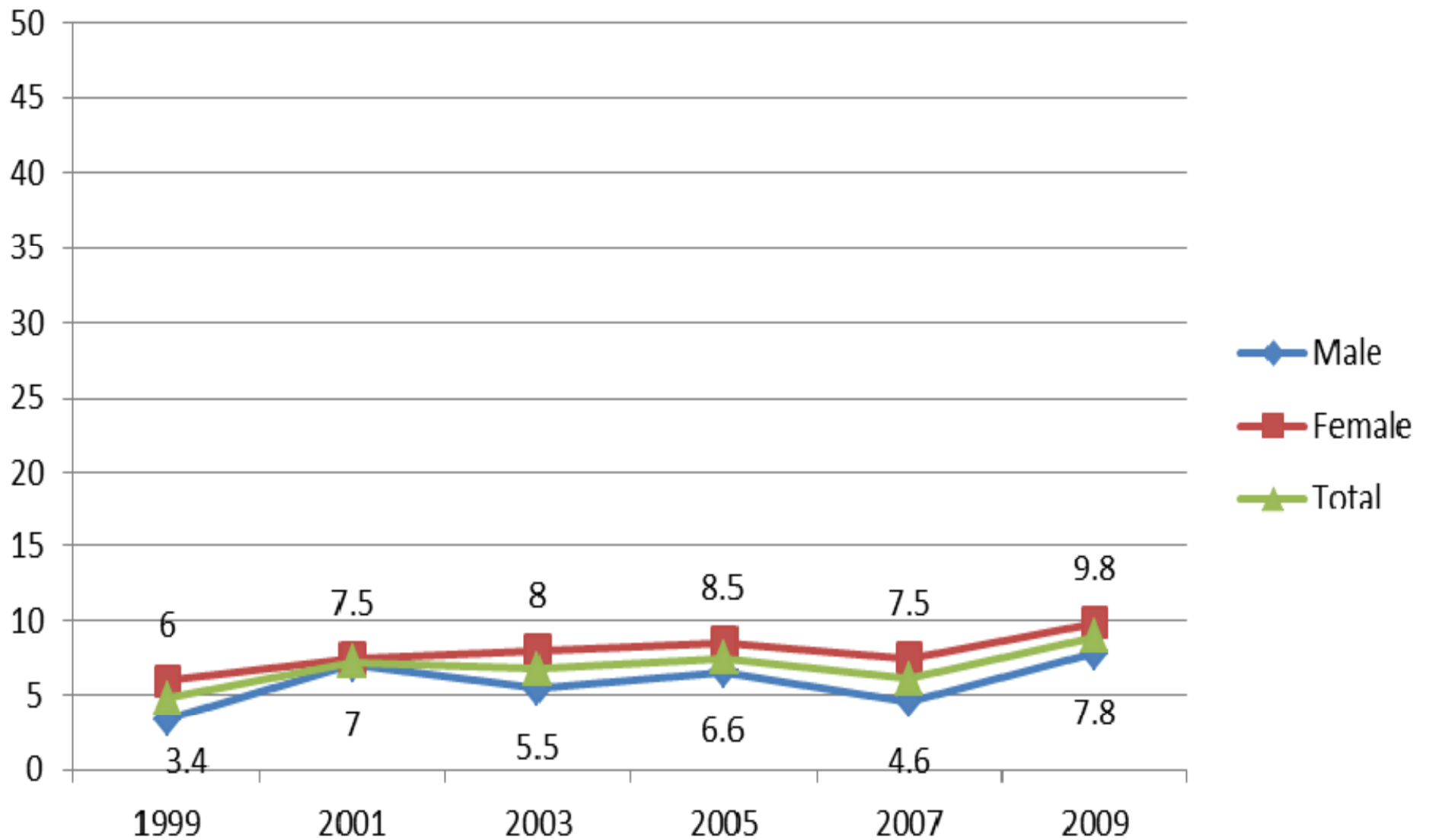


PERCENT OF CURRENTLY SEXUALLY ACTIVE HIGH SCHOOL STUDENTS WHO USED A CONDOM AT LAST INTERCOURSE, U.S., 1991-2009

YRBS



PERCENTAGE OF HIGH SCHOOL STUDENTS WHO USED BOTH A CONDOM AND BIRTH CONTROL PILLS OR DEPO-PROVERA TO PREVENT PREGNANCY BEFORE LAST SEXUAL INTERCOURSE, 1999-2009



Contraceptive Failure Rates

<u>Method</u>	<u>Typical Use</u>	<u>Perfect Use</u>	<u>1 yr Use</u>
■ Spermicides	26	6	40
■ Female condoms	21	5	56
■ Diaphragms	20	6	56
■ Male condoms	14	3	61
■ Combined OCPs	8	<1	
■ NuvaRing		1-2	
■ Patch		~ 1	
■ IUD	0.8	0.6	78
■ DMPA	0.3	0.3	70
■ Norplant	0.5	0.5	88
■ All far better than nothing		85%	

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Oral Contraceptive Pills

- Safe and well-tested -- the gold standard:
 - 43 years of clinical experience in US
 - Best studied medication in history
- Failure rate with consistent and correct use < 1%
- Typical first year failure rate is 8% and 9-18% in teens
- Rapidly reversible:
 - Only 2 week average delay in fertility
- Extensive non-contraceptive benefits
- No need for pap, pelvic or breast exam before prescribing

Efficacy of COCs in U.S.

- Noncompliance implicated in 86% of unintended pregnancies with COCs
 - Rates 4X higher in US compared to Europe
 - Real life usage reduces very high pharmacological efficacy
- **Failure rates highest:**
 - Age 20-30
 - Parous > nulliparous women
 - Low education > high education
 - Obesity slightly higher

Dinger J, et al Obstet Gynecol 2011;117:33-40

How Many Pill Packs.... (California Family PACT: 84,401 women)

	1 cycle	3 cycles	13 cycles
Pregnancy	2.9%	3.3%	1.2%

Abortion rates 46% less when women given 1
year supply

Oral Contraceptives Metabolic Effects

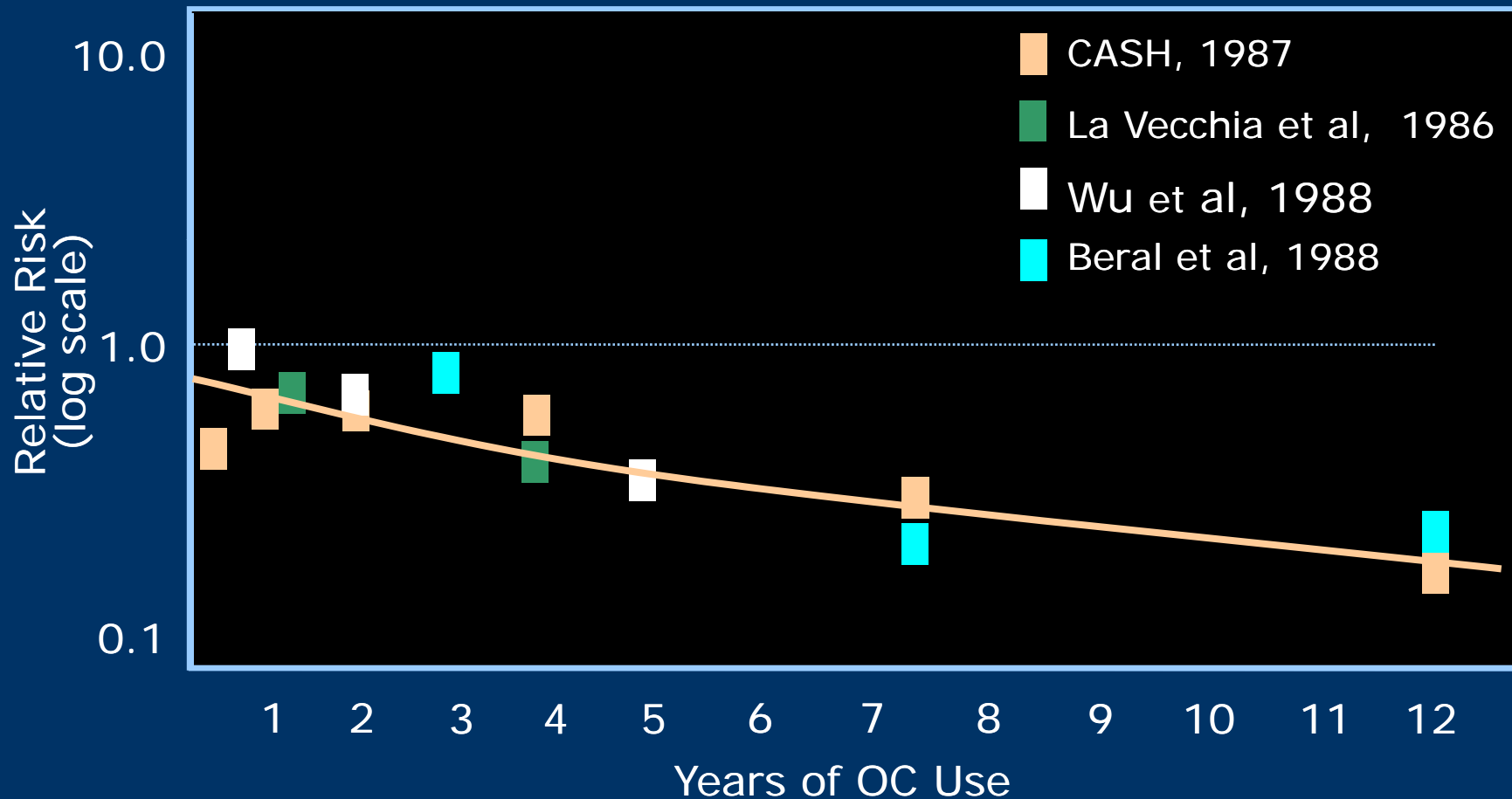
	Estrogens	Progestins
Protein	▲ Globulins	None
CHO	None	Insulin Resistance: ▲ Insulin ▼ Glucose Tol.
Lipids	▲ HDL-Chol ▼ LDL-Chol	▼ HDL-Chol ▲ LDL-Chol
Electrolytes	Na retention	Na retention

Benefits of OCs

- **Proven reduction in risk:**
 - Ovarian cancer
 - Endometrial cancer
 - Salpingitis (RR = 0.4, .2-1.1)
 - Benign breast disease
 - Dysmenorrhea/Menorrhagia
 - Ectopic pregnancies
 - Acne
 - Iron Deficiency Anemia
 - Low bone density
- **Possible Reduction in Risk:**
 - Cardiovascular Disease
 - Uterine Fibroids
 - Endometriosis
 - Rheumatoid Arthritis

Ovarian Cancer and OCs

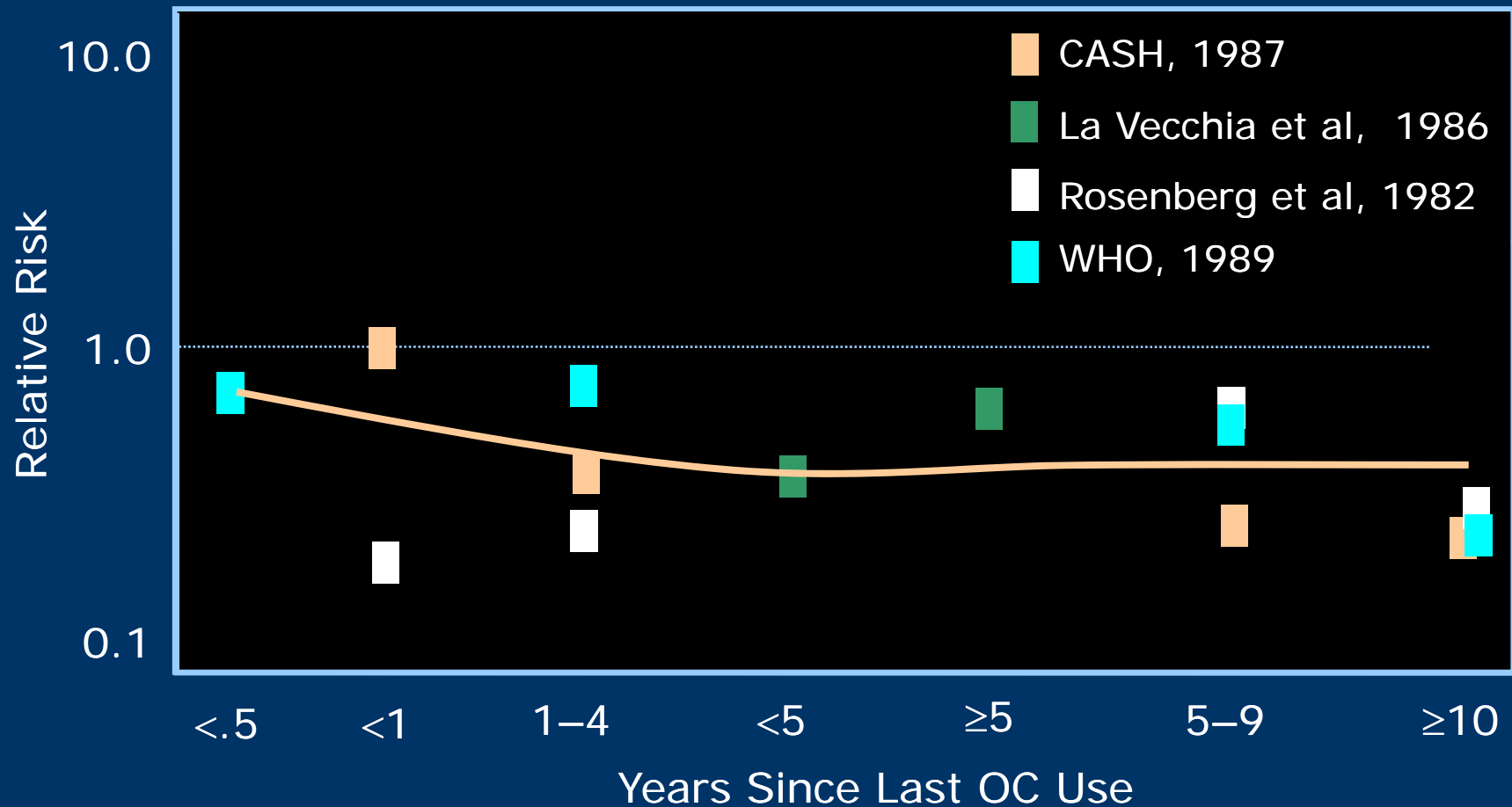
Risk Reduction by Years of Use



Adapted from Grimes DA et al, eds. *Modern Contraception: Updates from The Contraception Report*. Emron, 1997.

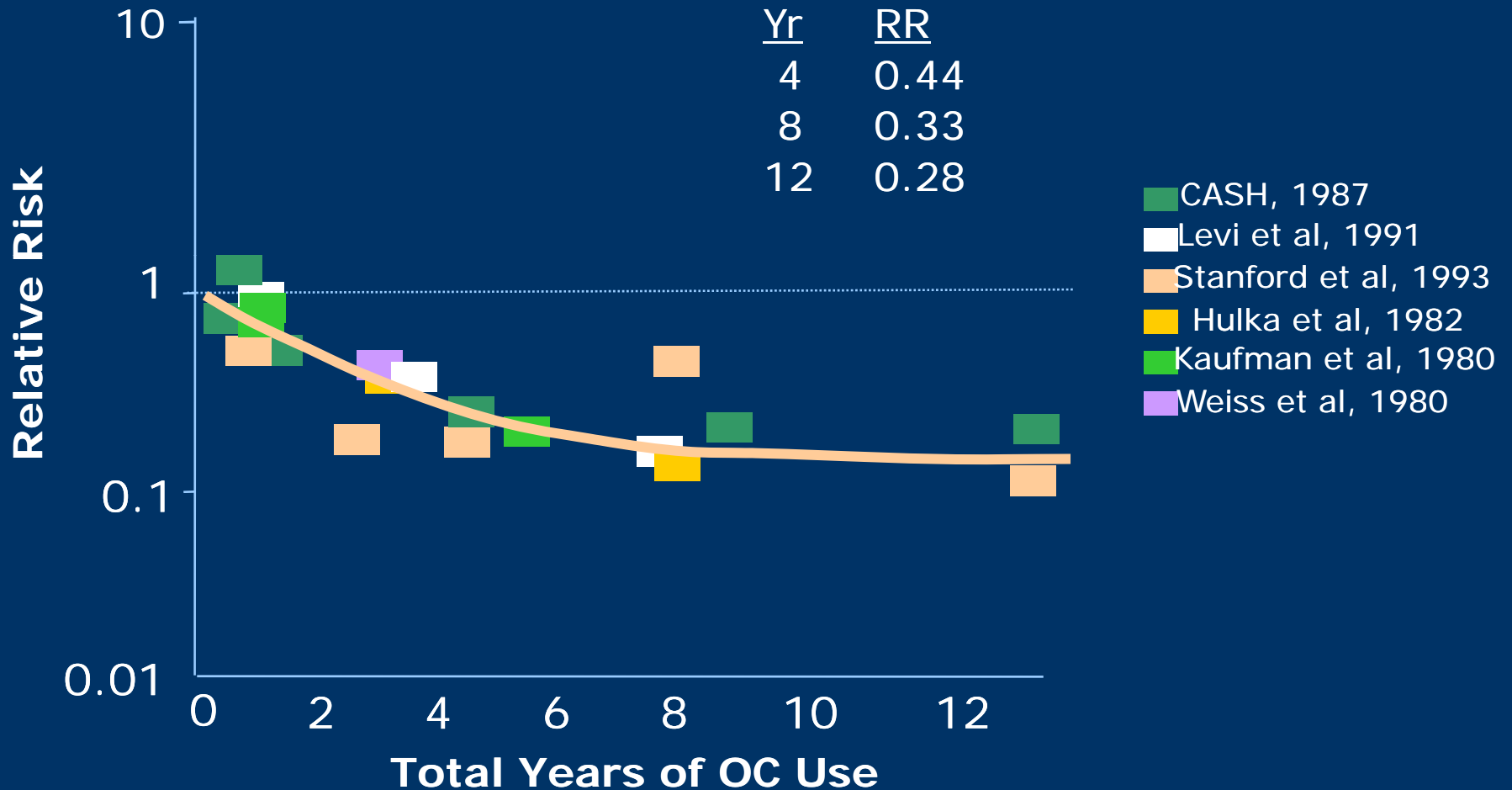
www.contraceptiononline.org

OCs Protect Against Ovarian Cancer After Discontinuation



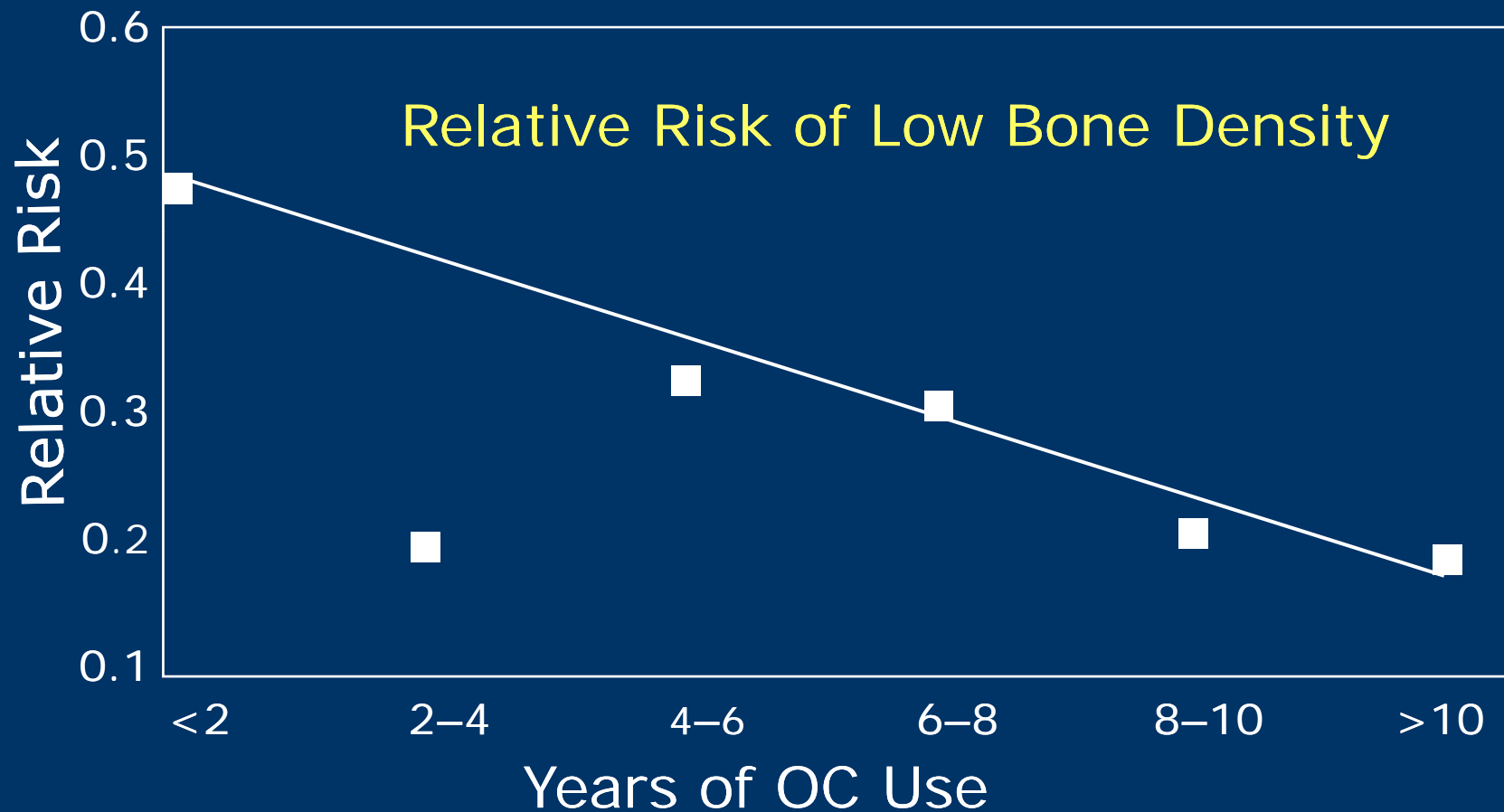
Adapted from Stanford JL. *Contraception*. 1991;43:543-556.

OCs Reduce Risk of Endometrial Cancer By Years of Use



Adapted from Schlesselman JJ. *Hum Reprod.* 1997;12:1851-1863.

Higher Bone Density *Association With Longer OC Use*



Adapted from Kleerekoper M et al. *Arch Intern Med.* 1991;151:1971-1976.

www.contraceptiononline.org

What testing/screening do you need to prescribe OCPs? And is a pelvic exam needed?

ACOG and WHO require only:

- Health history of contraindications
- Weight
- BP

- **Do not need pelvic exam unless symptomatic or ~21**

U.S. Medical Eligibility Criteria for Contraceptive Use (MEC)



MMWRTM

Morbidity and Mortality Weekly Report

www.cdc.gov/mmwr

Recommendations and Reports

June 18, 2010 / Vol. 59 / No. RR-4

U.S. Medical Eligibility Criteria for Contraceptive Use, 2010

**Adapted from the World Health Organization
Medical Eligibility Criteria for Contraceptive Use, 4th edition**

Medical eligibility criteria for contraceptive use

Fourth edition, 2009

A WHO FAMILY PLANNING CORNERSTONE



Next edition 2014



Summary Chart of U.S. Medical Eligibility Criteria for Contraceptive Use, 2010



Key:	
1	No restriction (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)

This summary sheet only contains a subset of the recommendations from the US MEC. For complete guidance, see: www.cdc.gov/roproductivhealth/usmec

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	Sub-conditions	Combined pill, patch, ring		Progesterone-only pill		Injection		Implant		LNG-IUD		Copper IUD	
		1	2	1	2	1	2	1	2	1	2	1	2
Age		Menarche to <40: 1		Menarche to <18: 1		Menarche to <18: 2		Menarche to <18: 1		Menarche to <20: 2		Menarche to <20: 2	
		>49: 2		18-45: 1		18-45: 1		18-45: 1		≥20: 1		≥20: 1	
		>45: 1		>45: 1		>45: 1		>45: 1					
Anatomic abnormalities	a) Distorted uterine cavity b) Other abnormalities							4	4	4	4	4	4
Anemia	a) Thalassemia b) Sickle cell disease c) Iron-deficiency anemia (including cysts)	3	1	1	1	1	1	3	2	3	2	3	2
Benign ovarian tumors		1	1	1	1	1	1	1	1	1	1	1	1
Breast disease	a) Undiagnosed mass b) Benign breast disease c) Family history of cancer d) Breast cancer	2*	2*	2*	2*	2*	2*	2	1	2	1	2	1
		1	1	1	1	1	1	1	1	1	1	1	1
		4	4	4	4	4	4	4	4	4	4	4	4
		3	3	3	3	3	3	3	3	3	3	3	3
Breastfeeding	a) < 1 month postpartum b) 1 month or more postpartum	3*	2*	2*	2*	2*	2*						
Cervical cancer	Awaiting treatment	2	1	2	1	2	1	4	2	4	2	4	2
Cervical ectropion		1	1	1	1	1	1	1	1	1	1	1	1
Cervical intraepithelial neoplasia (CIN)		2	1	2	1	2	1	2	1	2	1	2	1
Cirrhosis	a) Mild (compensated) b) Severe (decompensated)	1	1	1	1	1	1	1	1	1	1	1	1
Deep venous thrombosis (DVT) / Pulmonary embolism (PE)	a) History of DVT/PE, not on anticoagulant therapy i) higher risk for recurrent DVT/PE ii) lower risk for recurrent DVT/PE b) Acute DVT/PE c) DVT/PE and established on anticoagulant therapy for at least 3 months i) higher risk for recurrent DVT/PE ii) lower risk for recurrent DVT/PE d) Family history (first-degree relatives) e) Major surgery i) with prolonged immobilization ii) without prolonged immobilization f) Minor surgery without immobilization	4	2	2	2	2	2	2	2	2	2	2	2
		3	2	2	2	2	2	2	2	2	2	2	2
		4	2	2	2	2	2	2	2	2	2	2	2
		4*	2	2	2	2	2	2	2	2	2	2	2
		3*	2	2	2	2	2	2	2	2	2	2	2
		2	1	1	1	1	1	1	1	1	1	1	1
		4	2	2	2	2	2	2	2	2	2	2	2
		2	1	1	1	1	1	1	1	1	1	1	1
		1	1	1	1	1	1	1	1	1	1	1	1
Depressive disorders		1*	1*	1*	1*	1*	1*	1*	1*	1*	1*	1*	1*
Diabetes mellitus (DM)	a) History of gestational DM only	1	1	1	1	1	1	1	1	1	1	1	1

Condition	Sub-conditions	Combined pill, patch, ring		Progesterone-only pill		Injection		Implant		LNG-IUD		Copper IUD			
		1	2	1	2	1	2	1	2	1	2	1	2		
DM (cont.)	b) Non-vascular disease: (i) non-insulin dependent (ii) insulin dependent c) Nephropathy/retinopathy/neuropathy d) Other vascular disease or diabetes of >20 years duration	2	2	2	2	2	2	2	2	2	2	2	2		
		2	2	2	2	2	2	2	2	2	2	2	2		
		3*	2	3	2	3	2	3	2	3	2	3	2		
		3*	2	3	2	3	2	3	2	3	2	3	2		
Endometrial cancer		1	1	1	1	1	1	4	2	4	2	4	2		
Endometrial hyperplasia		1	1	1	1	1	1	1	1	1	1	1	1		
Endometriosis		1	1	1	1	1	1	1	1	1	1	1	1		
Epilepsy	see drug interactions	1*	1*	1*	1*	1*	1*	1*	1*	1*	1*	1*	1*		
Gall-bladder disease	a) Symptomatic (i) treated by cholecystectomy (ii) medically treated (iii) current b) Asymptomatic	2	2	2	2	2	2	2	2	2	2	2	2		
		3	2	2	2	2	2	2	2	2	2	2	2		
		3	2	2	2	2	2	2	2	2	2	2	2		
		2	2	2	2	2	2	2	2	2	2	2	2		
Gestational trophoblastic disease	a) Declining or undetectable β-hCG levels b) Persistently elevated β-hCG levels or malignant disease	1	1	1	1	1	1	3	3	3	3	3	3		
Headaches	a) Non-migrainous b) Migraine: (i) without aura, age <35 (ii) without aura, age ≥35 (iii) with aura, any age	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*		
		2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*		
		3*	4*	3*	4*	3*	4*	3*	4*	3*	4*	3*	4*		
		4*	4*	2*	3*	2*	3*	2*	3*	2*	3*	2*	3*		
History of bariatric surgery	a) Restrictive procedures b) Malabsorptive procedures	1	1	1	1	1	1	1	1	1	1	1	1		
		COCC 3	3	1	1	1	1	1	1	1	1	1	1		
		1	1	1	1	1	1	1	1	1	1	1	1		
History of cholelithiasis	a) Pregnancy-related b) Post-CDC-related	2	2	2	2	2	2	2	2	2	2	2	2		
		3	2	2	2	2	2	2	2	2	2	2	2		
History of high blood pressure during pregnancy		2	1	1	1	1	1	1	1	1	1	1	1		
History of pelvic surgery		1	1	1	1	1	1	1	1	1	1	1	1		
HIV	High risk or HIV infected AIDS (see drug interactions) †§ Clinically well on ARV therapy	1	1	1	1	1	1	1	1	2	2	2	2		
		1*	1*	1*	1*	1*	1*	1*	1*	3	2*	3	2*		
		If on treatment see drug interactions										2	2	2	2
Hypertension	a) Adequately controlled hypertension b) Elevated blood pressure levels (properly taken measurements) (i) systolic 140-159 or diastolic 90-99	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*		
		3*	1*	2*	2*	2*	2*	2*	2*	1	1	1	1		
		3	1	2	2	2	2	2	2	1	1	1	1		

MEC Categories

- 1. A condition for which there is no restriction for the use of the contraceptive method.**
- 2. A condition where the advantages of using the method generally outweigh the theoretical or proven risks.**
- 3. A condition where the theoretical or proven risks usually outweigh the advantages of using the method.**
- 4. A condition which represents an unacceptable health risk if the contraceptive method is used.**

Obesity and Efficacy with COCs

- No association between OC failure/pregnancy rates and BMI^{1,2,3}
- However.....
- Westhoff study 226 women BMI 19-24.5 vs 30-39.9⁴
 - Obese women were 3.1 times more likely to be noncompliant
 - 17% never took any pills but said they were using them consistently
 - Consistent users had same ovulation suppression

1. Westhoff CL, et al. *Contraception*. 2010;81:474-80

2. Trussell J, et al. *Contraception* 2009;79:334-8

3. Kaneshiro B, et al, *Contraception*. 2008;77-234-8

4. Westhoff CL, et al. *Obstet Gynecol* 2010;116;275-83.

Relative risk of venous thrombotic disease in women taking OCs

Estrogen (micrograms)	Relative Risk
< 50	1
= 50	1.5
> 50	1.7

OCPs and VTE risks

- Increase with higher estrogen doses
- Increase with greater BMI
- Increase with age: 15-19 (1.84/10,000); 45-49 (6.59/10,000)
- Some (older data) suggested increase with third generation progesterone (desogestrel, gestoden)
- Data conflicting with drospirenone as compared to levonorgestrel
- Risk decreases with longer duration of use.

Special Medical Conditions

Diabetes

- Combined hormonal contraceptives can be used in diabetics in absence of clinically manifest vascular disease including:
 - Retinopathy
 - Nephropathy
 - Peripheral vascular disease
 - Cardiac disease
- With vascular disease, progestin-only method, IUD or implant is more appropriate.
- Higher risk group for pregnancy and pregnancy complications

Special Medical Conditions

Diabetes - Management

- Adjust insulin or oral hypoglycemics as necessary
- CHC: Evaluate CV risk and use low E and low P
- POP, DMPA and implant acceptable with vascular disease
- IUDs are safe and effective choice

OCP Use in Women with Cardiovascular Disease

<u>Problem</u>	<u>OK to use</u>	<u>Contraindicated</u>
• Asymptomatic MVP	X	
• Controlled HBP	X	
• Hx HBP/pregnancy	X	
• CHF		X
• CAD/angina		X
• Vascular Dis/Diabetes		X
• Smoker over 35		X

Special Medical Conditions

Hypertension: Risk acceptable if BP well controlled on meds

Hyperlipidemia: Risk acceptable if LDL <160 mg/dL and no other CV risk factors.

Estimated number deaths per 100,000 women from fertility and fertility control, U.S. (Smoker versus non-smoker)

Method	15-19	20-24	25-29	30-34	35-39	40-44
No method	7.0	7.4	8.1	14.8	26.7	28.2
Pill - nonsmoker	0.8	0.7	1.1	2.1	14.1	32
Pill smoker	2.4	3.8	6.8	13.7	51.4	117.8

Smoking and Contraceptive Use

<i>CONDITION</i>	<i>CHC</i>	<i>POP</i>	<i>DMPA</i>	<i>IMP</i>	<i>Cu-IUD</i>	<i>LNG-IUD</i>
<i>SMOKING</i>						
a) Age<35	2	1	1	1	1	1
b) Age \geq 35						
(i) <15 cigarettes/day	3	1	1	1	1	1
(ii) \geq 15 cigarettes/day	4	1	1	1	1	1

Special Medical Conditions

Migraine Headaches

- Differentiate between migraine and non migraine and use consultation if necessary
- Pre migraine aura: Risk with hormonal contraceptives usually outweighs benefits

Special Medical Conditions

Depression

- No good evidence that COC or POP make depression worse
- All methods ok for depression
- St John's Wort may decrease efficacy of hormonal contraceptives. Counsel about potential decreased effectiveness
- No effect of SSRI's or tricyclics

Special Medical Conditions

Seizures

Seizures: Dilantin and carbamazepine decrease efficacy, but can use higher dose pill or DMPA

Drugs That Decrease the Effectiveness of OCs

- Anticonvulsants
 - Barbituates (including phenobarbital and primidone)
 - Phenytoin
 - Carbamazepine
 - Toprimate
 - Vigabatin
- Anti-infectives
 - Rifampin
 - Griseofulvin

American College of Obstetrics and Gynecology Practice Bulletin Number 18, July 2000

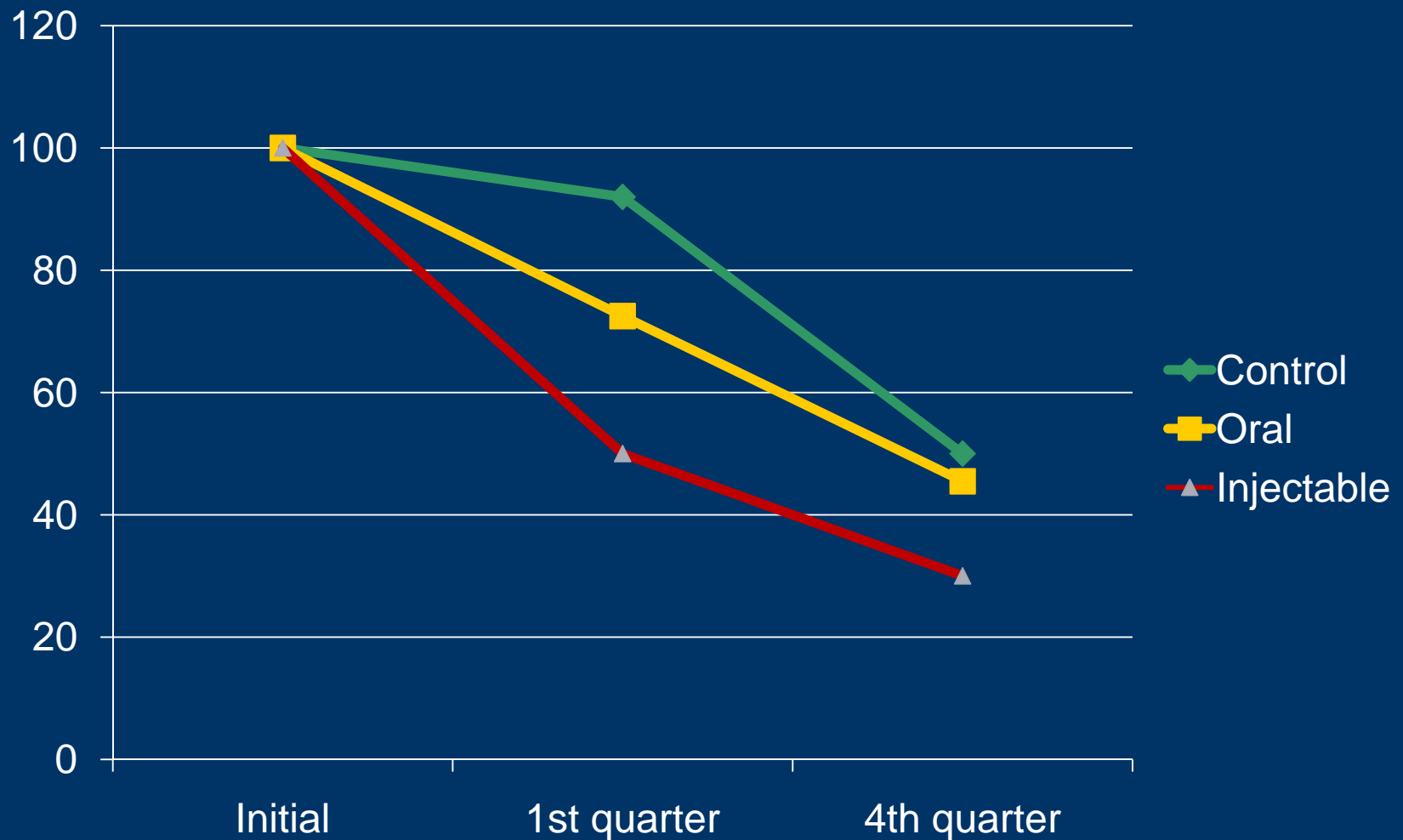
Drugs That Do Not Decrease the Effectiveness of OCs

- Anti-infectives
 - Tetracycline
 - Doxycycline
 - Ampicillin
 - Metronidazole
 - Quinolone antibiotics

Special Medical Conditions

Sickle cell anemia: No study has shown increase in sickling, but DMPA may decrease sickle crises

SS Crises: Percent having painful crisis by treatment group and by quarters



De Abood M, Et al, Contraception. 1997;56:313-16

Special Medical Conditions

Asthma

- All methods of contraception may be used.
- IUD use potential problem with chronic immunosuppression on steroids
- Theoretic concerns of estrogen effects on mucous, no studies to support clinical effect.

Thyroid Disease

- No contraindications to barrier methods, hormonal contraceptives or IUD related to thyroid diseases
- Combined OCPs may alter thyroid tests including increased TBG and total T4

Special Medical Conditions

IBD

- If disease is active and malabsorption is present, OCPS are inappropriate.
- Non-oral contraceptives, patch, ring, injections, implants can be used as they bypass enteric absorption.

SLE

- Flares during pregnancy have raised concerns about OCPs
- Some recent studies do not show more flares with OCPs
- Consider hormonal contraceptives in teens with stable, inactive or mildly active disease
- If positive antiphospholipid antibodies, hormonal contraceptives category 3 or 4

Renal disease and Contraception

- During dialysis, some teens resume ovulatory cycles
- Contraindications to OCPs would be uncontrolled HTN thromboembolic problems.
- DMPA does maintain levels during dialysis
- IUDs potential problem if on immunosuppressive Rx or anemic
- Progestin only methods potentially useful with dialysis with a transplant.

Scenario

- ❑ **17 year old female, history of multiple sexual partners, living in an area of high HIV prevalence, and is at high risk of contracting HIV. In addition to strong and supportive counseling about risk reduction and condom use, she also needs a highly effective contraceptive method. What options are available to her?**
 - A. Progestin-only implants**
 - B. Progestin-only injectables**
 - C. Combined hormonal methods (pill, patch, ring)**

WHO and US Recommendations prior to Feb 2012

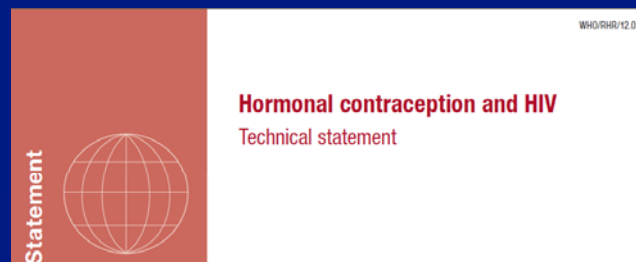
Condition	Combined methods	Progestin-only pills	Progestin-only injectables	Progestin-only implants
a) High risk for HIV	1	1	1	1
b) HIV infection	1*	1*	1*	1*
c) AIDS	1*	1*	1*	1*

*Drug interactions might exist between hormonal contraceptives and ARV drugs; refer to the section on drug interactions.

1	No restriction
2	Generally can use
3	Generally do not use
4	Do not use

WHO Consultation, Jan 31-Feb 1, 2012

- ❑ Triggered by new data, including publication by Heffron et al, Oct 2011
- ❑ Concerns about hormonal contraception and HIV
 - Increased risk of HIV acquisition among non-infected women?
 - Increased risk of HIV disease progression among HIV-infected women?
 - Increased risk of HIV transmission from infected women to non-infected male partners?
 - Interactions between hormonal contraception and antiretrovirals?



WHO Consultation, Jan 31-Feb 1, 2012

- ❑ 75 global experts met in Geneva
- ❑ Reviewed, biologic evidence, epidemiologic evidence, programmatic issues, competing risks
- ❑ Determined that numeric recommendations should not change, but that a strong clarification should be added to the recommendation for women at high risk for HIV and use of progestin-only injectables
- ❑ http://www.who.int/reproductivehealth/topics/family_planning/hc_hiv/en/index.html

WHO Recommendations Feb 2012

Condition	Combined methods	Progestin-only pills	Progestin-only injectables	Progestin-only implants
a) High risk for HIV	1	1	1**	1
b) HIV infection	1*	1*	1*	1*
c) AIDS	1*	1*	1*	1*

* *Some studies suggest that women using progestin-only injectable contraception may be at increased risk of HIV acquisition, other studies do not report this association. A WHO expert group reviewed all the available evidence and agreed that the data were not sufficiently conclusive to change current guidance. However, because of the inconclusive nature of the body of evidence on possible increased risk of HIV acquisition, **women using progestin-only injectable contraception should be strongly advised to also always use condoms, male or female, and other HIV preventive measures.** Expansion of contraceptive method mix and further research on the relationship between hormonal contraception and HIV infection is essential. These recommendations will be continually reviewed in the light of new evidence.

Contraception in Individuals with Disabilities

- Barrier Methods: Require manual dexterity
Lack of muscle tone could affect diaphragm use
- Hormonal contraceptives:
 - Ability to take pills
 - Increased risk of thromboembolic complications
 - DMPA and Norplant may be good alternatives
DMPA may have advantage in regards to menses
- IUD: High effectiveness and no need for dexterity
Must be able to check string
Problem if woman has decreased pelvic sensation

So why are teen pregnancy rates so high?

- 46% due to non-use of contraception
- 54% due to contraceptive failure
 - Effectiveness of method
 - Consistent and correct use

Santelli et al., 2006



Long Acting Reversible Contraception

Why Don't American Women Choose Long Acting Reversible Contraception?

- Copper IUD-Paraguard
- Mirena IUD
- Implanon

- Only 2% of American women are choosing them to prevent pregnancy
- 50% of contraceptive users in China and Egypt use IUDs

Long Acting Reversible Contraception (LARC)

- “Forgettable contraception”
- Not dependent on compliance/adherence
- Available in US:
 - IUDs: copper and hormonal
 - Implant
- “expanding access to LARC for young women has been declared a national priority” (IOM)
- “Encourage implants and IUDs for all appropriate candidates, including nulliparous women and adolescents.” (ACOG 2009)

Are IUDs safe in adolescents?

Revisiting the IUD – Dispelling myths

IUDs do not cause PID

IUDs are not an abortive agent

IUDs do not cause STD's

IUDs do not need to be removed for treatment of PID

IUDs do not cause infertility

IUDs can be used in nullips

IUDs can be used in appropriately screened adolescents and young adults

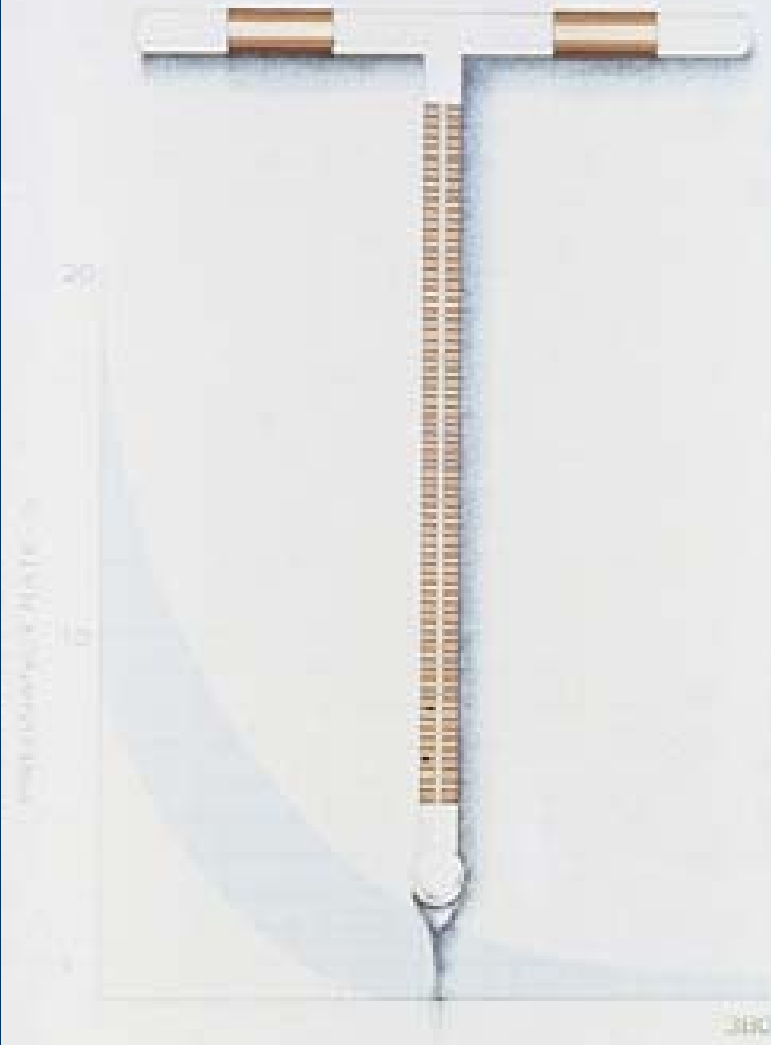
IUDs can be inserted immediately after a first trimester abortion

THE IUD - FACTS

- IUDs are highly effective, safe, cost effective, long acting and rapidly reversible contraception
- WHO supports use of IUD from menarche to 20

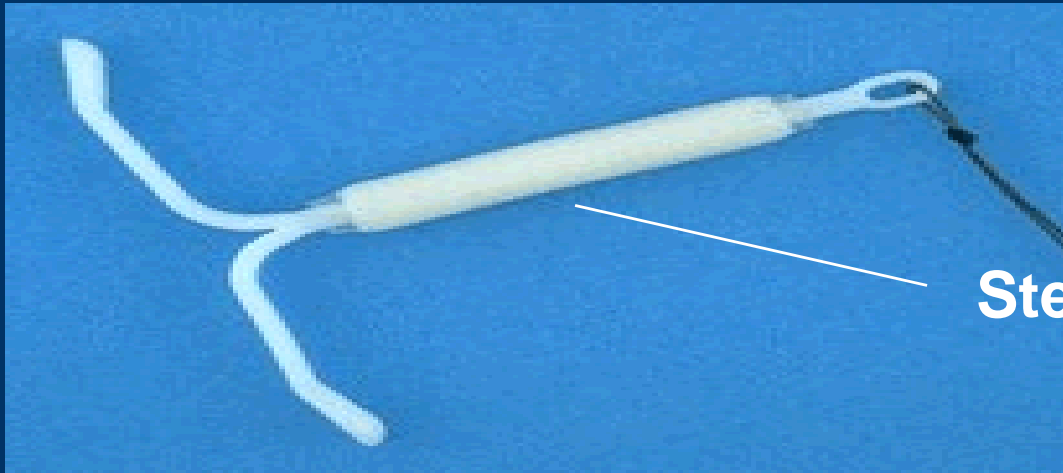
Copper T 380

Copper T 380



LOW-PAGE AREA OF COPPER (380)

Mirena (IUS)



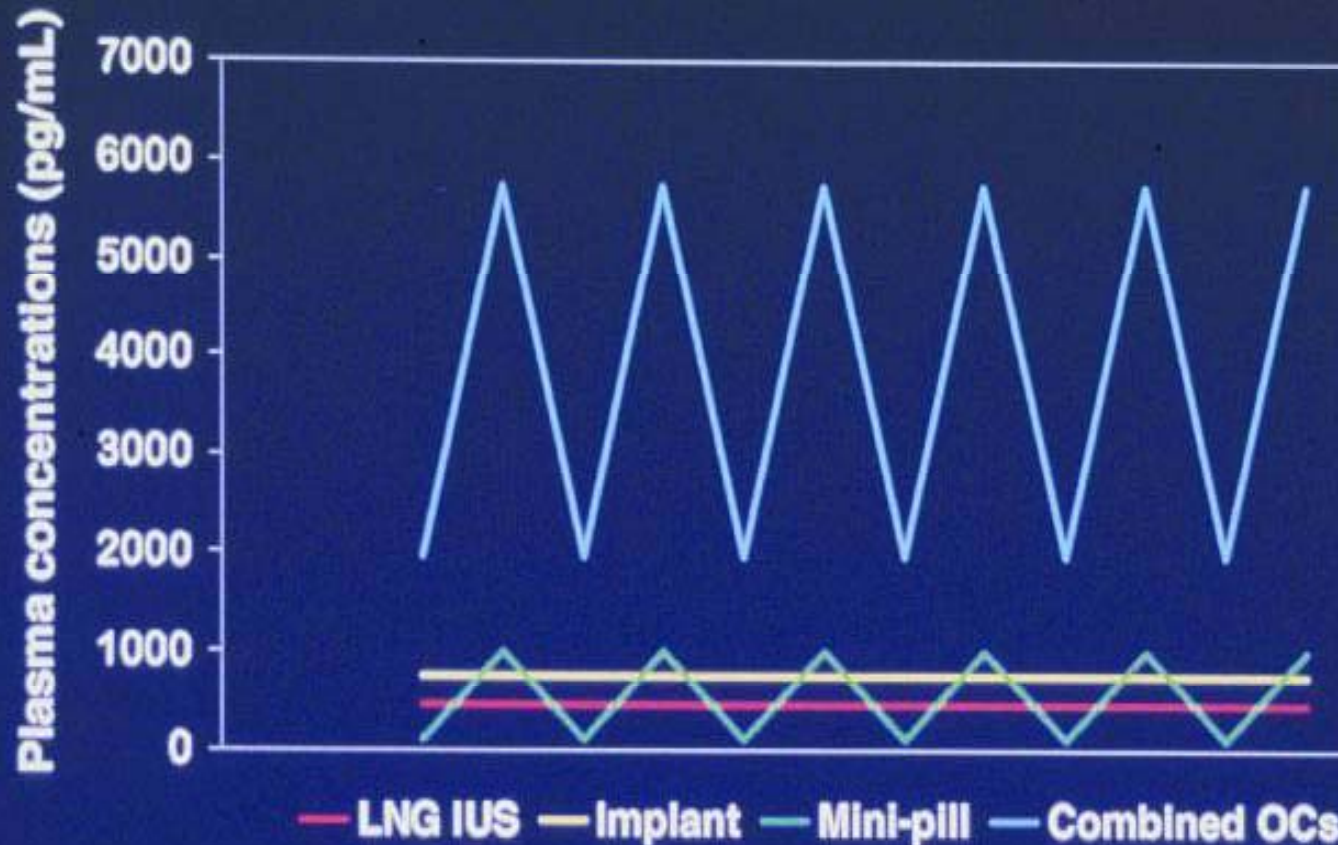
Steroid reservoir

**Levonorgestrel
20 mcg/day**

IUS (Intrauterine System) Versus IUD

- 1) More effective (1/1000 versus 10/1000)
- 2) Decreased menses: After 3 m, avg blood loss 85% less and reduced by 97% by 12 months
1/3 of women have no periods
- 3) Lasts 5 years versus 10 years

LNG IUS Plasma Concentrations of Levonorgestrel



Nilsson et al. *Acta Endocrinol* 1980;93:380

Diaz et al. *Contraception* 1987;35:551

Contraceptive Implant: Nexplanon/Implanon

- Implanon approved 2006 and as of 2012 only Nexplanon available in USA
- Nexplanon has different insertion device and is radiopaque
- Single implant rod (4 cm x 2 mm) made of ethylene vinyl acetate
- Contains 68 mg of etonogestrel (3-keto-desogestrel)
- Effective for 3 years
- 0 pregnancies for 13 trials with 70,000 cycles
- Inhibits ovulation and thickens cervical mucus ****0% ovulation**
- 94% of women ovulated within 3 weeks of removal



Implanon

- Adverse effect
 - Bleeding
 - 10% discontinue at 6 months
 - 20% at 12 months
 - 31% at 2 years
 - 32 % at 3 years

Implanon and BMD

- Single study on Implanon and BMD- no effect (n=44)
- Small controlled trial comparing BMD in adolescents (12-21) on DMPA, Norplant and OCP
 - Decrease 1.5% in DMPA users
 - Increase 2.5% in Norplant users
 - Increase 1.5% in OCP users
 - Increase 2.9% controls
 - After 2 years Norplant users increased 9.3% and control 9.5%

What are the guidelines for using emergency contraception?

Emergency Contraceptive Pills: Progestin-only

- Regular contraceptives used in a different way, i.e. prevent pregnancy after intercourse
- Similar mechanisms as OCPs including thickened cervical mucus; and inhibition of tubal transport of egg/sperm, ovulation, fertilization, and implantation
- Birth control pills containing only progestin
- First dose (or only dose) within 72 hours after intercourse (can be given up to 120 hours)
- Second dose 12 hours later if using Next Step

Emergency Contraceptive Options

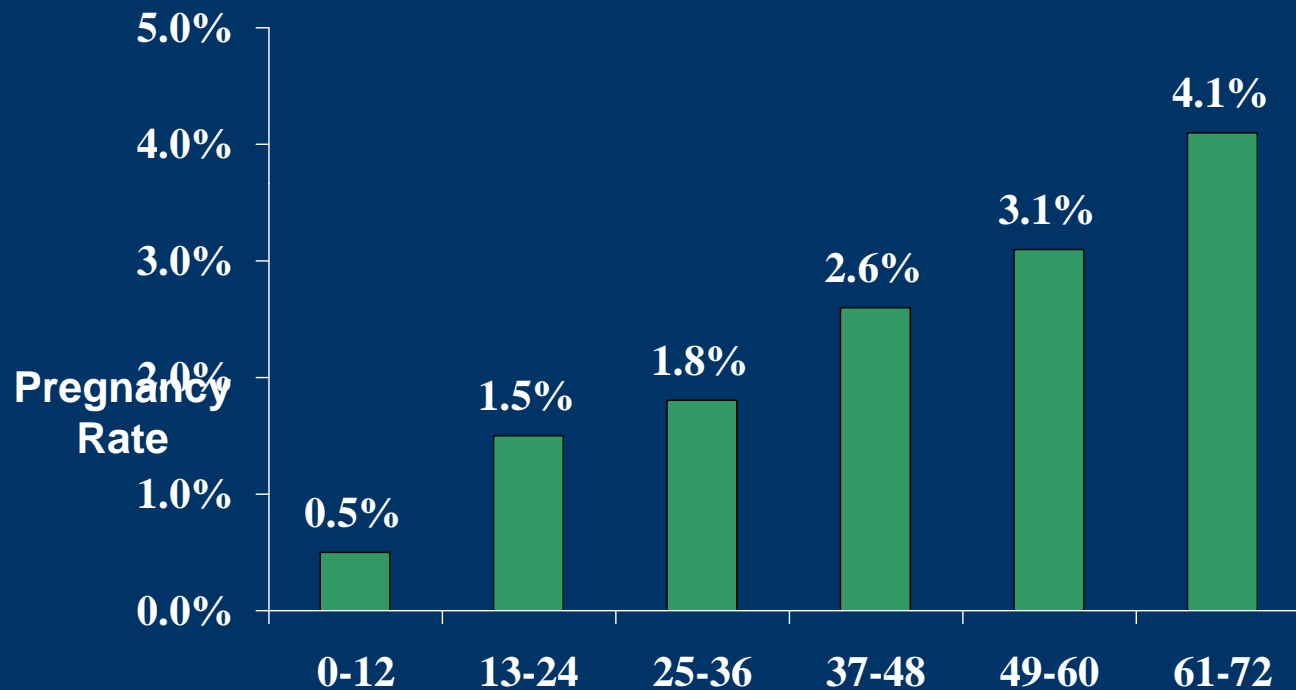
- Approved and available for EC use (progestin only)
 - Plan B – One-Step (1.5 mg levonorgestrel in one pill)
 - Next Choice (generic - 2 pills equal to 1.5 mg levonorgestrel)
- FDA approved 2010
 - Ella (ulipristal acetate) single dose (30 mg) for use up to five days after unprotected intercourse.
 - Inhibits or delays ovulation

EC and Obesity

- Appears that with increasing obesity the risk of failure of EC with Plan B rises.
- Risk of failure with Plan B versus Ella
 - BMI: 25-29.9 - 2 fold risk of failure with Plan B (LNG)
 - BMI > 30: Plan B appears ineffective and Ella (ulipristal acetate) remains effective

Glasier A. Contraception. 84(4):363-7, 2011 Oct.

How Long After the Morning After? *WHO Pooled Data (Yuzpe and LNg), 1998*



Source: Piaggio, von Hertzen, Grimes and Van Look 1999

Contraindications: Progestin-only ECPs

- Plan B
 - Known or suspected pregnancy
 - Hypersensitivity to any component of the product
 - Undiagnosed abnormal genital bleeding

Results:

Women who received ECPs in advance

- Were more likely to use ECPs: 47% vs 27% of women who received only counseling ($p < .001$)
- Were **not** more likely to use ECPs repeatedly
- Used other methods of **contraception** equally well
- Had fewer unintended pregnancies: 3.3% vs 4.8 % for women who received only counseling ($p = 0.14$)

Source: Glasier and Baird 1998





Yasmin (Ocella, Zaray) and Yaz (Gianvi)

- Components:
 - Yasmin: Monophasic 30 ug EE and 3 mg drospirenone
 - Yaz: 24 day regimen: 20 ug EE and 3 mg drospirenone
- Yaz approved for Premenstrual Dysphoric disorder
- Drospirenone new progestin, spironolactone analog and has slight diuretic effect, antiandrogenic and antimineralocorticoid activity
- While effective for acne and hirsutism, little evidence that more effective than other OCs for acne

The risk

- Drospirenone
 - 9.1 VTE per 10,000 woman years (Contraception 2007)
 - 7.83 VTE per 10,000 woman years (BMJ 2009)
- Levonorgestrel
 - 8.0 VTE per 10,000 woman years (Contraception 2007)
 - 5.47 VTE per 10,000 woman years (BMJ 2009)

The risk

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FDA Panel Summary

February 2012

- Data from a large, prospective cohort safety study of various COCs suggest that this increased risk, as compared to that in non-COC users, **is greatest during the first 6 months of COC use.** Data from this safety study indicate that the greatest risk of VTE is present after **initially starting a COC or restarting** (following a 4 week or greater pill-free interval) the same or a different COC.
- Counsel patients that cigarette smoking increases the risk of serious cardiovascular events from COC use, and that women **who are over 35 years old and smoke should not use COCs.**
- Counsel patients that the increased risk of VTE compared to non-users of COCs is greatest after initially starting a COC or restarting (following a 4-week or greater pill-free interval) the same or a different COC

New Utilization Patterns (Extended Usage) - Rationale

- No medical rationale for 21/7
- Changing the 21/7 leads to reduced follicular activity during pill free interval and reduces the risk of ovulation
- Possibly more effective and higher compliance
- Reduces symptoms of estrogen withdrawal
- Few days of unscheduled bleeding and less anemia

Grimes DA, Nelson AL. Trends in Oral Contraception Novel Strategies, Greater Choice. MPR Fall 2007

Indications for Tri-cycling or Continuous Use

- Potential drug interactions
- Severe PMS or cyclic depression
- Endometriosis
- Significant mental retardation with hygiene problems
- Cyclic headache
- Convenience: vacations, honeymoons, travel, athletics, military campaigns.

Continuous use pills

- Seasonale/Jolessa:
 - 84 pills - 150 mcg levonorgestrel/30 mcg ethinyl estradiol, 7 days placebo
- Seasonique (Camrese)
 - 84 pills - 150 mcg levonorgestrel/30 mcg ethinyl estradiol, 7 days 10 mcg ethinyl estradiol
- Lybrel
 - 90 mcg levonorgestrel/20 mcg ethinyl estradiol for 365 days per year

Depo Medroxyprogesterone Acetate (DMPA)

- Highly effective
 - First year failure rate: 0.25-0.3%
 - Five-year cumulative failure rate: 0.9%
- Very convenient and private
- Special clinical applications:
 - SS anemia,
 - MR,
 - breast feeding,
 - seizure disorders

DMPA Issues

- Side effects:
 - Menstrual irregularities tend toward amenorrhea with time
 - Slow return to fertility (10 months average delay to conception)
- Concerns:
 - Weight gain (1-3 kg with long-term use)
 - **Low estrogen levels (bone density effects)**
 - Removes incentive for condom use

DMPA and BMD

- Study on adolescents 14-18 years old
- Statistically significant bone loss during use with recovery post discontinuation
- Bone loss is around 5% which is comparable to lactation which reduces BMD by 4-6% over 6 months with recovery after weaning.
- Lactation is not associated with osteoporosis or fractures.

DMPA and BMD

- Multiple studies of women on DMPA up to 5 years demonstrate that bone loss is reversible
- No subjects had bone loss of greater than 10%
- No difference in fracture rates but no long term data

DMPA and BMD

- WHO: No restrictions age 18-45, in adolescents benefits generally outweigh risk
- ACOG: short and long term use in healthy women are not an indication for BMD testing. In adolescents advantages likely outweigh risk of theoretical safety concerns regarding BMD and fractures. In the absence of long term data in this population consideration of long term use should be individualized.
- Society of Adolescent Medicine: recommends continued use, discuss benefits and potential risk, encourage exercise, calcium and Vitamin D

DMPA

Poor continuation rates in women under 21

1 year 72%

2 years 56%

3 years 18%

Clinical recommendations

- Daily calcium and vitamin D
- Side effects should be weighed against the potential consequences of an unintended pregnancy
- Reasonable to consider changing to another form of birth control after 2 years

DMPA: Black Box Warning

Women who use Depo-Provera Contraceptive Injection may lose significant bone mineral density. Bone loss is greater with increasing duration of use and may not be completely reversible.

It is unknown if use of DMPA contraceptive injection during adolescence or early adulthood, a critical period of bone accretion, will reduce peak bone mass and increase the risk of osteoporotic fracture in later life.

DMPA contraceptive injection should be used as a long-term birth control method (e.g. longer than 2 years) only if other birth control methods are inadequate.

DMPA Support

- Patient Support Toll-free Line
 - **1-866-554-DEPO (3376)**
 - 24 hours/day, 7 days/week
 - English or Spanish
- Health Care Provider Support Toll-free Line
 - **1-877-HCP-DEPO (427-3376)**
- Patient Information Website
 - www.birthcontrolresources.com
 - www.depoprovera.com (same site as above)
 - www.depo-provera.com (same site as above)