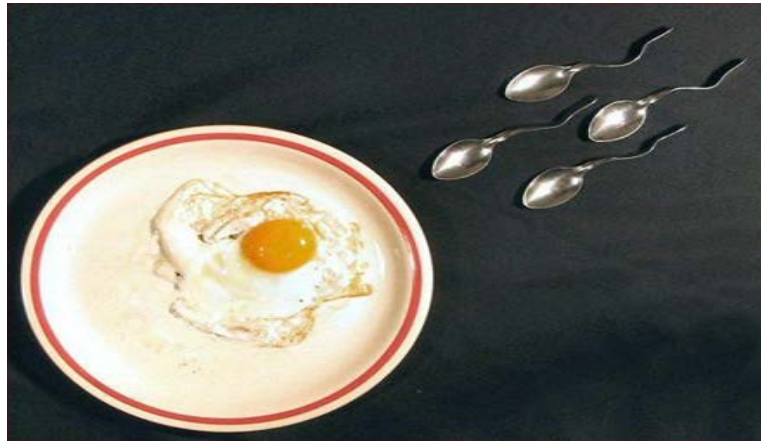


Long Acting Reversible Contraception



Who, when and why not?

Ashley Waddington MD, FRCSC

Queen's University

Disclosures

- Industry involvement:
 - Speaker on behalf of Merck, Pfizer, Warner-Chercott and Bayer
 - Consultant to Bayer
 - Have had conference travel funded by Bayer
 - Have received research funding from Bayer

Objectives

- At the conclusion of this talk, participants will be able to:
 - Counsel patients about contraceptive effectiveness
 - Contrast the advantages and disadvantages of LARCs and SARCs
 - Describe strategies for increasing the use of LARCs

A thought experiment



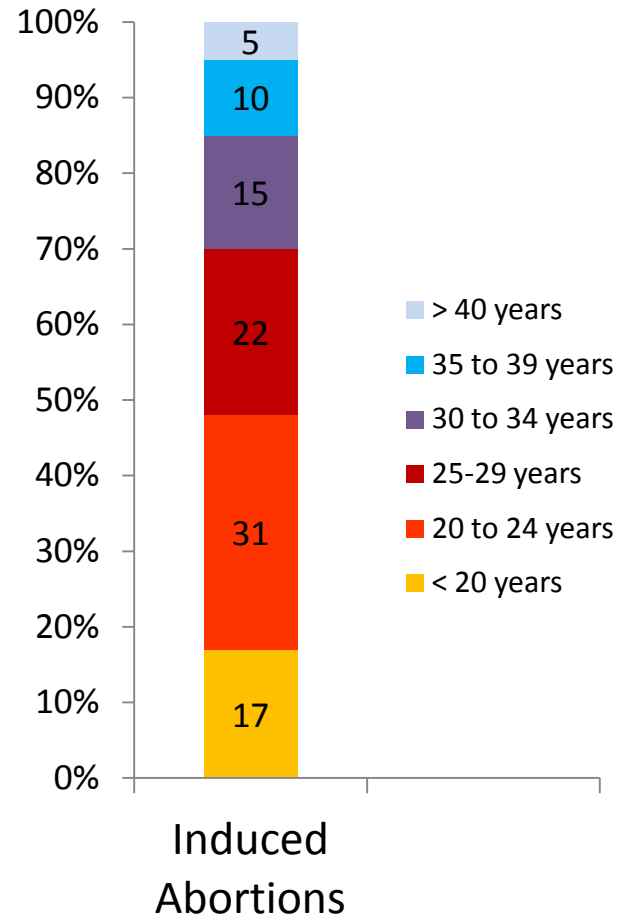
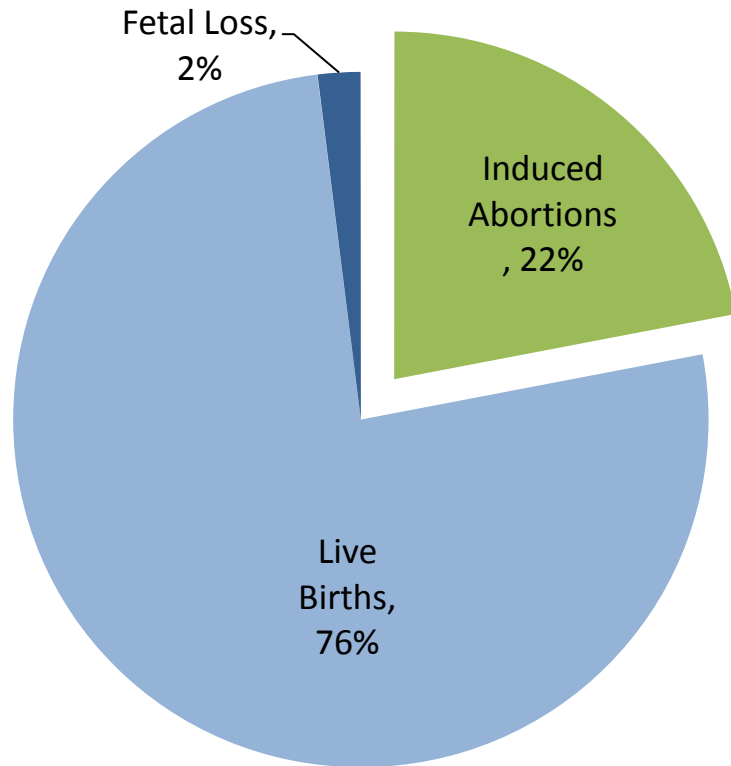
Unintended pregnancy

- Why do we not take unintended pregnancy as seriously as other major medical conditions?
 - Significant health impacts
 - Significant psychological impacts
 - Significant socioeconomic impacts

Pregnancy Outcomes in Canada

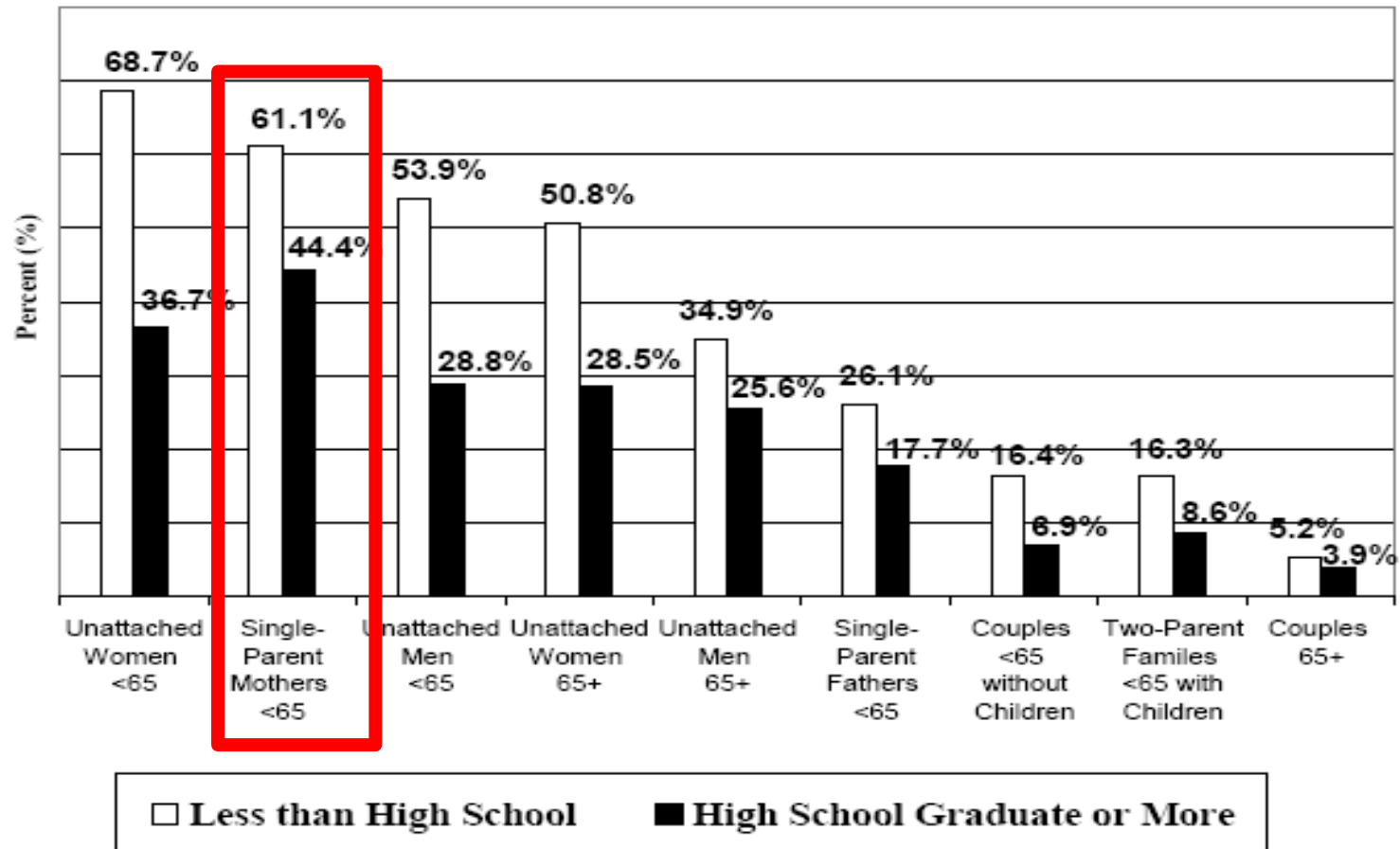
Over half of abortions are among women ages 20-29

Total pregnancies: 447,485



Poverty rates by family type and education level

2003



Socioeconomic Consequences of Teen Pregnancy

Table 1 Marriage and marital status of teenage and adult mothers

	Teenage mothers	Adult mothers
Age at first marriage		%
Under 20	49*	8
20 to 24	19*	43
25 to 29	9*	28
30 to 39	4*	7
Never married	19*	13
Marriage and birth		
Married prior to birth	20*	72
Married same year as birth	22*	6
Married post birth	39*	8
Never married	19*	13
Current marital status		
Married	60*	76
Common-law	14*	10
Separated	9*	5
Divorced	7*	4
Widowed	F	0 ^E
Never married	10*	5

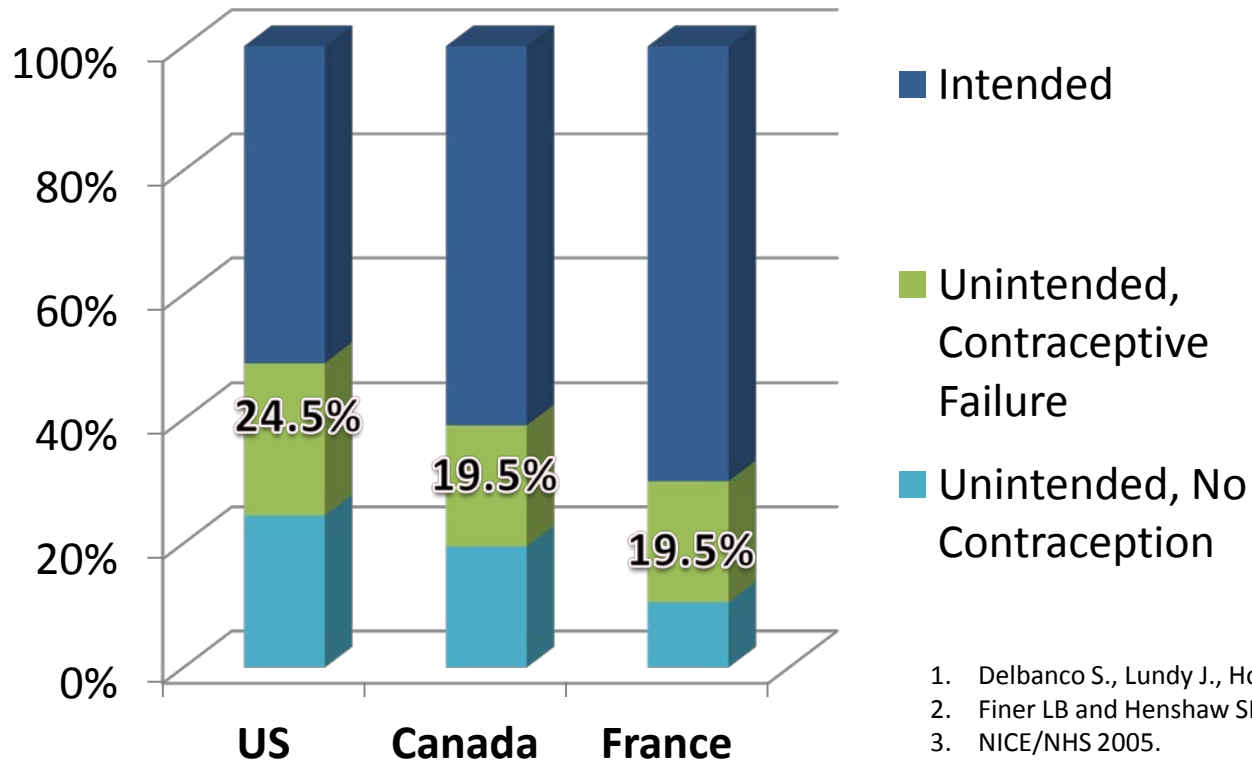
* statistically significant from adult mothers at the 0.05 level or better

Note: Results are restricted to those with a valid response.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 1993, 1996, 1999, 2002 and 2005.

So why do unintended pregnancies keep happening?

Unintended Pregnancy and Contraceptive Failure



1. Delbanco S., Lundy J., Hoff T., Parker M., Smith M.D. 1997
2. Finer LB and Henshaw SK. 2006
3. NICE/NHS 2005.
4. Bajos N, Leridon H, Job Spira N. 2004

BIRTH CONTROL EFFECTIVENESS



CONDOMS

99%



BIRTH
CONTROL
PILLS

99%



crocs[™]

100%

Contraceptive failure rates

Method	Perfect Failure	Typical Failure
NO METHOD	85%	85%
Spermicide	18%	28%
Fertility Awareness	0.4-5%	24%
Withdrawal	4%	22%
Male Condom	2%	18%
Female Condom	5%	21%
Combined Hormonal Contraception	0.3%	9%
Depot-MPA	0.2%	6%
Copper IUD	0.6%	0.8%
LNG IUD	0.2%	0.2%
Implantable Progestin	0.05%	0.05%
Tubal Ligation	0.5%	0.5%
Vasectomy	0.10%	0.15%

Contraceptive Methods Used in Canada

*DMPA was not available in Canada at the time of the 1998 survey

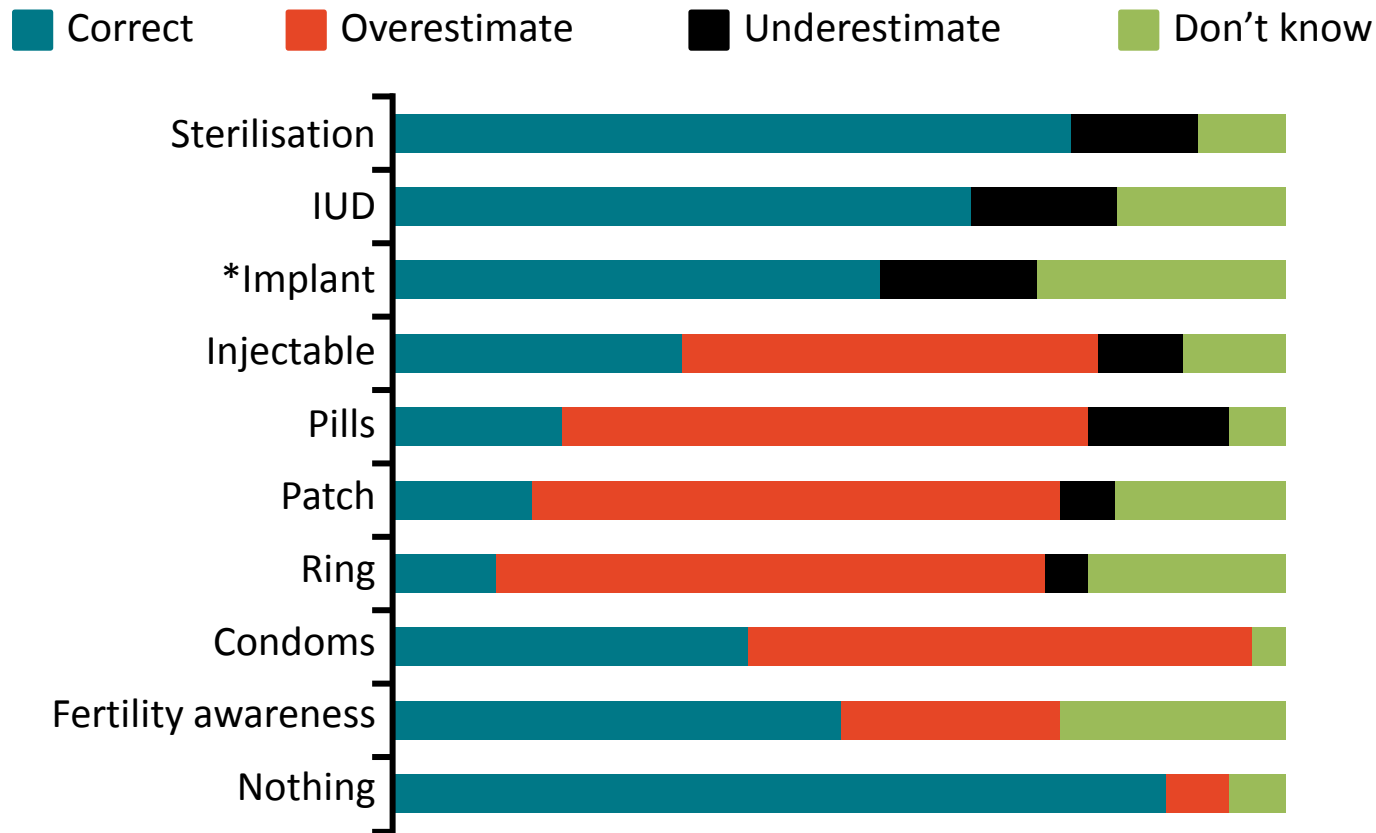
Method	%		
	2006	2002	1998
Oral Contraceptives	44	32	38
Condom	54	21	32
Sterilization, male	7	15	32
Sterilization, female	6	8	
Withdrawal	12	6	7
Injection (DMPA*)	2	2	*
Intrauterine device	4	1	1
Rhythm	4	2	4

Black A, Yang Q, Wu WS, Lalonde AB, Guilbert E, Fisher W. Contraceptive use among Canadian women of reproductive age: results of a national survey. *J Obstet Gynaecol Can* 2009;31(7):627-40.

Fisher W, Boroditsky R, Morris B. The 2002 Canadian Contraception Study: Part 2. *J Obstet Gynaecol Can* 2004;26(7):646-56.

Fisher WA, Boroditsky R, Bridges ML. The 1998 Canadian Contraception Study. *Can J Hum Sex* 1999;8:161-216.

Women's perceptions of contraceptive effectiveness are often inaccurate

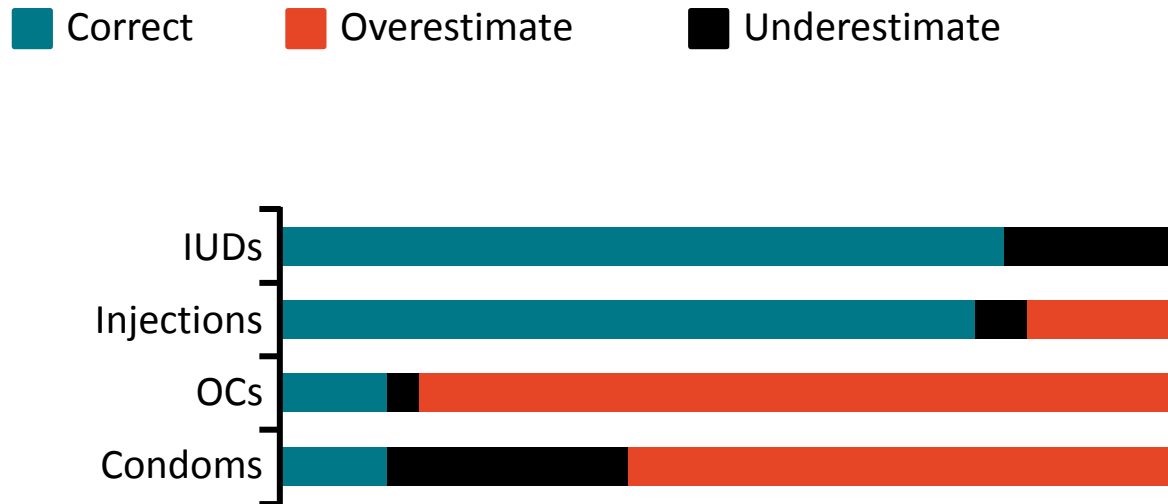


IUD, intrauterine device.

Eisenberg DL, *et al.* Am J Obstet Gynecol 2012;206:479.e1–.e9.

*Implant not available in Canada

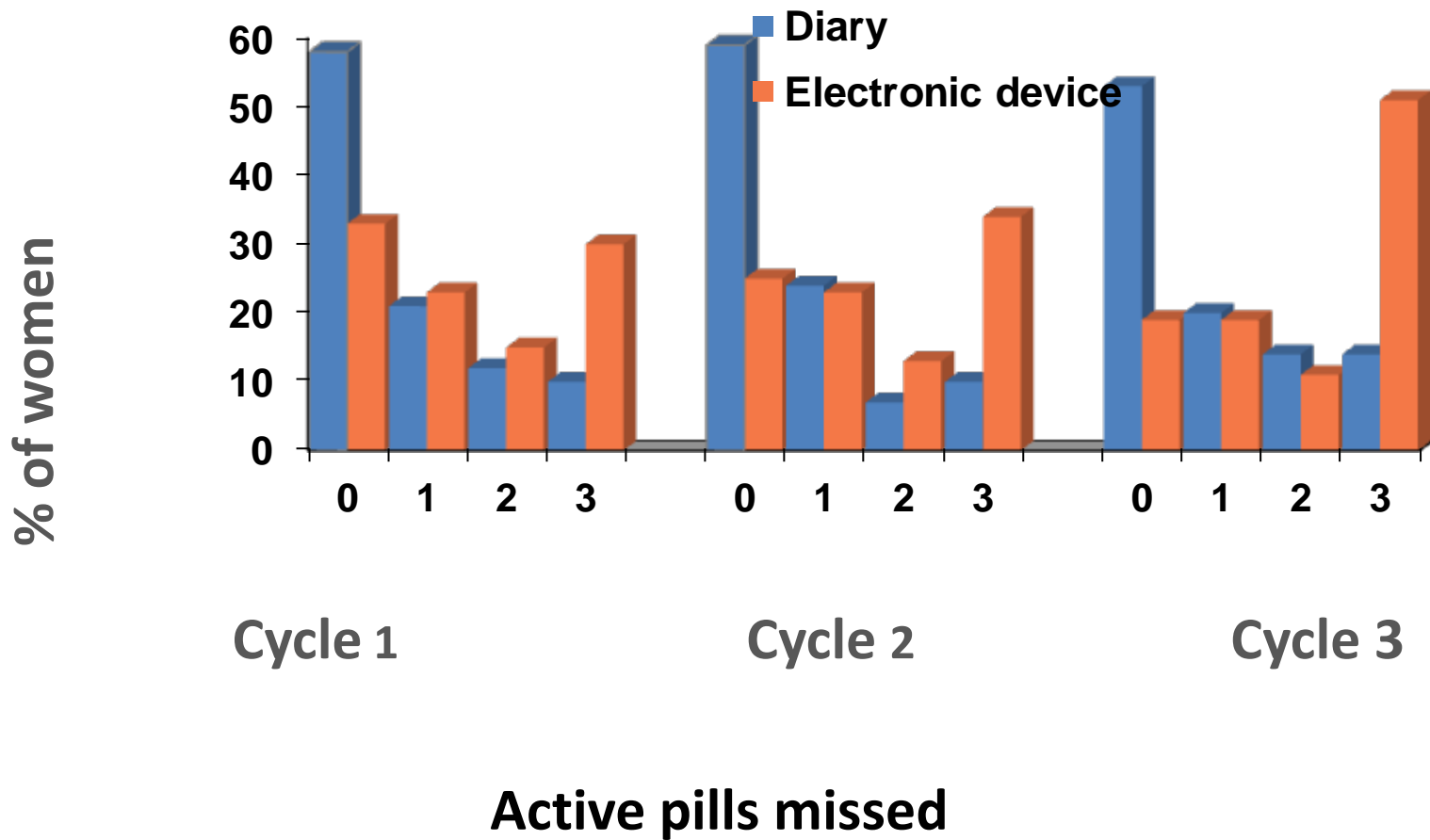
Primary care physicians' perception of contraceptive efficacy is also inaccurate



IUD, intrauterine device

Parisi SM, *et al.* Contraception 2012;86:48–54.

Oral Contraceptive Compliance



Active pills missed

LARC's

- **L**ong
- **A**cting
- **R**eversible
- **C**ontraception



© NHS, 2012

- Any contraceptive method that requires administration less than once per menstrual cycle (NICE, 2005)

Common Characteristics of LARCs

- Highly efficacious and effective
- Ease of adherence
 - “Forgettable contraception”
- Reversible
 - Varying degrees of rapidity
- Less expensive over time
- Many are covered under extended health plans, Provincial drug plans, and NIHB

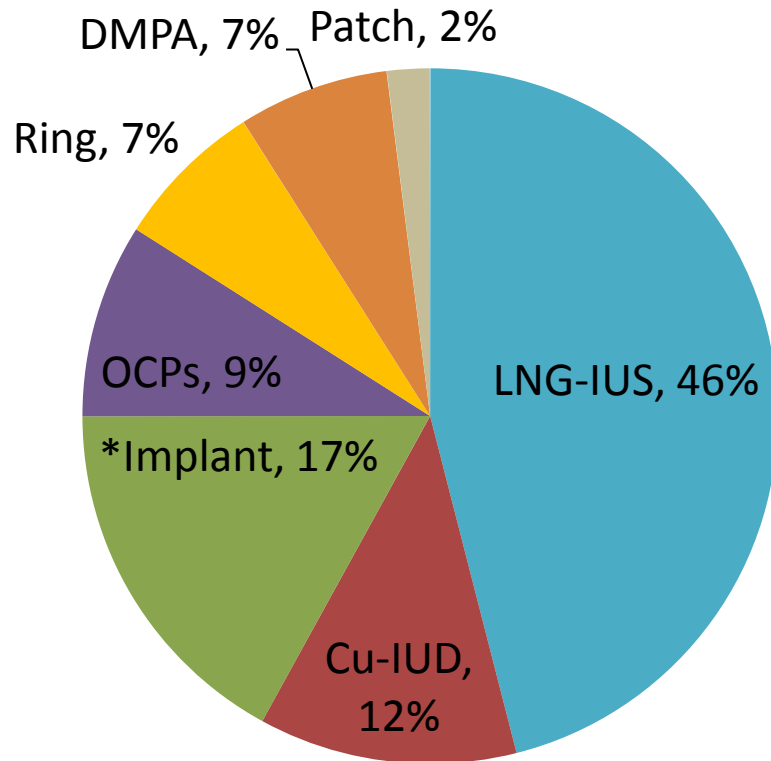


The Contraceptive CHOICE Project

- <http://www.choiceproject.wustl.edu/index.html>
- Large prospective cohort study to promote the use of long-acting reversible contraceptive methods (copper intrauterine devices, Mirena and implant*) as means of reducing unintended pregnancies
- 9,256 participants at risk for unintended pregnancy (ages 14-45)
- Received contraceptive counseling on all reversible contraceptive methods re: effectiveness, side effects, risks and benefits
- Received method of her choice at no cost for 3 years



Women's CHOICE of method where standard information is given and cost is not an issue



75%
chose LARC

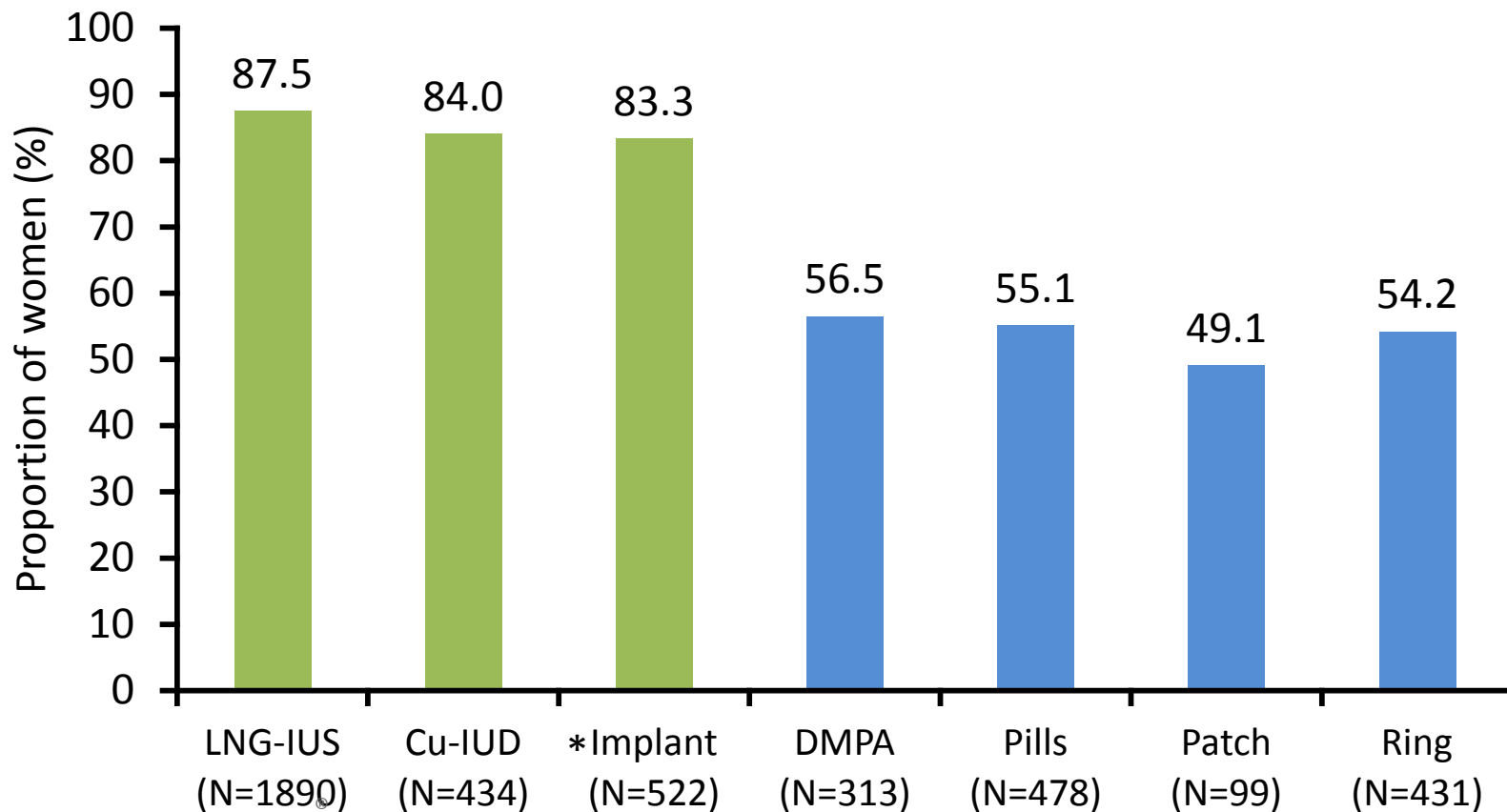
N= 9,256

Peipert et al. Obstet Gynecol 2012; December
(epub ahead of print)

LNG-IUS, levonorgestrel-releasing intrauterine system
Cu IUD, copper intrauterine device
OCP, oral contraceptive pill
DMPA, depot medroxyprogesterone
LARC, long-acting reversible contraception
*Implant not available in Canada



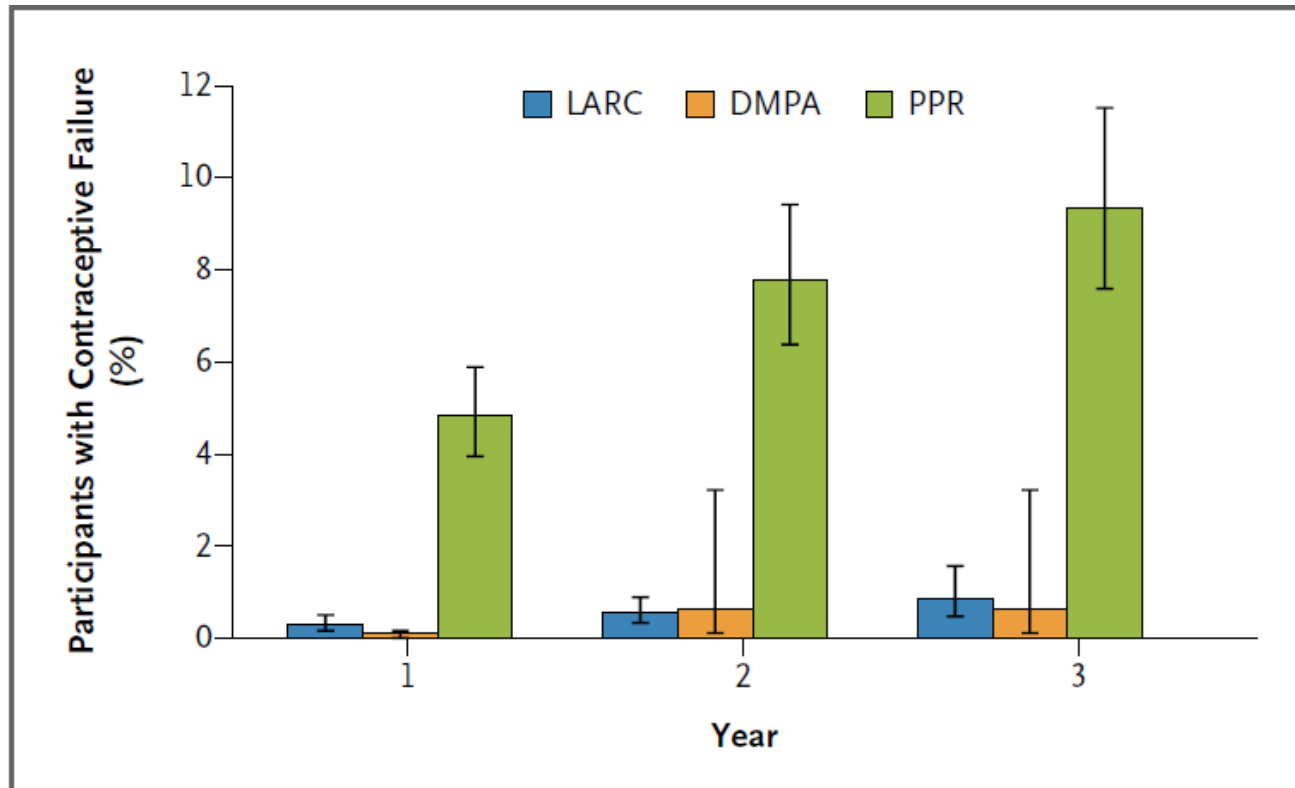
Highest continuation at 12 months with LARC



LNG-IUS, levonogestrel-releasing intrauterine system
Cu IUD, copper intrauterine device
OCP, oral contraceptive pill
DMPA, depot medroxyprogesterone
LARC, long-acting reversible contraception
*Implant not available in Canada



Superior Effectiveness of LARC in Real Life



Failure Rates per 100 Woman-Years

Pills, Patch, Ring (PPR): 4.55

Depot-medroxyprogesterone (DMPA): 0.22*

Long Acting Reversible Contraception (LARC) : 0.27*

N=7,486

*P<0.001

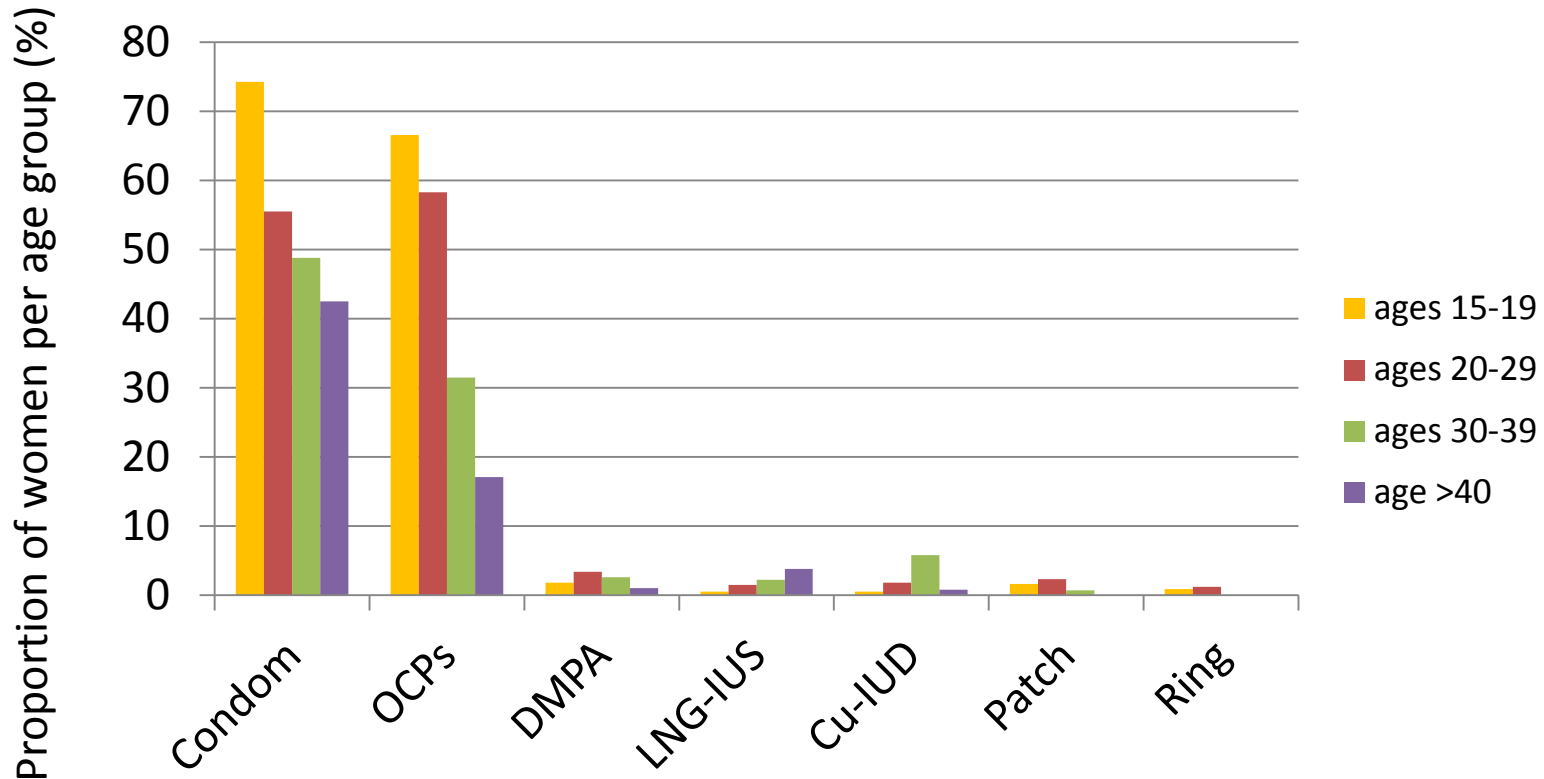


LARC Decreases Abortion Rates

- Abortion rates in the CHOICE cohort were less than half the regional and national rates ($p < 0.001$)
- One abortion prevented per 79-137 women given the CHOICE intervention



Use of LARC is low among women less than 30 years of age



N=2341

Totals per age group may exceed 100% as women were allowed to choose more than one method

Data on sterilization, non-hormonal methods not shown.

Black et al. J Obstet Gynecol 2009; 31(7): 627-640

LNG-IUS, levonorgestrel-releasing intrauterine system
 Cu IUD, copper intrauterine device
 OCP, oral contraceptive pill
 DMPA, depot medroxyprogesterone
 LARC, long-acting reversible contraception



LARC METHODS

- Injectable contraception – 2-3%¹
 - Depot Medroxyprogesterone Acetate (DMPA)
- Intrauterine Contraception – 1-5%^{1,2}
 - Copper Intrauterine Device (Cu-IUD)
 - Levonorgestrel Intrauterine System (LNG-IUS)
- Implantable Contraception – Approval pending
 - Single-rod implantable progestin

1. Fisher WA, 2002

2. Finer LB et al. 2012

Depot Medroxyprogesterone Acetate



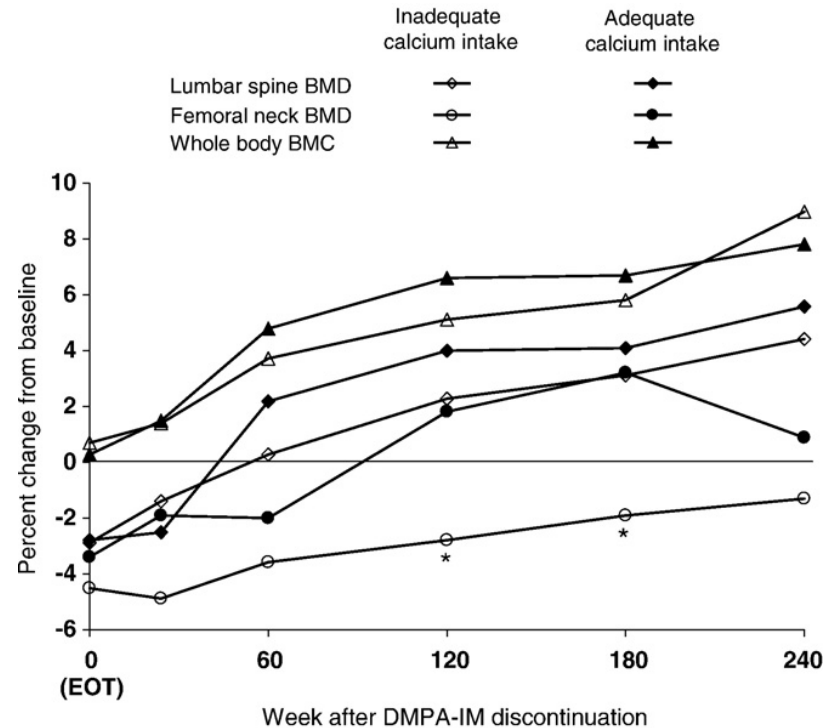
- Injectable Progestin – 150 mg IM
 - q12weeks
 - One week grace period
- Licensed in 1997
- Mechanism of Action
 - Prevents ovulation
 - Cervical mucous changes – Inhibits sperm transit

DMPA – Benefits and Disadvantages

- Non-Contraceptive benefits
 - Improvement in dysmenorrhea and endometriosis symptoms
 - Reduction in moliminal symptoms
 - May reduce number of sickle cell crises, seizures
 - No increased risk of VTE
- Disadvantages
 - Weight gain
 - Acne
 - ?Mood changes¹

DMPA and Bone Health

- Decrease in BMD well-documented¹
- In vast majority, BMD recovers to baseline²
 - Usually within 2-3 years
- Prospective studies have not demonstrated increased fractures.



Harel et al, 2010

1. Black et al, 2006 – SOGC
2. Kaunitz et al, 2006

Depot MedroxyProgesterone Acetate

Great Option

- Contraindications to estrogen-containing contraceptives
- Immediate postpartum, women choosing to breastfeed
- Patients who want or accept amenorrhea (50-60% by 12 months)
- Women who may benefit from systemic progestin
 - Greater ovulatory suppression than IUS
- Patients without drug coverage who cannot afford up-front expense of other methods

Copper IUD

- Plastic with 200, 300 or 380mm² of copper around body +/- arms
- Cu-IUDs first introduced in North America in the 1970s
- Impairs sperm function
 - Spermicidal
 - Impairs fertilizing capacity.
- Exerts effect on endometrium

Copper IUDs available

Brand	Duration	Cost - Retail	NIHB
Nova-T (Bayer)	5 Years (30mo – Monograph)	\$200	covered
Flexi-T (Trimedica) 300 - Nullip 300+/380+ - Parous	5 Years	\$75-90	covered
Liberté (Medisafe) UT 380 – Standard/Short TT 380 – Standard TT 380 - Short	5 Years 10 Years 5 Years	\$60-75	covered
MonaLisa (PACE) MonaLisa 10 MonaLisa 5 MonaLisa N - Nullip	10 years 5 years 3 years	\$90-100 \$70-75 \$70-75	Not covered

Copper IUDs

- Advantages
 - Highly effective
 - Hormone free
 - Emergency contraception
- Disadvantages
 - Change in menstrual characteristics
 - Not covered under many drug plans



Copper IUD

Great Option

- Desire to avoid hormones
- Women who like reassurance of menses
- Lack upfront cost of more expensive LARCs
- Have NIHB Coverage

Levonorgestrel IUS

- Approved 2001
- Releases 20 mcg LNG daily
- Indicated for 5 years
 - Contraception may be provided for 7 years
- Covered under NIHBB and many drug plans



Levonorgestrel IUS

Advantages and Non-contraceptive benefits

- Amenorrhea – 30-40%
- Reduced blood loss
- Reduced dysmenorrhea
 - Can be used to treat pelvic pain
- Endometrial protection

Disadvantages

- Occasional Progestogenic/Androgenic Side Effects
 - Breast discomfort, acne
- High upfront cost

Levonorgestrel IUS

Great Option

- Women wishing to minimize systemic progestins but want cycle control
- Contraindications to estrogen
- Chronic pelvic pain or Endometriosis
- Dysmenorrhea
- Menorrhagia
- Women with bleeding disorders
- Women requiring anticoagulation

Can IUC be used for these situations? - Yes

- ✓ Nulliparous, nulligravid women
- ✓ Age <20
- ✓ HIV/AIDS
- ✓ Previous PID (no active infection)
- ✓ Previous ectopic pregnancy
- ✓ Previous C-section
- ✓ Previous DVT or stroke
- ✓ Smokers
- ✓ Obese/Diabetes

What about adolescents?

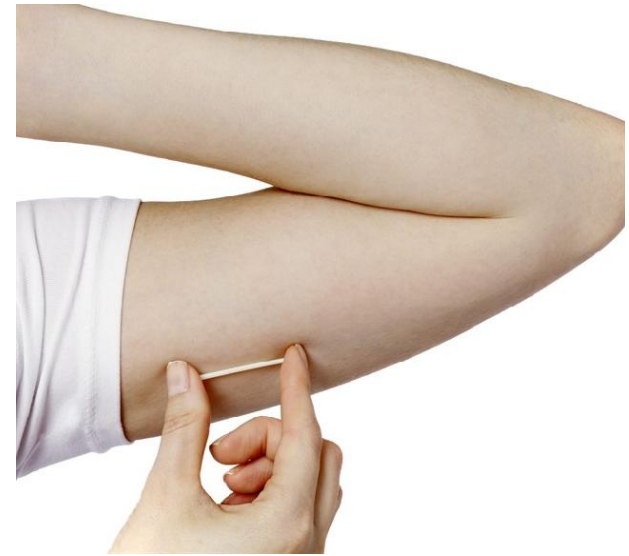
- There is no minimal age required to use intrauterine contraception
 - The American College of Obstetricians and Gynecologists (ACOG) published Committee Recommendation number 539:
 - IUDs and other long-acting reversible contraceptives can be offered as first line choices for contraception in adolescents because of their high efficacy, low rate of complications, high continuation rates, and patient satisfaction

IUCs and adolescents

- In a recent study of 90,000 IUD users aged 15-44
 - No difference in complication rates between adolescent and older users
 - No difference in failure rates
 - No difference in discontinuation rates

Implantable Progestin

- Single rod implant
 - Specialized inserter
- Etonorgestrel 60 mcg/d
- Indicated for 3 years
- Effective in overweight and obese women¹
 - Not originally studied



Implantable Progestin

- Advantages

- Avoids intrauterine insertion
- Discreet

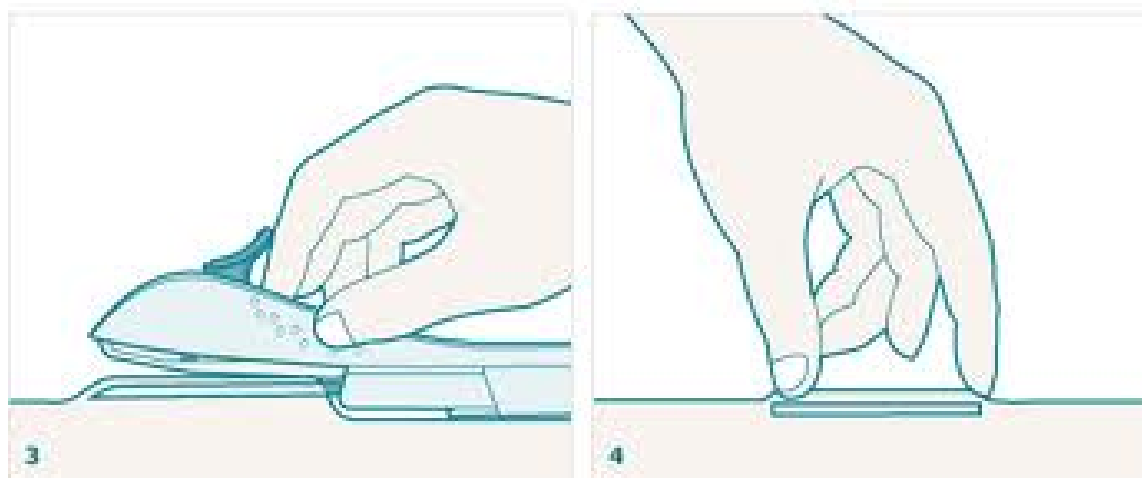
- Disadvantages

- Systemic side effects of progestin
- Requires skilled operator for insertion and removal

Implantable Progestin

Great Option

- Systemic Progestin with higher rates of amenorrhea and anovulation
- Women who like advantages of DMPA but with fewer Injections
- Women who like advantages of LNG-IUS but wish to avoid Intrauterine contraception



“I just don't feel comfortable with something inside my body”



“I want to avoid chemicals in my body”



“I can't afford it”



Daily Out-Of Pocket Cost

Method	Per-Diem Cost over 5 Years
Oral Contraceptive Pill	\$0.80 - \$1
DMPA	\$0.33
LNG-IUS	\$0.22
Copper IUD (Generic 5-Year)	\$0.05



LONG VS SHORT Acting Methods

LARCS	SARCS
Lowest Rates of Failure	Low Rates of Failure
Low-Maintenance	Require Greater Adherence
Lower Long-Term Cost	Higher Long-Term Cost
Higher Continuation Rates	Lower Continuation Rates
Minimal Contraindications	Estrogen-Related Contraindications
Fewer Systemic Effects (IUD/IUS)	Greater Systemic Effects
Covered under NIHB	Covered under NIHB
Route may not be acceptable	Ease of Administration
Higher Up-Front Cost	Lower Up-Front Cost

Summary

- Unintended pregnancy is still a big problem
- Contraception counselling should include a frank discussion of the comparative effectiveness rates.
- LARCs are:
 - Cost effective
 - Well tolerated
 - A good choice for many women

Thank you!

