Providing Quality Contraceptive Care Throughout the Lifespan

Patty Cason MS, FNP-BC

UCLA School of Nursing

Envision Sexual and Reproductive Health

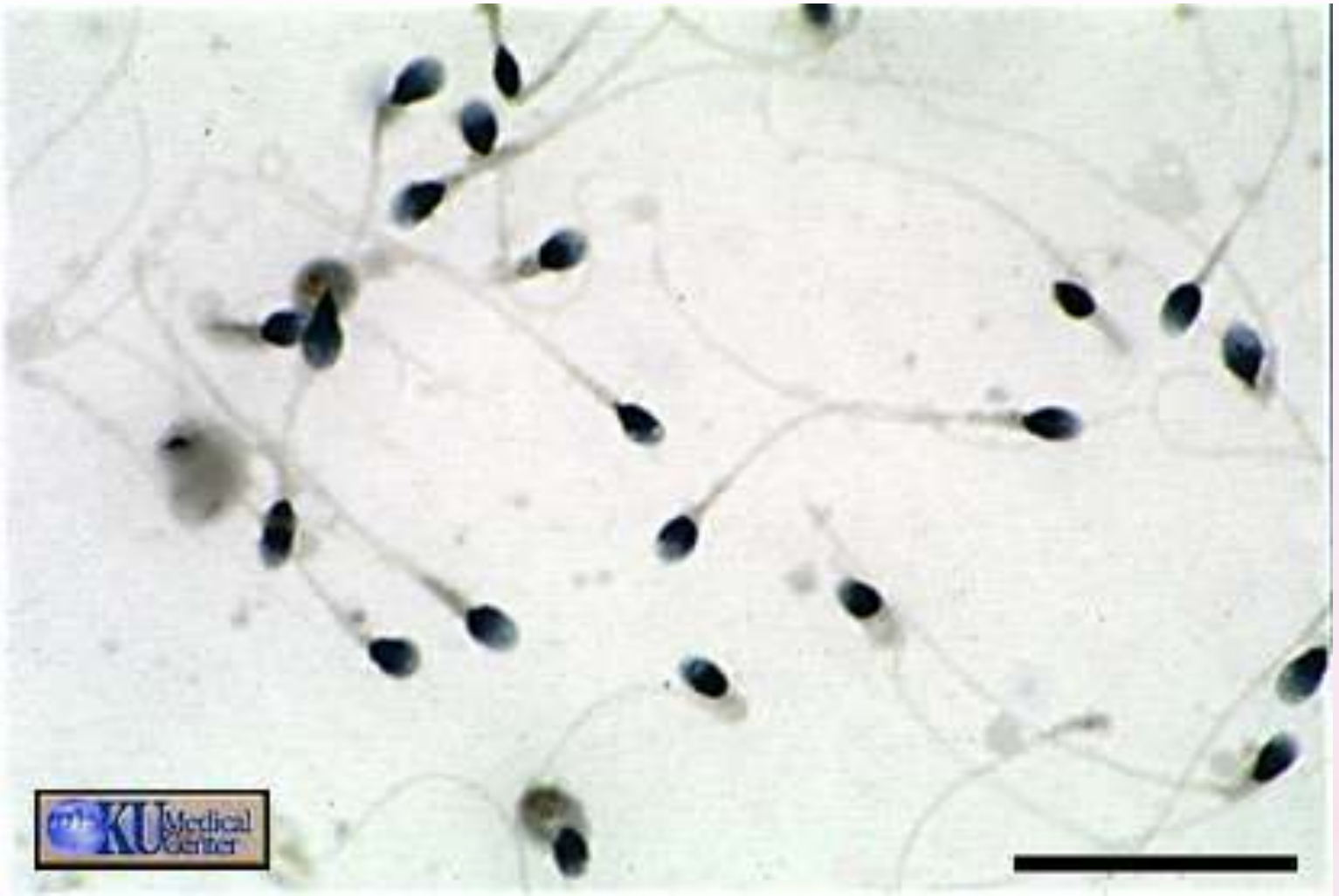
Objectives

- Identify one pregnancy intention screening tool
- Explain what it means to provide contraceptive care throughout the lifespan
- Describe two recommendations that you will implement in your practice

This presentation includes “off-label” discussion of products.

When the speaker mentions use of medications for purposes other than what is included in their FDA label they will be identified as such.

Sperm



Facts of Life
< age 25

- >48% of adolescents are sexually active
- People ≤ age 25 are at highest risk for
  - Unintended pregnancy
  - STDs
- Teen pregnancy rates are higher in the US than other industrialized countries
- Risk reduction requires negotiating condom use and effective contraception

Facts of Life
Mid-life

- Mid-life people are frequently in relationship transition
- Women are sexually active in mid-life and are still fertile
- Risk reduction requires negotiating condom use and effective contraception

40–44 Year Olds

- 60% less likely to use contraception currently
- And less likely to use contraception during the next year

Age 15-19 2006-2010 and 2011	28% Current contraceptive %	Ever used %
Implant or patch	.5	Patch 10%
IUD	1	
DMPA	3	20%
Pill	15	56%
Ring	1	5%
Condom	6	96% (58%)
Withdrawal	1	57%
Rhythm		15%
EC		14%
Pregnant or postpartum	3.9	
Seeking pregnancy	.9	

COC is Still The Most Common Contraceptive

- Daily dosing
- Risk for thrombosis
- Lower efficacy
- Use of top tier methods are lower than any other age group

Age 40-44

Method	77% are using contraception
Female sterilization	39.1
Male sterilization	15.3
Pill	8.6
Condom	6.8
IUC	3.2
Withdrawal	2.5
Injectable	0.9
Periodic Abstinence	0.5
Contraceptive ring	0.3
Implant, or patch	No data

Consent

Confidentiality

Condoms

TEENS AND FAMILY PLANNING

Sexuality Education

- Oregon state law requires teaching about contraceptives, such as condoms, the Pill, or the Patch
- “culturally and gender-sensitive materials, language, and strategies that recognize different sexual orientations and gender roles.”
- “must be presented in a manner sensitive to the fact that there are students who have experienced sexual abuse” and that does not devalue or ignore students who have engaged in sexual intercourse.

Yet…

- Adolescents have limited knowledge of reproductive health and contraceptive options, and their sources of information are often unreliable.
- Minimal knowledge of anatomy

American Academy of Pediatrics

http://pediatrics.aappublications.org/content/pediatrics/134/4/e1257.full.pdf

ACOG

https://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Adolescent-Health-Care/Adolescents-and-Long-Acting-Reversible-Contraception

- Educate adolescents about the implant and IUDs as a first-line contraceptive choice
- Providers unable to provide these methods to adolescents should refer them to healthcare providers who can.
- Contraceptive prescription or referral for IUD placement without prior pelvic examination is appropriate, as are screenings for chlamydia or other sexually transmitted infections

Contraceptive counseling should be developmentally targeted

- The sexual health and contraceptive needs of early adolescents differ markedly from those of middle and late adolescents.
- Even among same-age adolescents, there is a wide range in adolescents' sense of themselves as a sexual being, their sexual experiences, and their interest and need for contraception.

Contraceptive counseling should be developmentally targeted

A study of early adolescents described views and behaviors ranging from considering sex to be "nasty" and something best left to adults, to an intense curiosity about and initiation of sexual behaviors.

Consent

- Minors of any age do not need parental consent to access:
  - Information about contraception
  - Contraceptive services
  - Testing and treatment for STIs including HIV
- < age 18 can not consent to sex

Consent

- Oregon law protects providers from civil liability when a diagnosis or treatment is provided to an authorized minor without the consent of the parent or legal guardian of the minor.
- ORS 109.685

Consent for Abortion

- No law in Oregon says that a minor seeking an abortion must have parental consent
- However, anyone < 15 seeking medical services related to medical or surgical diagnosis or treatment needs parental consent. Abortion falls under this law
- Anyone > 15 or older does not need parental consent or notification

Oregon Healthy Teens Survey 2009

- www.dhs.state.or.us/dhs/ph/chs/youthsurvey/ohtdata.shtml

- http://www.oregon.gov/oha/ph/HealthyPeopleFamilies/Youth/HealthSchool/SchoolBasedHealthCenters/Documents/SBHC%20Certification/MinorConsent2012.pdf

Confidentiality

- Confidentiality is a major concern of adolescents
- It is a reason for foregoing contraceptive care
- Confidentiality concerns are heightened among adolescents from underrepresented minority groups:
  - Those involved with the juvenile justice system; lesbian, bisexual, and transgender; and lower income youth

Adolescents Surveyed said:

If parental notification were required for prescriptive contraceptives

- 1% said they would stop having vaginal sex
- 59% said they would stop using all clinic services

Confidentiality

- All Title X providers must follow federal regulations regarding confidentiality
- Recommend an office policy that explicitly describes confidential services

Confidentiality

- Discuss (and document) confidentiality with patients and families during early adolescence to set expectations about the transition from childhood to adolescence.
- Adhere to policies regarding confidential SRH services in electronic health records, encounter sheets, clinical and laboratory billing practices, and receipt of explanation of benefits

Sexual History Taking

Adolescents report that providers:

- are a highly trusted source of sexual health and other confidential information.
- understand their problems, ease their worries, and allow them to make treatment decisions.

Sexual History Taking

- Guidelines require that the sexual history be taken with the adolescent alone.
- Key to history taking is an honest, caring, nonjudgmental attitude and a comfortable, matter-of-fact approach to asking questions.

Condom/ Use of Dual Method

- Every Adolescent
- Every and any type of visit
- Increases effectiveness of contraception
- Protects against STDs
- Teach how to use a condom
- Dispense condoms
- Teach condom come-backs

Motivational Interviewing

- Empathetic and nonjudgmental
- Open ended questions--Careful listening
- Unconditional positive regard for the adolescent
- A safe nonthreatening environment
- Engage adolescents in their own behavior change

Motivational Interviewing

- Ask adolescents about their goals; help them identify inconsistencies between their goals and current behavior
- “Roll with resistance,” or avoid direct confrontation if resistance is met
- Wait for adolescents to find their own answers rather than pointing them out

U.S. Medical Eligibility for Contraceptive Use

U.S. Selected Practice Recommendations

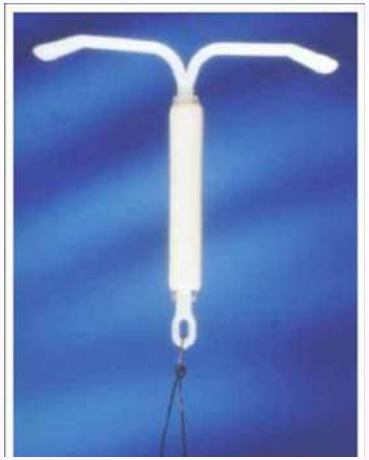
Providing Quality Family Planning Services

UTILIZE NATIONAL GUIDELINES

CDC Resources

https://www.cdc.gov/reproductivehealth/contraception/mmwr/mec/summary.html

CONDITIONS ASSOCIATED WITH INCREASED RISK FOR ADVERSE HEALTH EVENTS AS A RESULT OF PREGNANCY



- Breast cancer
- Complicated valvular heart disease
- Cystic fibrosis
- Diabetes: insulin dependent; with nephropathy, retinopathy, or neuropathy or other vascular disease; or of >20 years' duration
- Endometrial or ovarian cancer
- Epilepsy
- Hypertension (systolic ≥160 mm Hg or diastolic ≥100 mm Hg)

Curtis KM, et al. U.S. Medical Eligibility Criteria for Contraceptive Use, 2016. MMWR Recomm Rep 2016;65(No. RR-3):1–104

- History of bariatric surgery within the past 2 years
- HIV: not clinically well or not receiving antiretroviral therapy
- Ischemic heart disease
- Gestational trophoblastic disease
- Hepatocellular adenoma and malignant liver tumors (hepatoma)
- Peripartum cardiomyopathy

- Schistosomiasis with fibrosis of the liver
- Severe (decompensated) cirrhosis
- Sickle cell disease
- Solid organ transplantation within the past 2 years
- Stroke
- Systemic lupus erythematosus
- Thrombogenic mutations
- Tuberculosis

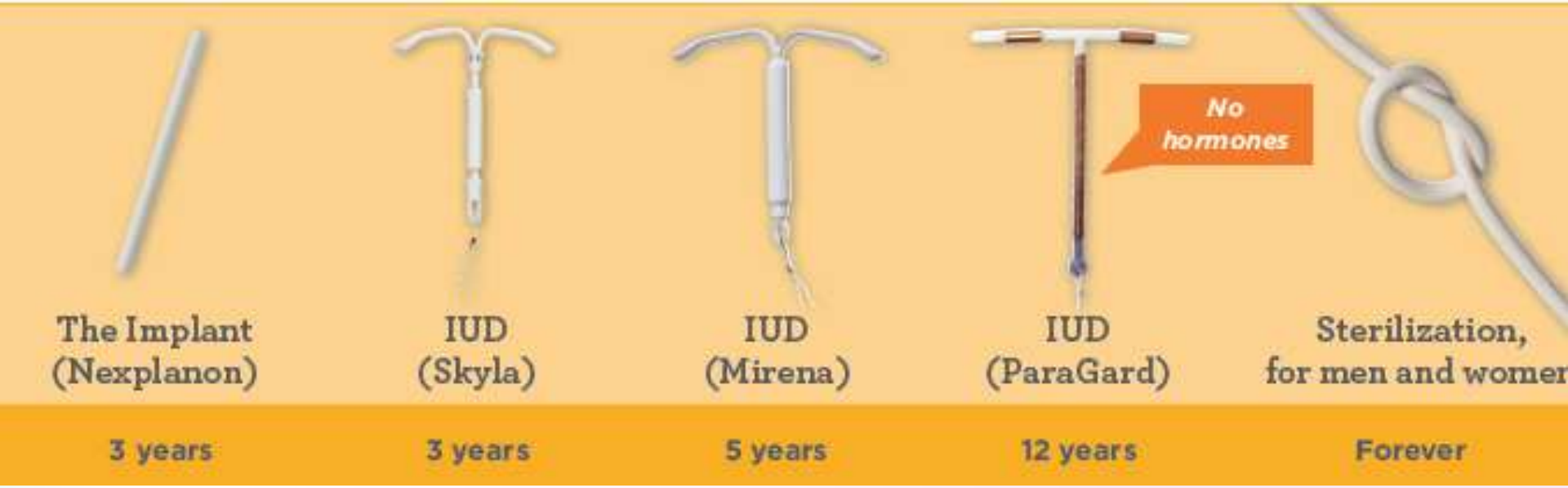
Risks of Pregnancy with Advanced Maternal Age

- Increased obstetric morbidity, mortality and interventions
- Higher perinatal complications
- Increased rate of chromosomal defects
- Increased preterm birth risk
- Ectopic pregnancy risk increases to 7% by age 44 or older
- Higher C-Section rate

Spontaneous Abortion

- Mean fetal loss rate between 12 and 28 weeks → 3.86%
- Fetal loss increased with maternal age: Age >40 years old: → 50%

TOP TIER



<1% failure

Why Do These Methods Work So Well?

- No repeated action needed on the part of the users for the method to work
- “Place it and forget it”
- A single act of motivation
- Reduced need to access health care

Cost

Top tier methods are the most cost-effective contraceptive methods available in the United States

Permanent Contraception

- Female: Tubal ligation
  - Fallopian tubes are occluded
  - Severed and cauterized or sealed, clamped
  - With clips, rings, sutures
- Male: Vasectomy
  - Each vas deferens is blocked (plural deferentia)
  - Severed and occluded
  - Sutures, cautery, clamp

Happily Shooting Blanks

Calculate It
In One Year

- 1000 women use condoms = 150 pregnancies
- 1000 women use pills = 90 pregnancies
- 1000 women use LARC = 1 pregnancy
- 1000 vasectomies = 1 x

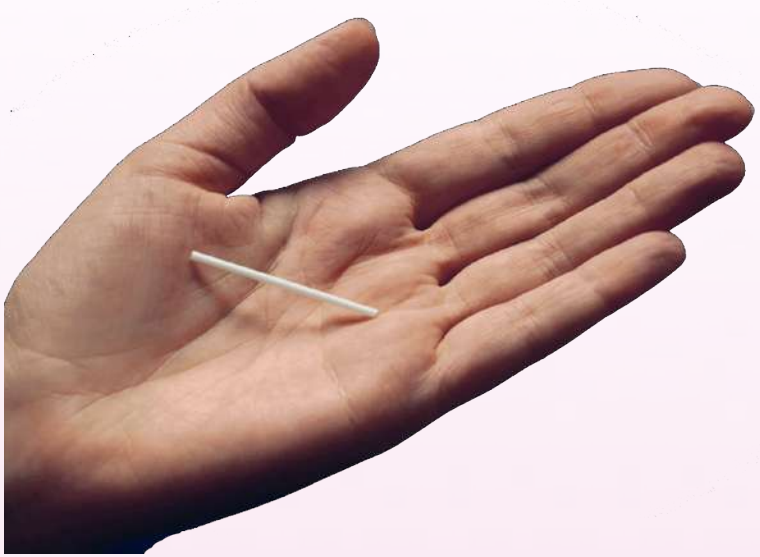
X=number of partners **1 X1 will always=1**

Effectiveness and Continuation Rates

	Perfect Use	Typical Use	Continuation rate
ENG Implant	0.05	0.05	84%
Male sterilization	0.10	0.15	100%
IUC •LNG 20 IUD •Cu IUD •LNG 13.5 IUD*	 0.2 0.6 0.4	 0.2 0.8	 80% 78%
Female sterilization	0.5	0.5	100%
DMPA	0.2	6.0	56%
OCs, Patch, Ring	0.3	9.0	67%

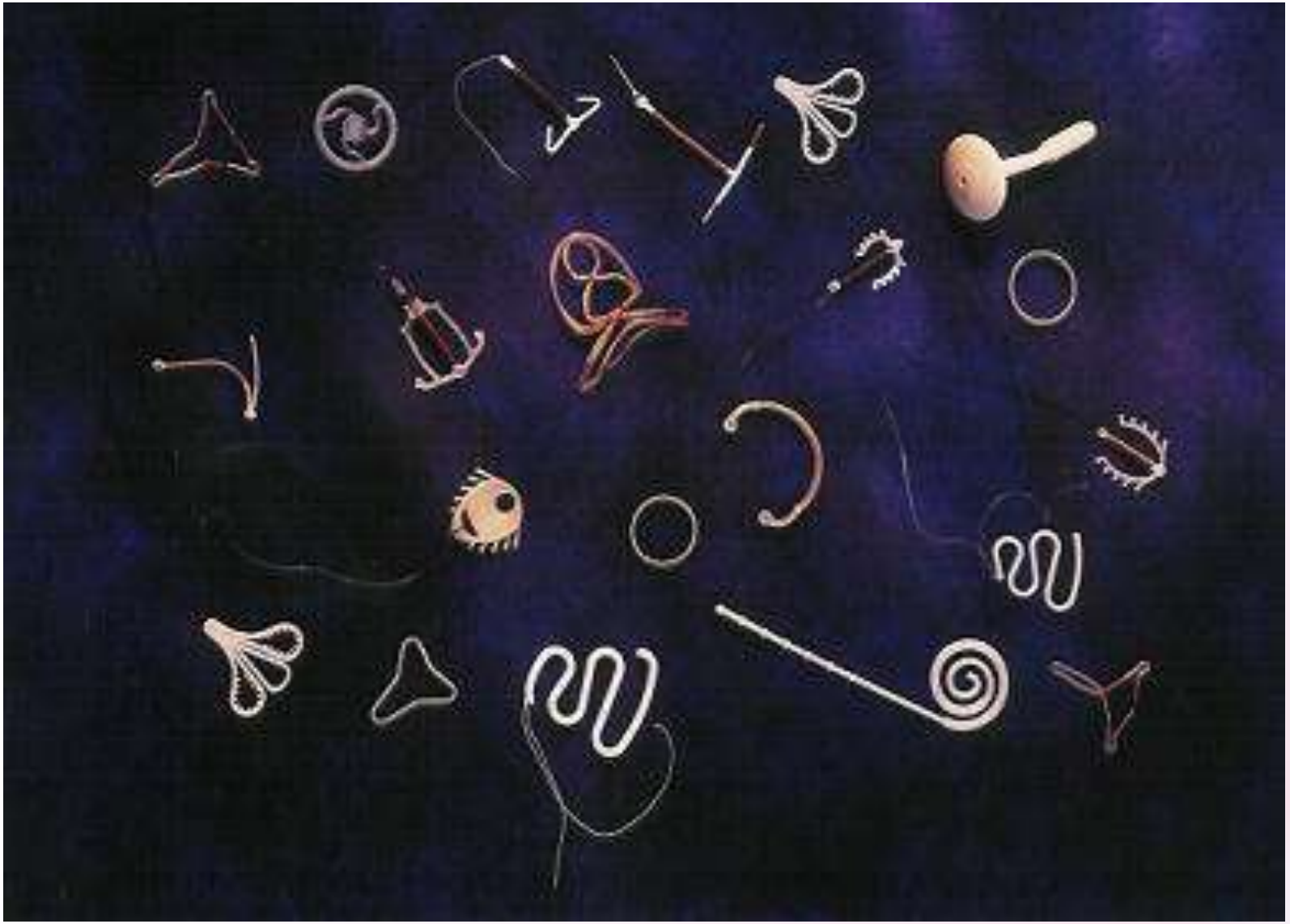
Hatcher, RA et al; *Contraceptive Technology 20th Edition*,: 2011 *Skyla Bayer data

Single-rod Etonogestrel (ENG) Implant

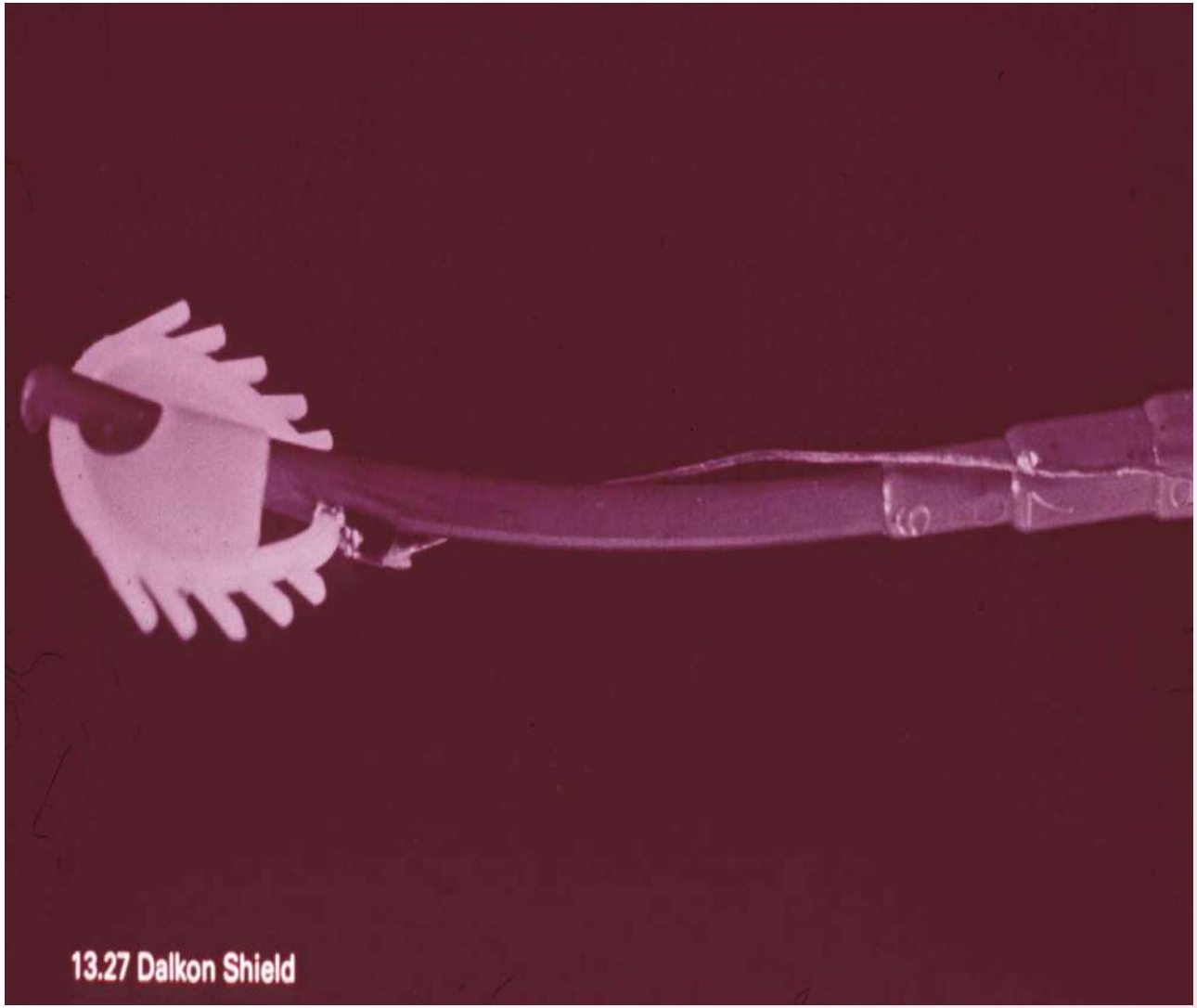


- Most effective method
- Suppression of ovulation
- Thickens cervical mucous
- Progestin only – NO estrogen
- Moderate progestin dose does not cause hypo-estrogenic state

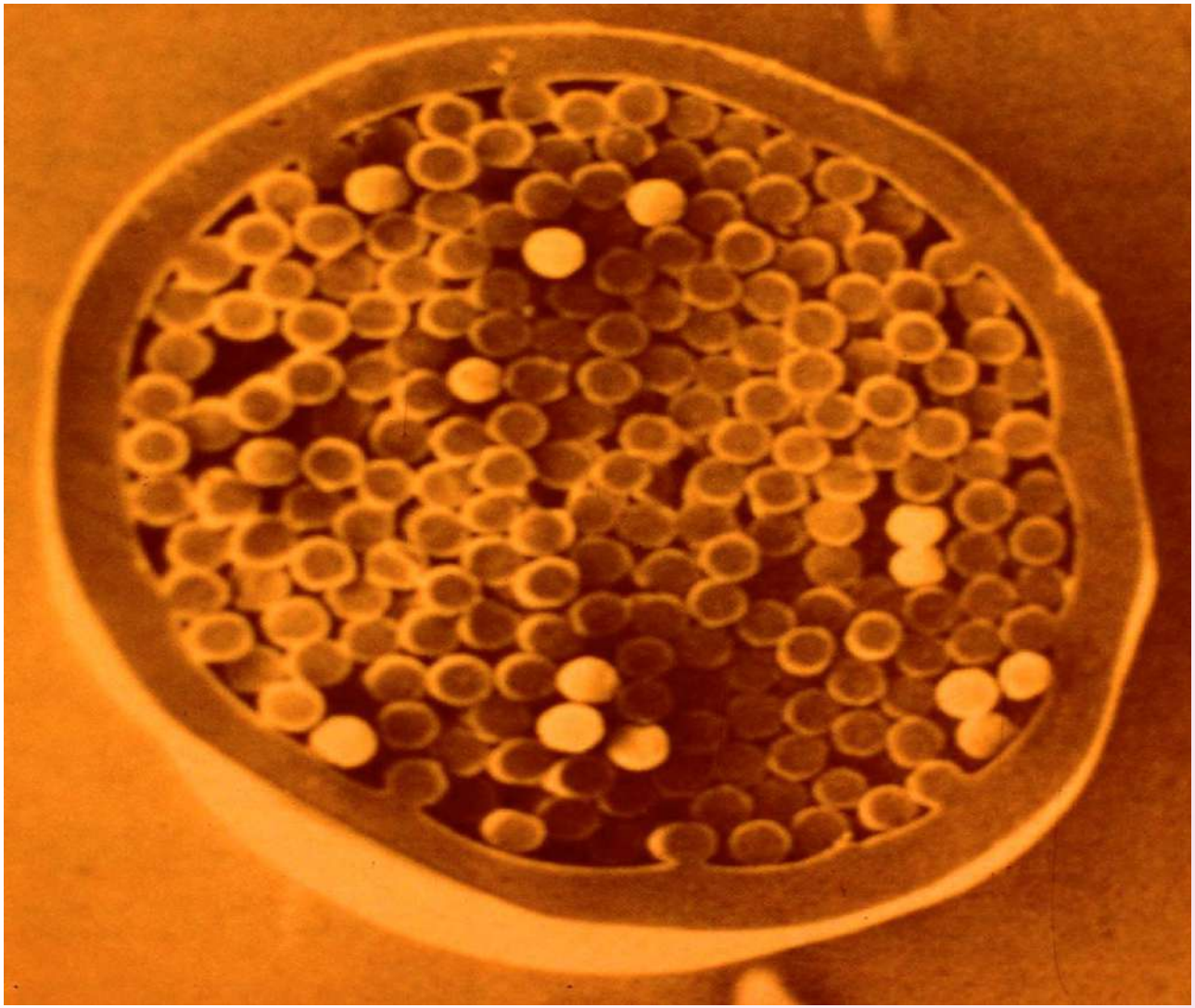
Intrauterine Contraception



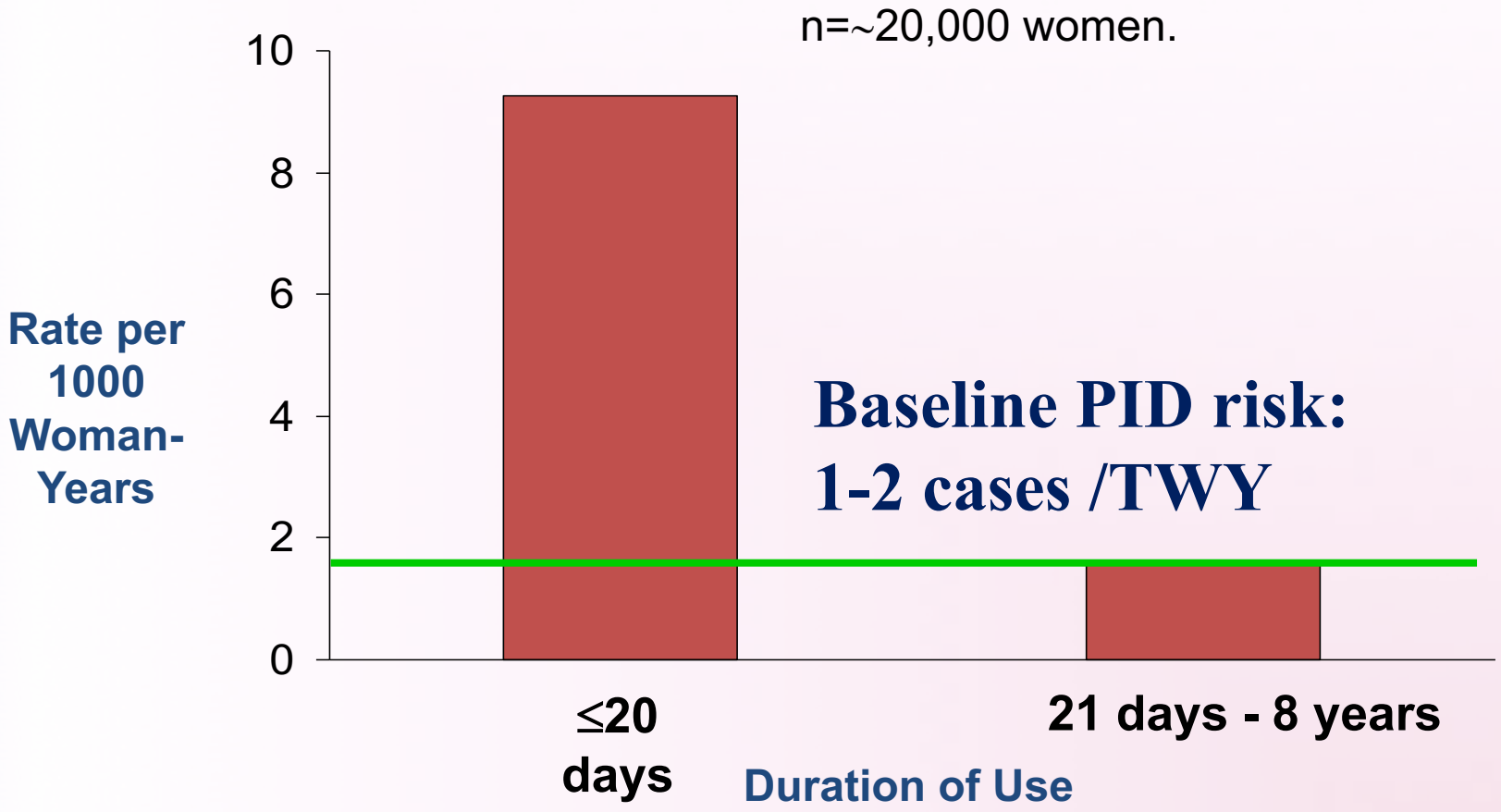
Dalkon Shield



Dalkon Shield- multi-filament string

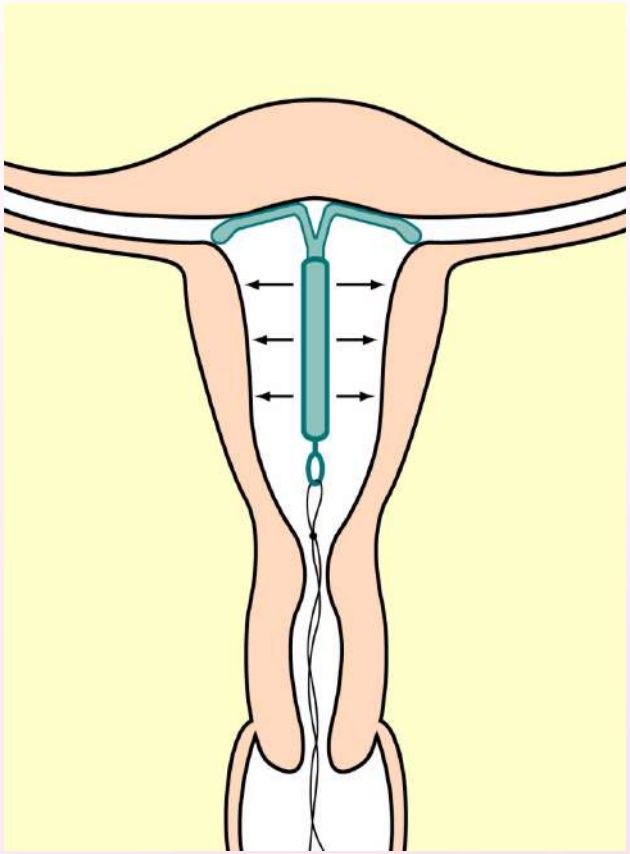


Rate of PID by Duration of IUC Use



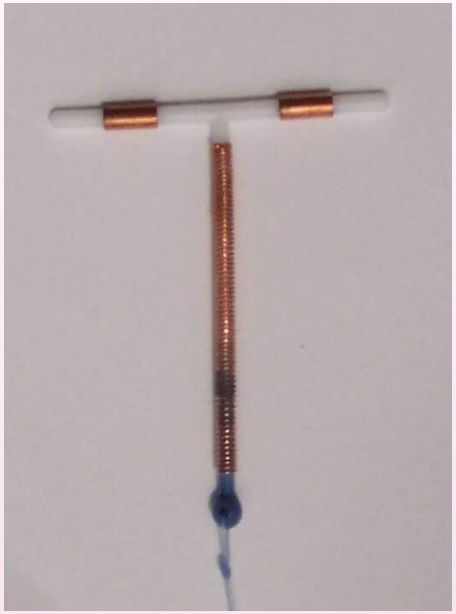
LNG IUDs: Mechanism of Action

- Cervical mucus thickened
- Sperm motility and function inhibited
- Unlikely secondary mechanism of action
  - Endometrium suppressed
  - Ovulation inhibited occasionally for LNG 20



Cu IUD: Mechanism of Action

- Primary mechanism is prevention of fertilization
  - Spermicidal, reduces motility and viability of sperm
  - Inhibits development of ova
- Possible secondary mechanism inhibition of implantation



Weight

Timing

Efficacy

APPROPRIATE EMERGENCY CONTRACEPTION

Oral EC: **Less or NOT Effective**

- BMI of 26, 70 kg (154 lbs)

Levonorgestrel

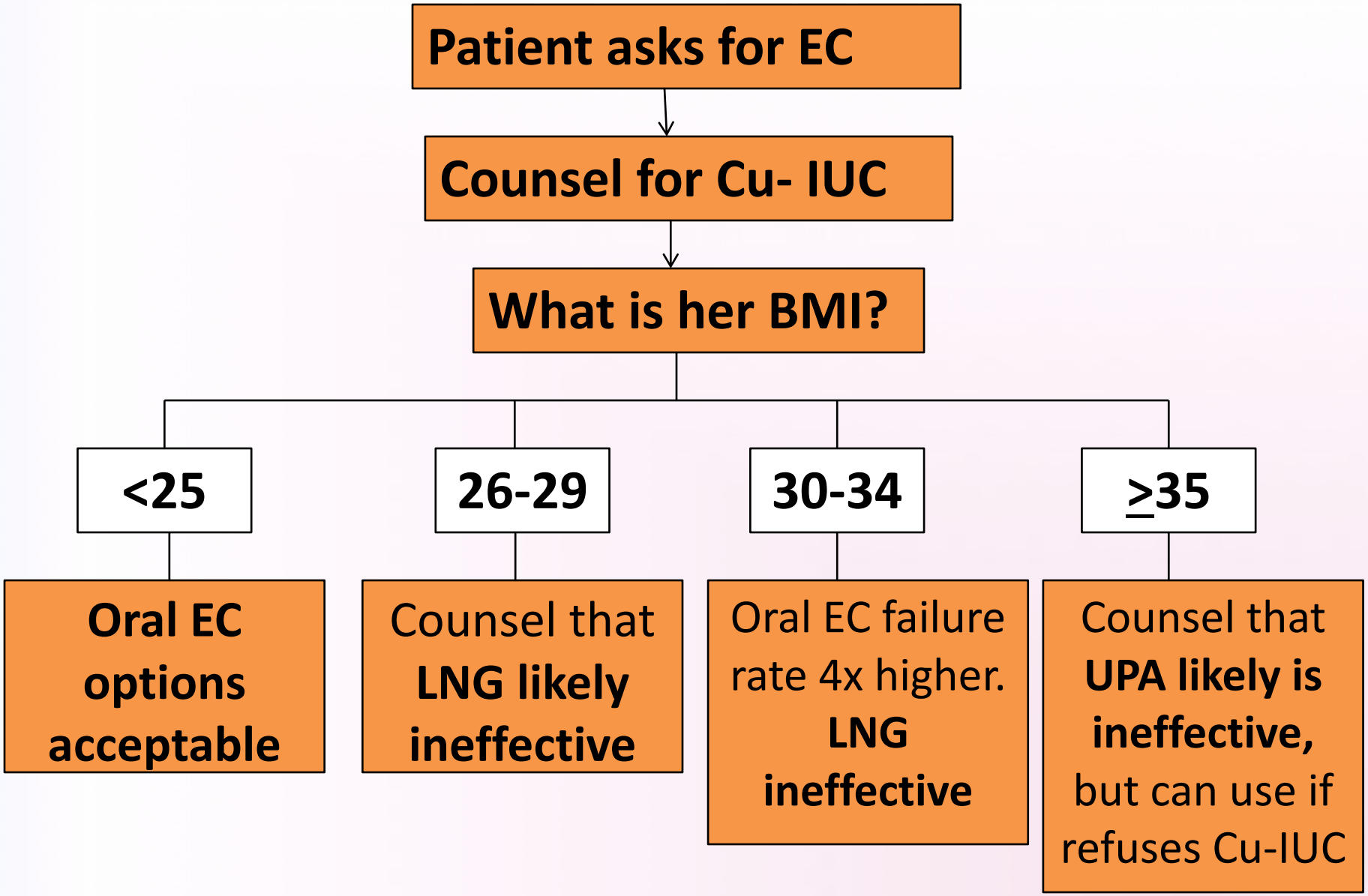
(Plan B One-Step® Next Choice One Dose™)

- BMI 35, 88 kg (194 lbs)

Ulipristal Acetate (Ella®)

- Highest risk for pregnancy is unprotected sex

subsequent to EC use



(Festin, 2017; Gemzell-Danielsson, 2015; Glasier, 2010, 2014, 2015; Kapp et al., 2015; Praditpan et al. 2017; Rapkin RB, 2011)

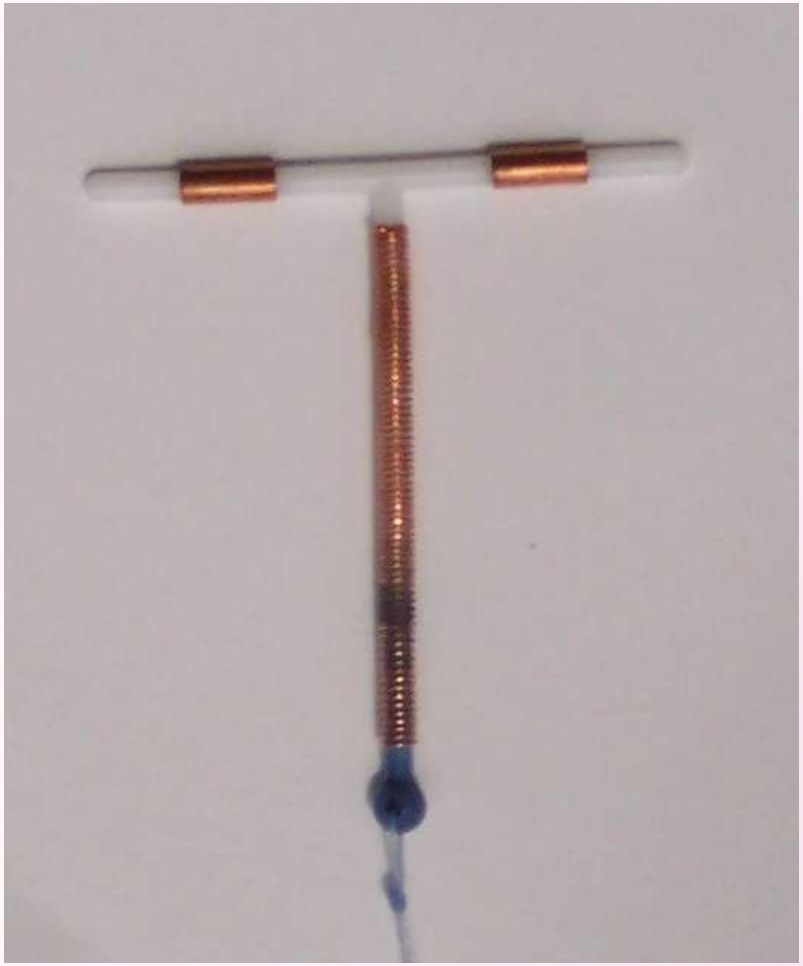
Starting Hormonal Contraception After Using Oral EC

- Levonorgestrel
  - Do not wait to start or re-start
  - Preferred when EC used due to incorrect use of a hormonal method
- Ulipristal Acetate
  - Wait 5 days after last unprotected coitus before starting Implant, LNG IUD, DMPA, CHC, POP

Otherwise, the Rule is…

- Quick start all methods
- Rule out pregnancy before IUD placement
- Back-up for 7 days

Cu IUD Has No Decrease in EC Efficacy



United States Selected Practice Recommendations for Contraceptive Use

US SPR

CU IUD as EC
US SPR says…

- Within 5 days of the first act of unprotected sexual intercourse
- If the day of ovulation can be estimated, the Cu-IUD also can be inserted >5 days after sexual intercourse
- As long as placement does not occur >5 days after ovulation

US Medical Eligibility Criteria

Category	Definition	Recommendation
1	No restriction in contraceptive use	Use the method
2	Advantages generally outweigh theoretical or proven risks	More than usual follow-up needed
3	Theoretical or proven risks outweigh advantages of the method	Clinical judgment that this patient can safely use
4	The condition represents an unacceptable health risk if the method is used	Do not use the method

US MEC Differences

- DMPA <18 or ≥ 45 years old 2
- LNG and Copper IUD <20 years old 2

Safest methods

- No difference in US MEC classification by age
  - Implant
  - Progestin only pills
- But...Unpredictable bleeding may be confusing and potentially obscure endometrial hyperplasia

Non Hormonal Methods

Multiple risk factors

Older age, smoking, DM, low HDL, high LDL, high TG

No difference in MEC category

Concern for Efficacy
Fertility Awareness–Based Methods

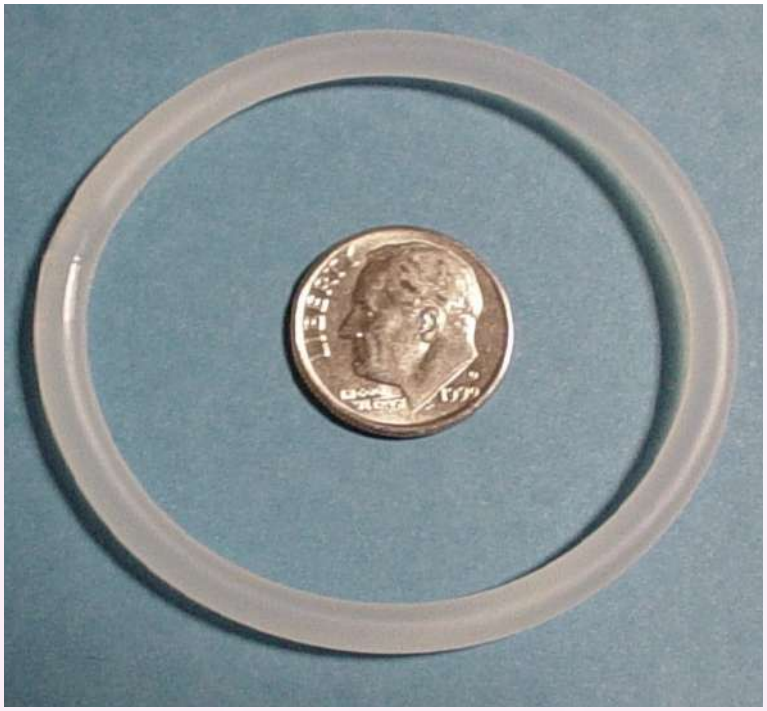
- US MEC Gives a **C for Caution** for FAB methods

- Clarification: Menstrual irregularities are common in perimenopause and might complicate the use of FAB methods.

Multiple risk factors

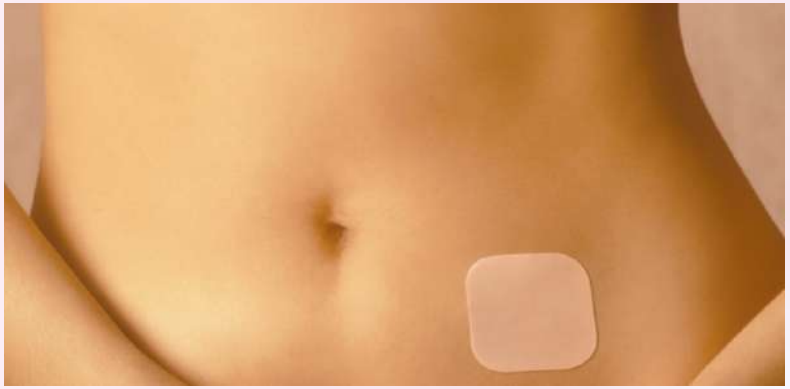
Older age, smoking, DM, low HDL, high LDL, high TG

- Implant 2
- DMPA 3
- POP 2
- LNG IUD 2



Pills, Patches, Ring

COMBINED HORMONAL CONTRACEPTIVES

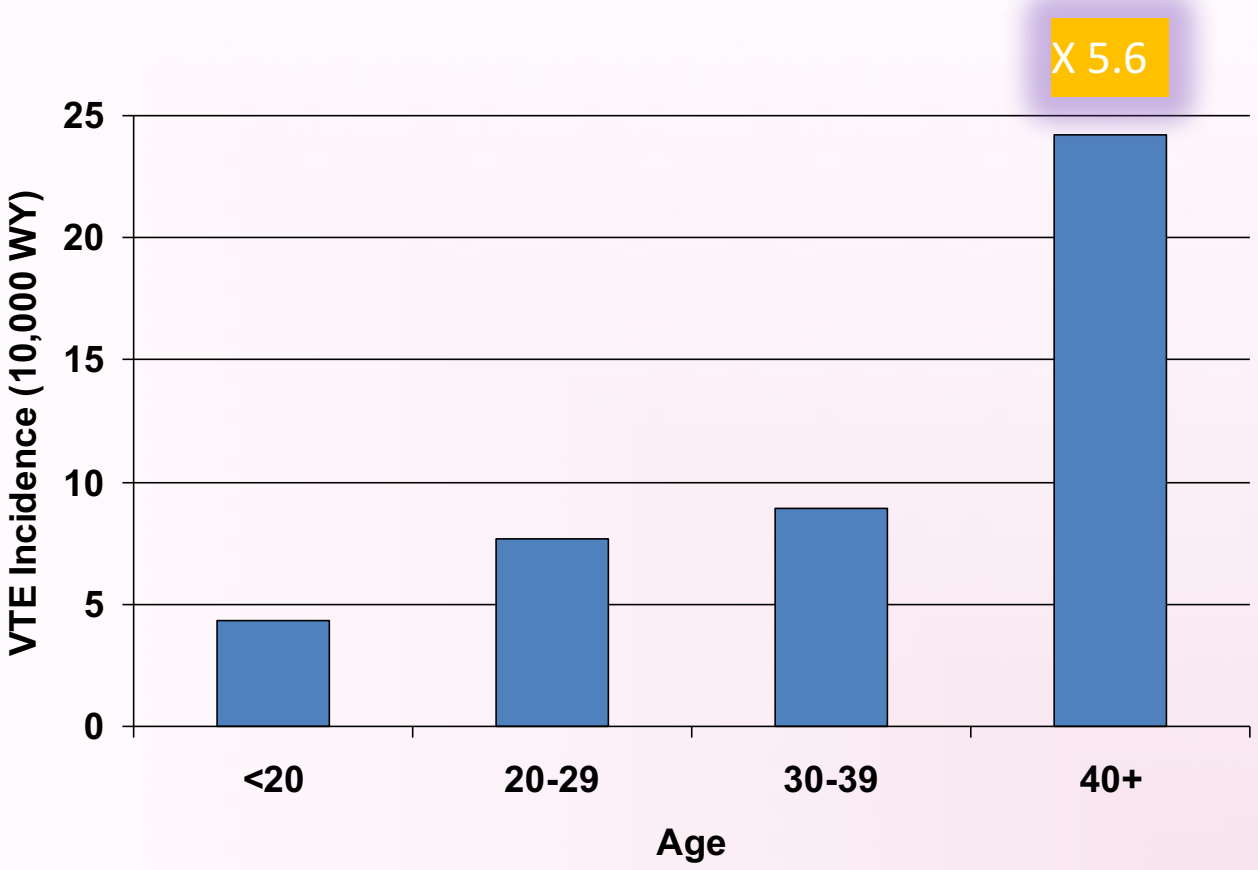


Combined Hormonal Contraceptives

- ≥40 2
- Plus “multiple risk factors”:

Older age, smoking, DM, low HDL, high LDL, high TG

- 3 or 4
- 30–42 days postpartum 3



The European Active Surveillance study (EURAS): VTE Incidence vs. Age

DMPA

- Women lose BMD while using DMPA
- Women regain BMD after discontinuing DMPA
- 2 year limit for adolescents is relative
- Not known if DMPA users can regain BMD to baseline before menopause
- DMPA-associated ↓ BMD & future fracture risk needs further study
- *This concern* ***does not apply to other "progestin-only" methods***

Breast Cancer & Hormonal Contraception

- DMPA
  - No overall ⇧ risk of breast cancer
  - Initiation of DMPA ≤ 5 years a 2-fold ⇧ risk
  - Possibly due to ⇧ detection or acceleration in growth of pre-existing tumors
- CHC
  - Conflicting data
  - Most studies show no increased risk
  - When increased, it is *current* use in older women
- POPs
  - Little data
  - ↑ risk if use within the last 10 years
  - ↓ risk if used POPs earlier

NON-CONTRACEPTIVE BENEFITS

Ah!...to be young again

- Acne
- Dysmenorrhea
- Menstrual irregularities
- Heavy menstrual bleeding

The Joy of Perimenopause

- Decreased progesterone: normal estradiol
- 11% with major depression
- Anovulation in 50% with occasional ovulatory events
- Menorrhagia or metrorrhagia in 45%-67%
- Vasomotor symptoms in 25%-73%
- Mastalgia
- Premenstrual symptoms 18%
- Hirsutism, irritability and acne
- Vulvovaginal dryness 48%

Non-Contraceptive Benefits

LNG IUC

- Decreased
  - Menorrhagia
  - Dysmenorrhea
  - Long term risk of endometrial cancer
  - No adverse effect on BMD

- **Can be left in place during and after transition to menopause for use with ET**

LNG IUC
Additional Therapeutic Use

- Symptomatic fibroids
- Endometrial hyperplasia
- Symptomatic endometriosis, adenomyosis

Non-Contraceptive Benefits

Implant

- Reliable ovulation suppression
- Decreased dysmenorrhea
- Likely reduction in risk of endometrial cancer and ovarian cancer

Non-Contraceptive Benefits CHC

- Regulates and schedules bleeding
- Avoids AUB (abnormal uterine bleeding)
- Reduced dysmenorrhea
- Improvement in benign breast disease
  - Breast tenderness, fibroadenoma, chronic cystic disease
- Control of acne and hirsutism
- Reduction in PMS/PMDD sx
- Stabilization of BMD

Mid-life Women
Non-Contraceptive Benefits CHC

- Improved quality of life
- Treatment of depression in symptomatic, midlife women
- Reduction of vasomotor symptoms
- Improved vulvovaginal dryness

FDA Indications

Drugs@FDA
FDA Approved Drug Products

- Estradiol valerate (instead of ethinyl estradiol) branded COC indicated for the treatment of heavy menstrual bleeding
- Some COCs indicated to treat acne

Branded pill

Drugs@FDA
FDA Approved Drug Products

- 10 mcg EE/ 1 mg norethindrone acetate
- Will a very low dose of EE make a safety difference?
- No data indicating that it will

Continuous Use
↓ Common Symptoms

- Avoids hormone withdrawal symptoms, ovarian cysts, discontinuation
- **PMS**;
  - Mood
  - Headaches
  - Pelvic pain/cramping
  - Bloating
- Best effect after 6 months

Continuous Use

- Adenosis, endometriosis
- Leiomyoma
- Bleeding irregularities

Ovarian and Endometrial Cancer Protection Likely Colon Cancer

Current or former COC use:

- Further ↓↓with longer duration use
- Remained ↓↓ long after discontinuing use.

Replace The IUC Over 40?

- Copper IUC:
  - 12 years considered standard
  - Likely good for 20

- Levonorgestrel 52
  - 7 to perhaps 8+ years
- Lower dose levonorgestrel IUDs
  - No data on extended use

Female Condom FC2
Insertive Condom

- A thin nitrile sheath or pouch worn by a woman.
- At each end there is a flexible ring.
- Condom entirely lines the vagina.
- Helps to prevent pregnancy, STIs & HIV.
- Brand name Reality.

Benefits for Younger & Older Women

- Comes with silicone-based lubricant on the inside
- Additional lubrication can be used. Does NOT have to be water soluble!
- Does not contain spermicide
- STI protection that doesn’t rely on a partner or on the partner maintaining an erection

U.S. Selected Practice Recommendations

Provides recommendations on optimal use of contraceptive methods for persons of all ages.

“The Age At Which A Woman Is No Longer At Risk For Pregnancy Is Not Known.”

- Spontaneous pregnancies occur >44 years.
- The median age of menopause is 51 years
- In North America it can vary from ages 40 to 60 years.

“Limited” Reproductive Potential

FSH ≥ 20 or antral follicle count <4-6

No Further Need for Contraception

- < 50: 2 years of Amenorrhea *or* FSH ≥ 30 on two occasions 6-8 weeks apart
- ≥ 50:
  - 1 year of amenorrhea *or* FSH ≥ 30 on two occasions 6-8 weeks apart
  - On CHC: FSH ≥ 30 on two occasions 6-8 weeks apart; 7-14 d after use
  - On DMPA: FSH ≥ 30 on two occasions 90 d apart on day of injection
  - On LNG IUD: FSH ≥ 30 on two occasions 6-8 weeks apart

Baldwin MK, 2013

Questions?

References

- ACOG Committee on Practice Bulletin Use of hormonal contraception in women with coexisting medical conditions. Obstet Gynecol. Reaffirmed 2008
- Allen, R. H., C. A. Cwiak and A. M. Kaunitz (2013). "Contraception in women over 40 years of age." Cmaj **185**(7): 565-573.
- Allshouse, A. A., Polotsky, A., Crawford, S., Chen, H.-Y., El Khoudary, S. R., & Santoro, N. (2015). Consistent ovulation may not be enough to make women healthy when approaching menopause: an update from the Study of Women's Health Across the Nation. *Menopause, 22*(3), 267-274.
- Anderson FD, Hait H. A multicenter, randomized study of an extended cycle oral contraceptive. Contraception. 2003;68(2):89-96.
- Anderson RA, Nelson SM, Wallace WH. Measuring anti-Müllerian hormone for the assessment of ovarian reserve: When and for whom is it indicated? Maturitas. 2012:71(1):28-33.

Bibliography/References

- Balasch J, Gratacós E. Delayed Childbearing: Effects on Fertility and the Outcome of Pregnancy. Fetal Diagn Ther. 2011;29:263-273.
- Baldwin, M. K., & Jensen, J. T. (2013). Contraception during the perimenopause. *Maturitas, 76*(3), 235-242.
- Barad DH, Weghofer A, Gleicher N. Utility of age-specific serum antai-müllerian hormone concentrations. Reprod Biomed Online. 2011;22(3):284-291.
- Battaglia, C., Battaglia, B., Mancini, F., Busacchi, P., Paganotto, M. C., Morotti, E., & Venturoli, S. Sexual behavior and oral contraception: a pilot study. J Sex Med, 2012; 9(2), 550-557.

Bibliography/References

- Beasley A. Contraception for specific populations. Semin Reprod Med. 2010;28(2):147-55.
- Beksinska ME, Smit JA, Kleinschmidt I, Farley TM. Assessing menopausal status in women aged 40 - 49 using depot-medroxyprogesterone acetate, norethisterone enanthate or combined oral contraception. S Afr Med J. 2011;101(2):131-5.
- Beksinska ME, Smit JA, Kleinschmidt I, Rees HV, Farley TM, Guidozzi F. Detection of raised FSH levels among older women using depomedroxyprogesterone acetate and norethisterone enanthate. Contraception. 2003;68:339-343.
- Binder B, Lackner HK, Salmhofer W, Hofmann-Wellenhof R. Risk Factors for Deep Vein Thrombosis in Women Aged 18 to 50: A Retrospective Analysis. Dermatol Surg. 2009;35(3):451-6.

Bibliography/References

- Bodley-Tickell AT, Olowokure B, Bhaduri S, White DJ, Ward D, Cross JDC, Smoth G, Duggal HV, Goold P. Trends in sexually transmitted infections (other than HIV) in older people: analysis of data from an enhanced surveillance system. Sex Transm Infect. 2008; 84:312–317.
- Bromberger JT, Kravitz HM, Chang Y, Randolph JF Jr, Avis NE, Gold EB, Matthews KA. Does risk for anxiety increase during the menopausal transition? Study of Women's Health Across the Nation. Menopause. 2013;20(5):000/000.
- Bromberger JT, Schott LL, Matthews KA, Kravitz HM, Randolph JF Jr, Harlow S, Crawford S, Green R, Joffe H. Association of past and recent major depression and menstrual characteristics in midlife: Study of Women's Health Across the Nation. Menopause. 2012;19(9):959-966.

Bibliography/References

- Brunner Huber LR, Huber KR. Contraceptive Choices of Women 35-44 Years of Age: Findings From the Behavioral Risk Factor Surveillance System. Ann Epidemiol. 2009;19(11):823-833.
- Casper RF, Dodin S, Reid RL, and Study Investigators. The effect of 20 µg ethinyl estradiol/1 mg norethindrone acetate (MinestrinTM), a low-dose oral contraceptive, on vaginal bleeding patterns, hot flashes, and quality of life in symptomatic perimenopausal women. Menopause. 1997;4:139-147.
- Centers for Disease Control Cancer and Steroid Hormone Study: Long-term oral contraceptive use and the risk of breast cancer. JAMA. 1983;249:1591-95.
- Chu SY, Lee NC, Wingo PA, Senie RT, Greenberg RS, Peterson HB. The relationship between body mass and breast cancer among women enrolled in the Cancer and Steroid Hormone Study. J Clin Epidemiol. 1991;44:1197-1206.

Bibliography/References

- Coffee AL, Kuehl TJ, Willis S, Sulak PJ. Oral contraceptives and premenstrual symptoms: Comparison of a 21/7 and extended regimen. Am J Obstet Gynecol. 2006 Nov;195(5):1311-9.
- Coffee AL, Sulak PJ, Kuehl TJ. Long-term assessment of symptomatology and satisfaction of an extended oral contraceptive regimen. Contraception. 2007;75(6):444-449.
- Collaborative Group on Epidemiological Studies of Ovarian Cancer, Beral V, Doll R, Hermon C, Peto R, Reeves G. Ovarian cancer and oral contraceptives: collaborative reanalysis of data from 45 epidemiological studies including 23,257 women with ovarian cancer and 87,303 controls. Lancet. 2008;371(9609):303-14.
- Curtis KM, Martins SL. Progestogen-only contraception and bone mineral density: a systematic review. Contraception. 2006;73(5):470-87.

Bibliography/References

- Drew O, Sherrard J. Sexually transmitted infections in the older woman. Menopause Int. 2008;14(3):134–135.
- Edelman A, Jensen JT, Bulechowsky M, Cameron J. Combined oral contraceptives and body weight: do oral contraceptives cause weight gain? A primate model. Hum Reprod. 2011;26(2):330-6.
- Edelman AB, Gallo MF, Jensen JT, Nichols MD, Schulz KF, Grimes DA. Continuous or extended cycle vs. cyclic use of combined oral contraceptives for contraception. Cochrane Database Syst Rev. 2005;(3):CD004695.
- Faculty of Family Planning and Reproductive Health Care Clinical Effectiveness Unit. FFPRHC Guidance (2005) contraception for women aged over 40 years. J Fam Plann Reprod Health Care. 2005;31(1):51-63.
- Ferré C, Callaghan W, Olson C, Sharma A, Barfield W. Effects of Maternal Age and Age-Specific Preterm Birth Rates on Overall Preterm Birth Rates — United States, 2007 and 2014. MMWR Morb Mortal Wkly Rep 2016;65:1181–1184
- Finer LB, Zolna MR. Unintended pregnancy in the United States: incidence and disparities, 2006. Contraception. 2011; 84:478-85.

Bibliography/References

- Finer, L. B. and M. R. Zolna (2016). "Declines in Unintended Pregnancy in the United States, 2008-2011." N Engl J Med 374(9): 843-852.
- Folger SG, Marchbanks PA, McDonald JA, Bernstein L, Ursin G, Berlin JA, Daling JR, Norman SA, Strom BL, Weiss LK, Simon MS, Burkman RT, Malone KE, Spirtas R. Risk of breast cancer associated with short-term use of oral contraceptives. Cancer Causes Control. 2007;18:189-198.
- Fraser IS. Added health benefits of the levonorgestrel contraceptive intrauterine system and other hormonal contraceptive delivery systems. Contraception. 2013 Mar;87(3):273-9
- Frey BN, Lord C, Soares CN. Depression during menopausal transition: a review of treatment strategies and pathophysiological correlates. Menopause Int. 2008;14:123-128.
- Fugh-Berman, A., & Bythrow, J. Bioidentical hormones for menopausal hormone therapy: variation on a theme. J Gen Intern Med, 2007; 22(7), 1030-1034.
- Gemzell-Danielsson K, Schellschmidt I, Apter D. A randomized, phase II study describing the efficacy, bleeding profile, and safety of two low-dose levonorgestrel-releasing intrauterine contraceptive systems and Mirena. Fertil Steril. 2012;97:616-22.

Bibliography/References

- Gibbs, S. E., Rocca, C. H., Bednarek, P., Thompson, K. M. J., Darney, P. D., & Harper, C. C. Long-Acting Reversible Contraception Counseling and Use for Older Adolescents and Nulliparous Women. Journal of Adolescent Health, 2016; 59(6), 703-709.
- Glasier AF, Smith KB, van der Spuy ZM, Ho PC, Cheng L, Dada K, Wellings K, Baird DT. Amenorrhea associated with contraception—an international study on acceptability. Contraception. 2003;67:1-8.
- Gleicher, N., Weghofer, A., & Barad, D. H. Defining ovarian reserve to better understand ovarian aging. Reprod Biol Endocrinol, 2011; 9, 23.
- Godfrey, E. The New U.S. Selected Practice Recommendations: Practical Applications for Contraceptive Management. In: Proceedings of the Contraceptive Technology Conference; 2012 Mar 28-31; Boston, MA.
- Greenblum CA, Rowe MA, Neff DF, Greenblum JS. Midlife women: symptoms associated with menopausal transition and early postmenopause and quality of life. Menopause. 2013;20(1):22-27.
- Grevers, X., Grundy, A., Poirier, A. E., Khandwala, F., Feldman, M., Friedenreich, C. M., & Brenner, D. R. Cancer incidence attributable to the use of oral contraceptives and hormone therapy in Alberta in 2012. CMAJ Open, 2016; 4(4), E754-e759.
- Harlow SD, Gass M, Hall JE, Lobo R, Maki P, Rebar RW, Sherman S, Sluss PM, de Villiers TJ; STRAW + 10 Collaborative Group. Executive summary of the Stages of Reproductive Aging Workshop + 10: addressing the unfinished agenda of staging reproductive aging. J Clin Endocrinol Metab. 2012 Apr;97(4):1159-68.

Bibliography/References

- Hennekens CH, Speizer FE, Lipnick RJ, Rosner B, Bain C, Belanger C, Stampfer MJ, Willett W, Peto R. A case-control study of oral contraceptive use and breast cancer. J Natl Cancer Inst. 1984;72(1):39-42.
- Highlights of Prescribing Information: Skyla((levonorgestrel-releasing intrauterine system). Bayer HealthCare Pharmaceuticals, Inc. Wayne, NJ: February 2013.
- Hoesli IM, Walter-Göbel I, Tercanli S, Holzgreve W. Spontaneous Fetal Loss Rates in a Non-Selected Population. Am J of Med Genet. 2001;100:106-109.
- Hubacher D, Finer LB, Espey E. Renewed interest in intrauterine contraception in the United States: Evidence and explanation. Contraception. 2011;83:291-4.
- Hulka BS, Chambless LE, Kaufman DG, Fowler WC Jr, Greenberg BG. Protection against endometrial carcinoma by combination-product oral contraceptives. JAMA. 1982;247(4):475-7.

Bibliography/References

- Hunter DJ, Colditz GA, Hankinson SE, Malspeis S, Spiegelman D, Chen W, Stampfer MJ, Willett WC. Oral contraceptive use and breast cancer: a prospective study of young women. Cancer Epidemiol Biomarkers Prev. 2010;19(10):2496-502.
- International Collaboration of Epidemiological Studies of Cervical Cancer, Appleby P, Beral V, Berrington de González A, Colin D, Franceschi S, Goodhill A, Green J, Peto J, Plummer M, Sweetland S. Cervical cancer and hormonal contraceptives: collaborative reanalysis of individual data for 16,573 women with cervical cancer and 35,509 women without cervical cancer from 24 epidemiological studies. Lancet. 2007;370(9599):1609-21.
- Kaori I, Ayako T, Kazuhiro A, Ryosuke T, Tsuyoshi H, Ippei T, Hideki M. Role of antimüllerianhormone as a biomarker of the menopausal transition. Menopause. 2013 Feb;20(2):235-9.

Bibliography/References

- Kaunitz AM. Clinical practice. Hormonal contraception in women of older reproductive age. N Engl J Med. 2008;358:1262-1270.
- Kwiecien M, Edelman A, Nichols MD, Jensen JT. Bleeding patterns and patient acceptability of standard or continuous dosing regimens of a low-dose oral contraceptive: a randomized trial. Contraception. 2003;67:9-13.
- La Marca A, Broekmans FJ, Volpe A, Fauser BC, Macklon NS; ESHRE Special Interest Group for Reproductive Endocrinology--AMH Round Table. Anti-müllerian(AMH): what do we still need to know? Hum Reprod. 2009;24(9):2264-75.
- Lanza LL, et al. Use of Depo Medroxyprogesterone Acetate Contraception and Incidence of Bone Fracture. Obstet Gynecol. 2013;121:593-600.
- Leridon H. A new estimate of permanent sterility by age: Sterility defined as the inability to conceive. Popul Stud. 2008;62(1):15-24.
- Linton, A., Golobof, A., & Shulman, L. P. Contraception for the perimenopausal woman. Climacteric, 2016; 19(6), 526-534.
- Long, M. E., Faubion, S. S., MacLaughlin, K. L., Pruthi, S., & Casey, P. M. Contraception and hormonal management in the perimenopause. J Womens Health (Larchmt), 2015; 24(1), 3-10.
- Long-term oral contraceptive use and the risk of ovarian cancer. JAMA. 1983;249:1596-99.

Bibliography/References

- Lopez, L. M., Bernholc, A., Chen, M., Grey, T. W., Otterness, C., Westhoff, C., . . . Helmerhorst, F. M. (2016). Hormonal contraceptives for contraception in overweight or obese women. *Cochrane Database Syst Rev*(8), Cd008452. doi:10.1002/14651858.CD008452.pub4
- Marchbanks PA, McDonald JA, Wilson HG, Folger SG, Mandel MG, Daling JR, Bernstein L, Malone KE, Ursin G, Strom BL et al. Oral contraceptives and the risk of breast cancer. New Engl J Med 2002;346(26):2025-32.
- Matteson KA, et al. Nonsurgical Management of Heavy Menstrual Bleeding: A Systematic Review. Society of Gynecologic Surgeons Systematic Review Group. Obstet Gynecol. 2013; 121(3):632-643.
- Miller L, Hughes JP. Continuous Combination Oral Contraceptive Pills to Eliminate Withdrawal Bleeding: A Randomized Trial. Obstet Gynecol. 2003;101:653.
- Mosher WD, Jones J. Use of contraception in the United States: 1982–2008. National Center for Health Statistics. Vital Health Stat 23(29). 2010.
- Nelson HD, Zakher B, Cantor A, Fu R, Griffin J, O'Meara ES, Buist DS, Kerlikowske K, van Ravesteyn NT, Trentham-Dietz A, Mandelblatt JS, Miglioretti DL. Risk Factors for Breast Cancer for Women Aged 40 to 49 Years: A Systematic Review and Meta-analysis. Ann Intern Med. 2012;156(9):635-48.

Bibliography/References

- Nightingale AL, Lawrenson RA, Simpson EL, Williams TJ, MacRae KD, Farmer RD. The effects of age, body mass index, smoking and general health on the risk of venous thromboembolism in users of combined oral contraceptives. Eur J Contracept Reprod Health Care. 2000;5(4):265-74.
- Oral contraceptive use and the risk of endometrial cancer: The Centers for Disease Control Cancer and Steroid Hormone Study. JAMA. 1983;249(12):1600-4.
- Oral-contraceptive use and the risk of breast cancer. The Cancer and Steroid Hormone Study of the Centers for Disease Control and the National Institute of Child Health and Human Development. N Engl J Med. 1986;315(7):405-11.
- Patel D, Gillespie B, Foxman B. Sexual behavior of older women: Results of a random-digit-dialing survey of 2000 women in the United States. Sex Trans Dis. 2003;30(3):216-220.

Bibliography/References

- Prior J. Peri menopause: The complex endocrinology of the menopause transition. Endocr Rev. 1998;19:397-428.
- Rönnerdag M, Odlind V. Health effects of long-term use of the intrauterine levonorgestrel-releasing system. A follow-up study over 12 years of continuous use. Acta Obstet Gynecol Scand. 1999;(8):716-21.
- Salihu, H. M., Shumpert, M. N., Slay, M., Kirby, R. S., & Alexander, G. R. Childbearing beyond maternal age 50 and fetal outcomes in the United States. Obstet Gynecol, 2003; 102(5 Pt 1), 1006-1014.
- Scholes, D., LaCroix, A. Z., Hubbard, R. A., Ichikawa, L. E., Spangler, L., Operskalski, B. H., . . . Ott, S. M. Oral contraceptive use and fracture risk around the menopausal transition. Menopause, 2016; 23(2), 166-174.
- Sherman CA, Harvey SM, Noell J. Are They Still Having Sex? STIs and Unintended Pregnancy Among Mid-Life Women. J Women Aging. 2008;17(3):41-55.
- Sivin I, Stern J, Coutinho E, Mattos CE, el Mahgoub S, Diaz S, Pavez M, Alvarez F, Brache V, Thevenin F, et al. Prolonged intrauterine contraception: A seven-year randomized study of the LNg20 and the copper T 380 Ag IUDs. Contraception. 1991;44:473–80.

Bibliography/References

- Sivin I. Utility and drawbacks of continuous use of a copper T IUD for 20 years. Contraception. 2007;(6 Suppl):s70-5.
- Skegg DC, Paul C, Spears GF, Williams SM. Progestogen-only oral contraceptives and risk of breast cancer in New Zealand. Cancer Causes Control. 1996;7(5):513-9.
- Speroff L. Clinical Gynecology Endocrinology and Infertility. 2005. Prior J. Peri. Endocr Rev. 1998;. Bromberger. Study of Women's Health Across the Nation. Menopause. 2012
- Speroff L, Fritz MA. Menopause and the perimenopausal transition. Clinical Gynecology Endocrinology and Infertility. 7th ed. Philadelphia (PA): Lippincott Williams and Wilkins; 2005:621-688.
- Sulak P, Willis S, Kuehl T, Coffee A, Clark J. Headaches and Oral Contraceptives: Impact of Eliminating the Standard 7-Day Placebo Interval. Headache. 2007;47:27-37.
- Sulak PJ, Smith V, Coffee A, Witt I, Kuehl AL, Kuehl TJ. Frequency and management of breakthrough bleeding with continuous use of the transvaginal contraceptive ring: a randomized controlled trial. Obstet Gynecol. 2008;112(3):563-71.

Bibliography/References

- Sulak, PJ. Continuous oral contraception: changing times. Best Pract Res Clin Obstet Gynaecol. 2008;22(2):355-74.
- Tao MH, Xu WH, Zheng W, Zhang ZF, Gao YT, Ruan ZX, Cheng JR, Gao J, Xiang YB, Shu XO. Oral contraceptive and IUD use and endometrial cancer: a population-based case-control study in Shanghai, China. Int J Cancer. 2006;119(9):2142-7.
- Vessey M, Yeates D. Oral contraceptives and benign breast disease: an update of findings in a large cohort study. Contraception. 2007;76:418-424.
- Vessey MP, Painter R. Endometrial and ovarian cancer and oral contraceptives-findings in a large cohort study. Br J Cancer. 1995;71:1340-42.

Bibliography/References

- Wan YL, Holland C. The efficacy of levonorgestrel intrauterine systems for endometrial protection: a systematic review. Climacteric. 2011;14(6):622-32.
- Weber MT, Mapstone M, Staskiewicz J, Maki PM. Reconciling subjective memory complaints with objective memory performance in the menopausal transition. Menopause. 2012;19(7):735-741.
- Weisman CS, MacCannon DS, Henderson JT, Shortridge E, Orso CL. Contraceptive counseling in managed care: preventing unintended pregnancy in adults. Women Health Iss. 2002;12;9-95.
- World Health Organization. Long-term use of hormonal contraceptive DMPA not linked to breast cancer. Prog Hum Reprod Res. 1995;(33):5.
- Wren, B. G., McFarland, K., Edwards, L., O'Shea, P., Sufi, S., Gross, B., & Eden, J. A. Effect of sequential transdermal progesterone cream on endometrium, bleeding pattern, and plasma progesterone and salivary progesterone levels in postmenopausal women. Climacteric, 2000; 3(3), 155-160.

References Adolescents

Abma, J. C., Martinez, G. M., & Copen, C. E. (2010). Teenagers in the United States: sexual activity, contraceptive use, and childbearing, national survey of family growth 2006-2008. *Vital Health Stat 23*(30), 1-47.

Burke, P. J., Coles, M. S., Di Meglio, G., Gibson, E. J., Handschin, S. M., Lau, M., . . . Urbach, K. (2014). Sexual and reproductive health care: a position paper of the Society for Adolescent Health and Medicine. *J Adolesc Health, 54*(4), 491-496. doi:10.1016/j.jadohealth.2014.01.010

Francis, J. K. R., & Gold, M. A. (2017). Long-Acting Reversible Contraception for Adolescents: A Review. *JAMA Pediatr*. doi:10.1001/jamapediatrics.2017.0598

References Adolescents

McNicholas, C., Madden, T., Secura, G., & Peipert, J. F. (2014). The contraceptive CHOICE project round up: what we did and what we learned. *Clin Obstet Gynecol, 57*(4), 635-643. doi:10.1097/grf.0000000000000070

Raidoo, S., & Kaneshiro, B. (2015). Providing Contraception to Adolescents. *Obstet Gynecol Clin North Am, 42*(4), 631-645. doi:10.1016/j.ogc.2015.08.004

Reddy, D. M., Fleming, R., & Swain, C. (2002). Effect of mandatory parental notification on adolescent girls' use of sexual health care services. *Jama, 288*(6), 710-714.

References for EC

Festin, M. P., Peregoudov, A., Seuc, A., Kiarie, J., & Temmerman, M. (2017). Effect of BMI and body weight on pregnancy rates with LNG as emergency contraception: analysis of four WHO HRP studies. *Contraception, 95*(1), 50-54. doi:10.1016/j.contraception.2016.08.001

Gemzell-Danielsson, K., Kardos, L., & von Hertzen, H. (2015). Impact of bodyweight/body mass index on the effectiveness of emergency contraception with levonorgestrel: a pooled-analysis of three randomized controlled trials. *Curr Med Res Opin, 31*(12), 2241-2248. doi:10.1185/03007995.2015.1094455

Glasier, A. (2014). The rationale for use of Ulipristal Acetate as first line in emergency contraception: biological and clinical evidence. *Gynecol Endocrinol, 30*(10), 688-690. doi:10.3109/09513590.2014.950645

Glasier, A. (2015). Starting hormonal contraception after using emergency contraception: what should we recommend? *Hum Reprod, 30*(12), 2708-2710. doi:10.1093/humrep/dev242

Glasier, A., Gemzell-Danielsson, K., Bouchard, P., Genazzani, A. R., Al-Azzawi, F., Berga, S., . . . von Schoultz, B. (2014). ISGE statement on oral emergency contraception. *Gynecol Endocrinol, 30*(10), 681-682. doi:10.3109/09513590.2014.950649

References for EC

Glasier, A. F., Cameron, S. T., Fine, P. M., Logan, S. J., Casale, W., Van Horn, J., . . . Gainer, E. (2010). Ulipristal acetate versus levonorgestrel for emergency contraception: a randomised non-inferiority trial and meta-analysis. *Lancet, 375*(9714), 555-562. doi:10.1016/s0140-6736(10)60101-8

Kapp, N., Abitbol, J. L., Mathe, H., Scherrer, B., Guillard, H., Gainer, E., & Ulmann, A. (2015). Effect of body weight and BMI on the efficacy of levonorgestrel emergency contraception. *Contraception, 91*(2), 97-104. doi:10.1016/j.contraception.2014.11.001

Praditpan, P., Hamouie, A., Basaraba, C. N., Nandakumar, R., Cremers, S., Davis, A. R., & Westhoff, C. L. Pharmacokinetics of levonorgestrel and ulipristal acetate emergency contraception in women with normal and obese body mass index. *Contraception, 95*(5), 464-469. doi:10.1016/j.contraception.2017.01.004