



# Contraception Care Updates

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# Why is contraception important?

- ▶ Effective family planning has a tremendous impact on family's economic and social well being
- ▶ Unplanned pregnancies represent ~50% of pregnancies in the US
- ▶ Unplanned pregnancies can drastically change the course of someone's education, professional career, and family / relationships
- ▶ Preventing 1 unplanned pregnancy can alter the course of a patient's life
- ▶ Combined role of public health and individual medicine



# Universal Free Contraception

- ▶ Providing universal free contraception has many benefits
  - ▶ Reduces abortions
  - ▶ Reduces teen pregnancy rate
  - ▶ Reduces unplanned pregnancy rate overall
- ▶ Research by Susan Thompson Foundation published in NEJM showed that providing free LARC drastically reduced abortions, teen pregnancies and teen births

**Table 2.** Pregnancy, Birth, and Abortion Rates among Girls and Women 15 to 19 Years of Age in the CHOICE Cohort as Compared with Those in the U.S. Population.\*

Outcome	U.S. Population, All Teens*	U.S. Population, Sexually Experienced Teens†	CHOICE Cohort‡
	<i>no. per 1000 teens</i>		<i>mean no. per 1000 teens (95% CI)</i>
Pregnancy	57.4	158.5	34.0 (25.7–44.1)
Birth	34.4	94.0	19.4 (13.3–27.4)
Abortion	14.7	41.5	9.7 (5.6–15.8)

\* Data are U.S. rates for the year 2010.<sup>1</sup>

† Data are U.S. rates for the year 2008.<sup>20</sup>

‡ Data are the mean annual rates for the years 2008 through 2013. CI denotes confidence interval.



# Family Medicine Role

- ▶ Well Child visits (starting at age 12)
- ▶ Any visit with female of child bearing age (eg 12 to 50)
- ▶ Postpartum birth spacing



# How to Counsel

- ▶ 2 distinct approaches are often advocated
  - ▶ “Patient centered”
  - ▶ “List most effective options first”
- ▶ These seem contradictory but can be synergistic



# Overview of Different types of Contraception

- ▶ Long Acting Reversible Contraception:
  - ▶ IUDs
    - ▶ Copper
    - ▶ Levonorgestrel (Synthetic progesterone)
  - ▶ Arm implant
    - ▶ Nexplanon (progesterone)
- ▶ Injection (Depo Provera- progesterone)
- ▶ Oral Contraceptives
  - ▶ Combined (Estrogen/Progesterone)
  - ▶ Progesterone only (i.e. “mini pill”)
- ▶ Other hormonal methods (Nuva-Ring, patch, etc)
- ▶ Barrier (Condoms, diaphragm, etc)
- ▶ Natural Family Planning



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- ▶ Barrier (Condoms, diaphragm, etc)
- ▶ Natural Family Planning
- ▶ Emergency Contraception



# Permanent Contraception

- ▶ Bilateral Tubal Ligation
- ▶ Hysterectomy (usually done for other indication)
- ▶ Vasectomy



# Point of Care Apps

- ▶ CDC Contraception (includes Medical Eligibility Criteria and Selective Practice Recommendations)
  - ▶ Selective Practice Recommendations = Provides advice on missed/late pills, troubleshooting side effects of meds
- ▶ AAFP
  - ▶ Good quick start algorithms in article from 2021





# Information for patients

- ▶ Bedsider.org
- ▶ NY Times article with interactive graph
- ▶ <https://www.nytimes.com/interactive/2014/09/14/sunday-review/unplanned-pregnancies.html>

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# LARC # 1

## Etonorgestrel Subdermal Implant- Nexplanon

- ▶ Mechanisms of action:
  - ▶ Changes to cervical mucus
  - ▶ Changes to tubal motility
  - ▶ To lesser extent, suppression of ovulation and suppression of endometrial activity (often ovulation is not suppressed in the 3<sup>rd</sup> year and beyond of use).
- ▶ FDA approved for 3 years but post-approval data establishes equivalent efficacy for 5 years.
- ▶ Failure rate > 0.38% per year (1 in 260 women)
- ▶ Main side effects > irregular bleeding/ spotting or prolonged bleeding (~10%), amenorrhea (~20%)
- ▶ Benefits= easy procedure w/o pelvic exam, no maintenance required
- ▶ Effects on weight: average weight gain over 3 yrs of use = 6lbs.
- ▶ Per manufacturer can get pregnant 1wk after removal



# Troubleshooting irregular/ prolonged bleeding

- ▶ 10-14 days of scheduled NSAIDs
- ▶ 2-6 months of cOCPs if no contraindications



# Article Review: “Extended use up to 5 years of etonogestrel-releasing subdermal contraceptive implant: comparison to Lng-releasing subdermal implant

- ▶ Study published in Human Reproduction in 2016
- ▶ Multicenter open-label RCT, sites in 7 countries
- ▶ Conducted by WHO
- ▶ 912 women enrolled, randomized to LNG subdermal implant (not available in US) or etonorgestrel implant (Nexplanon)
- ▶ Comparison cohort of Copper IUD users (416 women)
- ▶ After 3 years of use, etonorgestrel implant users were consented to 2 years of additional use



**Table 1** Background characteristics of extended observation cohorts at the time of contraceptive implant insertion.

	<b>LNG implant</b> <i>n</i> (%) <b>522</b>	<b>ENG implant</b> <i>n</i> (%) <b>390</b>	<b>Copper IUD</b> <i>n</i> (%) <b>416</b>
Age, years			
Mean (SD)	28.6 (6.4)	27.8 (6.1)	29.5 (6.7)
[Min, Max]	[18.0, 44.0]	[18.0, 43.0]	[18.0, 44.0]
Median (IQR)	28.0 (23.0, 33.0)	27.0 (23.0, 32.0)	29.0 (24.0, 35.0)
Age, category*			
< 20	29 (5.6)	28 (7.2)	17 (4.1)
21–35	402 (77.0)	308 (79.0)	313 (75.2)
>35	91 (17.4)	54 (13.6)	86 (20.7)
Highest education*			
Never attended	6 (1.1)	2 (0.5)	4 (1.0)
Primary	115 (22.0)	71 (18.2)	110 (26.4)
Secondary	302 (57.9)	241 (61.8)	202 (48.6)
Technical/Vocational	37 (7.1)	35 (9.0)	27 (6.5)
University	62 (11.9)	41 (10.5)	73 (17.5)
Marital status			
Married or cohabiting	462 (88.9)	333 (85.4)	373 (89.7)
Regular partner, not cohabiting	33 (6.4)	38 (9.7)	33 (7.9)
Currently no regular partner	25 (4.8)	19 (4.9)	10 (2.4)



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Total number of pregnancies*			
Nulligravida	22 (4.2)	16 (4.1)	4 (1.0)
1–2	330 (63.2)	255 (65.4)	265 (63.7)
≥3	170 (32.6)	119 (30.5)	147 (35.3)
Previous use of hormonal contraceptive methods (%)*	392 (75.1)	307 (78.7)	288 (69.2)
Previous use of subdermal implants (%)*	104 (20.6)	77 (20.4)	34 (8.4)
<b>BMI (kg/m<sup>2</sup>)</b>			
<b>Mean (SD)</b>	<b>23.9 (3.9)</b>	<b>23.7 (3.8)</b>	<b>25.8 (4.8)</b>
Median (IQR)	23.6 (21.1, 26.0)	23.2 (20.7, 25.8)	25.2 (22.3, 28.2)
BMI category*			
Underweight: < 18.5	37 (7.1)	26 (6.7)	7 (1.7)
Normal weight: 18.5–24.9	300 (57.5)	235 (60.3)	192 (46.2)
Overweight: 25.0–29.9	151 (28.9)	104 (26.7)	141 (33.9)
Obese: ≥30.00	<b>34 (6.5)</b>	<b>25 (6.4)</b>	<b>76 (18.3)</b>



# Results

**Table II** Extended use data and number of events by year and cohort.

	LNG implant	ENG implant	Copper IUD
Number of pregnancies in the first three years *	3	3	14
Extended year 4 data			
Number of women starting	522	390	416
Number of women completing	470	311	373
Woman-months of observation	6254	4606/12 = 383 woman-yrs	4995
Number of pregnancies	0	0	1**
Extended year 5 data			
Number of women starting	470	311	373
Number of women completing	330	204	256
Woman-months of observation	4629	2454/12 = 204 woman-yrs	3521
Number of pregnancies	0	0	2
Year 1–5 cumulative data			
Total woman-months of observation	30 325	22 044	24 134
Total number of pregnancies for 5 years of observation	3	3	17
Cumulative pregnancy rates** (Kaplan Meier Rates)	0.8 (0.2–2.3)	0.6 (0.2–1.8)	4.1 (2.5–6.5)

\*Number of pregnancies reported previously in [Bahamondes et al. \(2015\)](#) in the first 3 years.

\*\*One additional pregnancy that occurred around 36 months was reported above. The Kaplan–Meier (K–M) method was used to estimate the overall cumulative pregnancy rates.



# Does BMI affect Nexplanon effectiveness?

- ▶ Lack of obese women was a weakness of the study (only 24 women w/ BMI >30 participated in year 4 & 5 of Nexplanon branch)
- ▶ Various other studies show equivalent effectiveness in obese and non-obese women
- ▶ Smaller pharmacokinetics studies (13 women vs 4 controls) originally showed possible decreased hormonal concentration in obese women, but subsequent larger studies showed equivalent concentration



# Article 2: Extended Use of Nexplanon and Levonorgestrel IUD

- ▶ Published in AJOG in 2017
- ▶ Conducted in St. Louis
- ▶ Observational cohort of women who were offered to continue using the implant or levonorgestrel IUD at time of device expiration
- ▶ Implant arm = 291 women, 444 woman-years of follow up
  - ▶ 0 pregnancies, 97.5% CI 0-1.48
- ▶ Levonorgestrel IUD = 496 women, 696 woman-years of follow up.
  - ▶ 2 pregnancies
  - ▶ Failure rate in year 6 = 0.25/100 woman years (0.04-1.42)
  - ▶ Failure rate in year 7 = 0.43/100 woman years (0.08-2.39)



# Significant portion of participants were obese

**TABLE 1**

**Baseline demographic and reproductive characteristics of implant and levonorgestrel intrauterine device users**

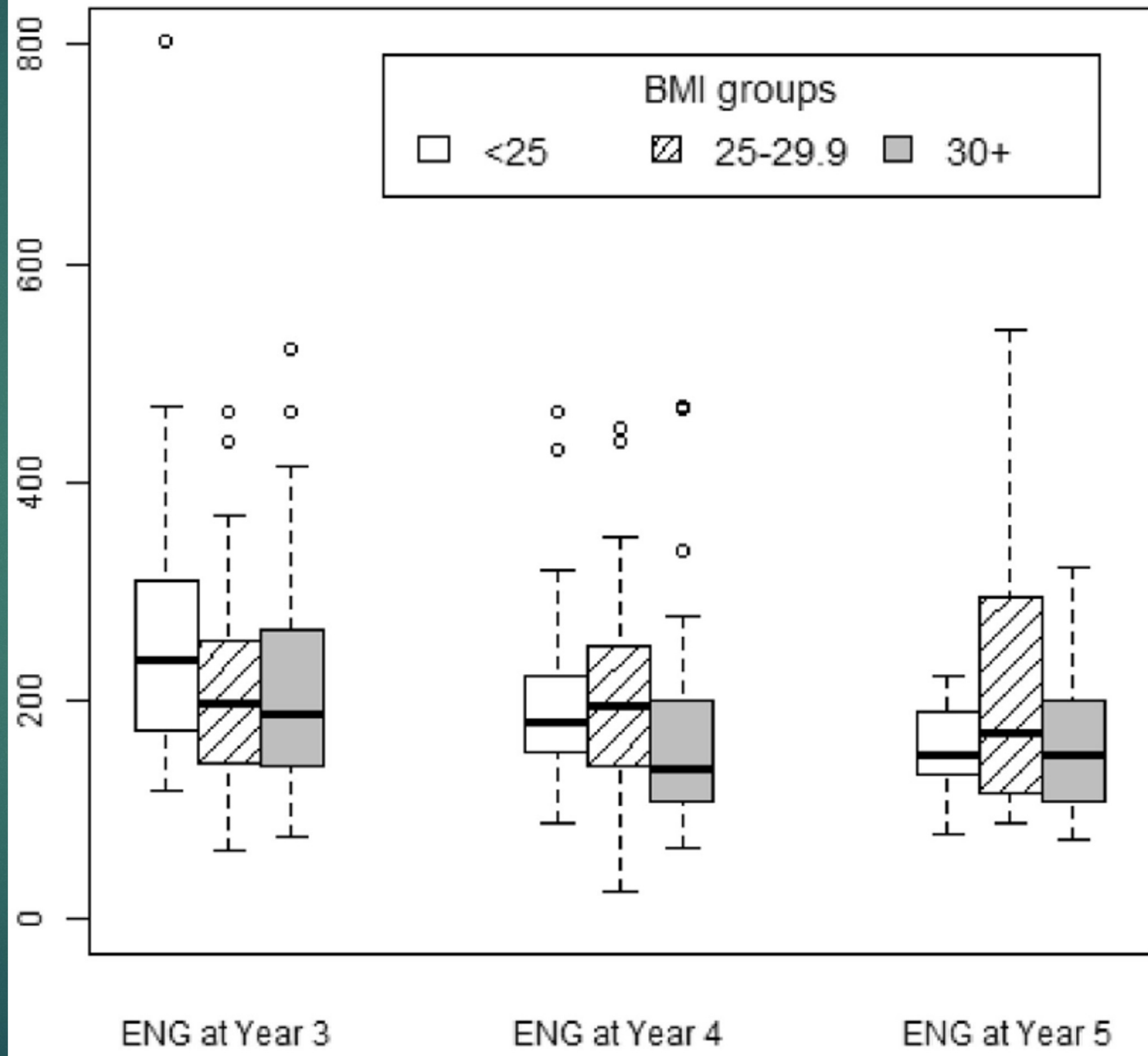
Characteristic, n (%)	Implant, n = 291	IUD, n = 496	<i>P</i>
BMI <sup>a</sup>			.07
<25	73 (25.1)	162 (32.8)	
25-30	67 (23.0)	106 (21.5)	
≥30	151 (51.9)	226 (45.7)	

*BMI*, body mass index; *IUD*, intrauterine device.

# Serum Etonogestrel Levels

- ▶ Etonogestrel level necessary for contraceptive effectiveness = 90

**FIGURE**  
Serum etonogestrel levels by BMI at 3,4, and 5 years of use



Median etonogestrel (ENG) levels at years 3, 4, and 5 by body mass index (BMI) categories.



# Bottom Line – Nexplanon for 5 years

- ▶ Evidence supports use of Nexplanon for 5 years and patients should be counseled on and offered this option
- ▶ Pts with obesity have similar hormone levels and effectiveness in years 4 and 5 of Nexplanon use and this is not a reason to withhold offering extended use to these patients
  - ▶ Plethora of data shows similar efficacy in years 1-3 for pts with obesity
- ▶ If you are hesitant to prescribe because it's “not FDA approved for 5 years”, see next slide
- ▶ Esoteric experiences



# Common meds used “off-label” – NOT FDA APPROVED!

- ▶ Misoprostol for cervical ripening or labor induction
- ▶ Gabapentin for diabetic neuropathy or peripheral neuropathy
- ▶ Betamethasone for lung maturation of premature fetus
- ▶ Magnesium sulfate for prevention of eclampsia
- ▶ Colchicine for acute pericarditis
- ▶ Propranolol for performance anxiety, essential tremor, or migraine prophylaxis
- ▶ Prazosin for nightmares



# LARC # 2 – IUD - Copper

- ▶ Brand name = Paragard
- ▶ Mechanisms of action:
  - ▶ Copper ions released by IUD are toxic to sperm and do not allow fertilization
  - ▶ Ovulation is maintained
- ▶ FDA approved for 10 years but post-approval data establishes equivalent efficacy for 12 years, even up to 16 years in one study.
- ▶ Failure rate = 0.3% per year (1 in 333 women)
- ▶ Main side effects= heavier (71%), longer (41%), more painful (63%) periods, especially in 1<sup>st</sup> 6 months of use. Rates are similar to Lng IUD at 6mo of use.
  - ▶ Discontinuation rate at 6mo of use = 6% (one in 16 women)
- ▶ Benefits= no hormones, longest life span of any device
- ▶ Effects on weight: average weight gain over 3 yrs of use = 2lbs.



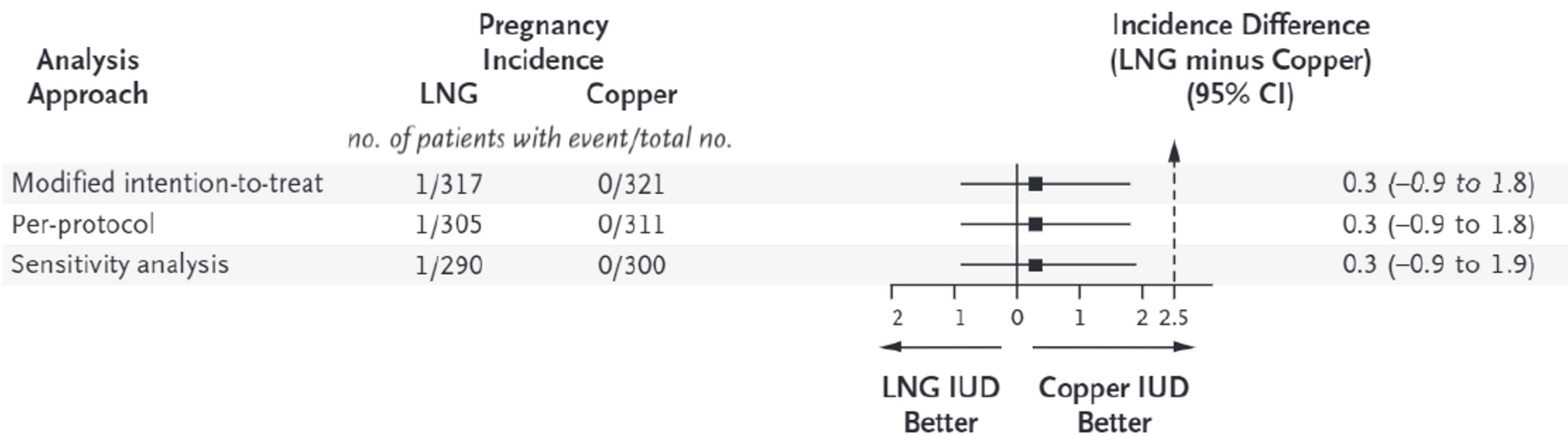
# LARC # 3 – Levonorgestrel IUD (52mg)

- ▶ Brand names = Mirena, Liletta
  - ▶ Other, smaller Lng IUDs (Skyla, Kyleena) w/ less hormones, shorter duration not covered here
- ▶ Mechanisms of action:
  - ▶ Enhanced inflammatory response toxic to sperm
  - ▶ Changes to cervical mucus (thickened)
  - ▶ Suppressed endometrial activity
  - ▶ To lesser extent, suppression of ovulation (~50% of women still ovulate)
- ▶ FDA approved for 7 years as of August 2021! (originally was approved for 5 yrs)
- ▶ Failure rate = 0.22% per year (1 in 454 women)
- ▶ Main side effects = prolonged or frequent bleeding (4% prevalence at 12mo, 2.5% early discontinuation rate), amenorrhea (50%)
- ▶ Benefits= lighter bleeding, amenorrhea, effective for HMB/fibroids, treatment/prevention of endometrial hyperplasia, endometrial and ovarian CA
- ▶ Effects on weight: RCTs did not show weight gain



# Levonorgestrel IUD for emergency contraception

- ▶ Previously, only LARC available for emergency contraception was Copper IUD
- ▶ Article in NEJM, Jan 2021 – “Lng vs Copper IUD for Emergency Contraception”
- ▶ Single-Blinded Multi-site RCT in Utah. 711 patients w/ at least one episode of unprotected sex within 5 days randomized to Lng IUD or Copper IUD (1:1 ratio)
  - ▶ Effective randomization, ~27% obese patients
- ▶ Excellent follow up (92% of patients took pregnancy test 1mo later)
  - ▶ Those who didn't follow up had chart reviews to eval for pregnancy



**Figure 2. One-Month Pregnancy Outcomes with the Levonorgestrel 52-mg IUD versus the Copper T380A IUD, According to Type of Analysis.**

The primary outcome, a positive urine pregnancy test 1 month after IUD insertion, was designed to test the efficacy of the levonorgestrel (LNG) 52-mg IUD and copper T380 IUD for emergency contraception. Forty-eight participants did not provide urine pregnancy tests and had their pregnancy outcomes reported by survey and health record data. The modified intention-to-treat analysis includes all participants receiving an IUD who reported the 1-month pregnancy outcome by any method. The per-protocol analysis includes only participants who were still using the IUD to which they were randomly assigned when the 1-month pregnancy outcome was reported. The sensitivity analysis includes only participants with the 1-month pregnancy outcome confirmed by a urine pregnancy test. The Miettinen–Nurminen method was used to compute the two-sided 95% confidence interval around the proportion difference to test noninferiority.



# Take Home points – Lng IUD for emergency contraception


- ▶ Mirena was established to be non-inferior to Copper IUD for emergency contraception within 5 days of unprotected sex
- ▶ Failure rate of 0.3% in this study significantly outperforms oral levonorgestrel and ulipristal efficacy rates
- ▶ Around 27% of IUD recipients were obese. Given data regarding decreased efficacy of levonorgestrel and ulipristal for emergency contraception in patients with obesity, these patients now have another effective option for emergency contraception
- ▶ Anticipatory counseling: if pregnancy occurs, patients should present immediately to care for removal of IUD if strings visible (administer azithromycin 500mg at time of removal due to increased risk of infection)
  - ▶ Chorio ~4%
  - ▶ Miscarriage ~50% (may be as low as 20% if IUD removed)
  - ▶ Preterm birth ~14% (compared with 7% of control pregnancies), often a/w abruption



# Contraindications to insertion of IUDs

- ▶ Very few
- ▶ Active infection (PID, cervicitis)
  - ▶ If patient develops infection while IUD is in place, it is NOT necessary to remove device. Treatment has similar outcomes.
- ▶ Severely distorted uterine cavity
  - ▶ Difficult placement and risk of expulsion
- ▶ Pregnancy
- ▶ Breast Cancer (Lng IUD)- not absolute
- ▶ Wilson's disease (Copper IUD)



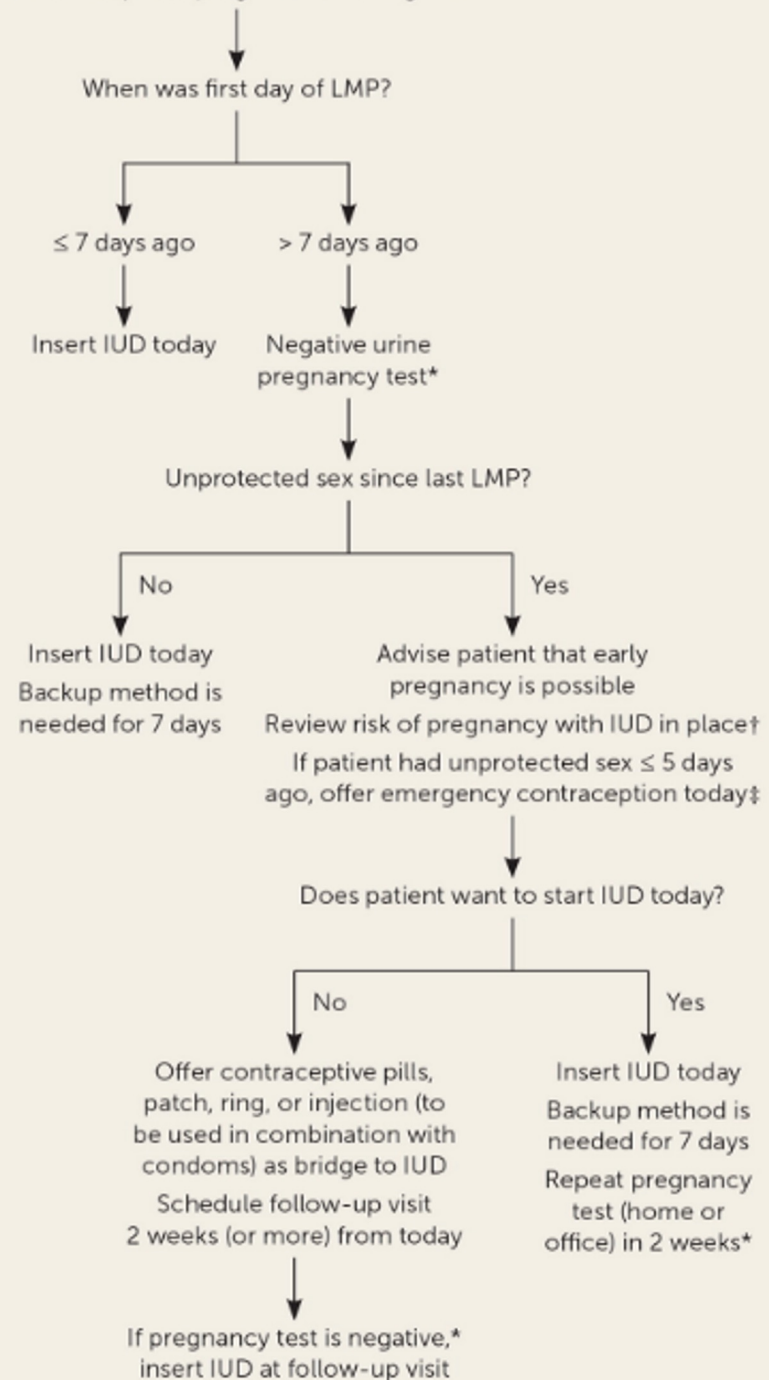


What if my patient desires hormonal contraception but has had intercourse since last menstrual period?

- ▶ Reference Quick Start Algorithms available AAFP app



Patient requests progestin-releasing IUD



Patient requests new birth control method: pill, patch, ring, injection, or implant



Citation:

Initiating Hormonal Contraception.  
Lesnewski. *Am Fam Physician.* 2021 Mar 1;103(5):291-300.



# What if I still get pregnant after starting Nexplanon, OCPs or other hormonal contraception, or am pregnant at time of initiation?

- ▶ There is no known harm to an early pregnancy from contraceptive hormones
- ▶ BMJ article 2016: examined 880,694 births in Danish women who had been taking OCPs shortly prior to conception, at time of conception or in early pregnancy; no differences in birth defects or adverse fetal outcome
- ▶ Ectopic- overall risk lower with IUD given lower pregnancy rates, however with contraceptive failure risk for ectopic high, 1 in 2 with LNG IUD and 1 in 16 with copper IUD, based on older studies (2002 , 2014)



# Depot Medroxyprogesterone Acetate (DMPA)

- ▶ Brand Name = Depo Provera. Aka the contraceptive injection, or “pregnancy vaccine”
- ▶ Mechanism = prevention of ovulation, changes to cervical mucus
- ▶ Effectiveness
  - ▶ Perfect use (on time injections every time) = 0.24% (1 in 416 women)
  - ▶ Typical use (missed or late injections) = 6% (1 in 17 women)
- ▶ Main side effects = unscheduled bleeding (57% at one year, 32 % at two years), amenorrhea (50% at 1 yr), weight gain (data mixed, up to 6 lbs over 10 yrs, most studies say <5lbs), bone density (see next slide)
- ▶ Benefits = cost, no need for procedure to start or discontinue, may be least intimidating method other than OCPs
- ▶ Can take up to 1yr to get pregnant after discontinuing



# DPMA effect on bone density

- ▶ Concerns over decreased bone density in women who use DPMA injections have led to concerns over long term use, FDA “black box” warning in 2004
- ▶ Decrease in bone density is mild and similar to the decrease in bone density seen during pregnancy (2 to 8% loss in bone density)
- ▶ Most of bone density loss occurs in first 1-2 years of use, then plateaus
- ▶ Changes appear to reverse after discontinuation of injections
- ▶ Retrospective studies examining fracture risk pre- and post-DPMA use show that fracture risk is not increased during use



# DPMA effect on bone density - Counseling

- ▶ Should counsel patients on black box warning but that it is based on weak data and there is likely no increased fracture risk
- ▶ ACOG: “The effect of DMPA on BMD and potential fracture risk should not prevent practitioners from prescribing DMPA or continuing use beyond 2 years”
  - ▶ Individualized counseling for women at higher risk (eg chronic steroid use, renal disease, malabsorptive conditions) risks still often exceed benefits
- ▶ Advise adequate Ca and Vit D intake, weight bearing exercise, smoking cessation
- ▶ Extended use is NOT an indication for DEXA scan
- ▶ Counsel on and offer other contraceptives including LARC



# Combined OCPs

- ▶ MOA: ovulation suppression via progesterone primarily. Estrogen does add some effectiveness
- ▶ ~90-93% effective (1 in 10-14 women get pregnant each year)
- ▶ Estrogen component = usually ethinyl estradiol
  - ▶ Ranges from 10 mcg to 50mcg daily
- ▶ Progesterone component (various)
  - ▶ Vary in their androgenicity
  - ▶ Levonorgestrel = longest acting, consider for heavy menstrual bleeding
  - ▶ Drospirinone = spironolactone analog, best for acne



# Medical indications / Benefits of OCPs

- ▶ Endometriosis
  - ▶ prevention of ovulation, improves pain
  - ▶ Before or after surgery
- ▶ Heavy menstrual bleeding (HMB) or dysmenorrhea
- ▶ PCOS or oligomenorrhea
- ▶ PMS/PMDD



# Medical indications / Benefits of OCPs

- ▶ Acne
  - ▶ Delayed impact; can take up to 6mo to work
  - ▶ Induces hepatic production of sex hormone binding globulin which binds to testosterone
  - ▶ Reduces ovarian production of androgens
  - ▶ Drospirinone is best
- ▶ Functional ovarian cysts (eg hemorrhagic cysts)
  - ▶ Extended cycle is best
- ▶ Prevention of cancer
  - ▶ Reduction in ovarian cancer (~50%)
  - ▶ Reduction in endometrial (~30%)
  - ▶ Reduction in colon cancer (~15-30%)



# Risks of combined OCPs

- ▶ DVT / PE
  - ▶ Dose dependent effect of estrogen
  - ▶ Absolute risk is low in young healthy individuals
  - ▶ Consider concurrent risk factors, i.e. tobacco use, obesity
- ▶ MI / Stroke
  - ▶ Absolute risk is very low in young healthy individuals
  - ▶ Increases in women with cardiovascular risk factors
    - ▶ Look at CDC MEC



# Combined OCPs

- ▶ Usually prescribed as 21 days w/ hormone pills, followed by 7 days of placebo
- ▶ No medical reason to use the placebo pills each month
- ▶ Monophasic = most common. 21/7, 24/4 (increased efficacy, less bleeding), extended cycle (84/7)
- ▶ Triphasic = 3 different doses of hormones at different points in the cycle, eg Ortho Tri-Cyclen tries to mimic physiology but not much evidence of benefit compared to monophasic.



# CDC Medical Eligibility Criteria

- ▶ Should always reference if there is any doubt about contraindications to estrogen therapy
- ▶ [https://www.cdc.gov/reproductivehealth/contraception/pdf/summary-chart-us-medical-eligibility-criteria\\_508tagged.pdf](https://www.cdc.gov/reproductivehealth/contraception/pdf/summary-chart-us-medical-eligibility-criteria_508tagged.pdf)
- ▶ Mainly cardiovascular risk factors (severe HTN, multiple ASCVD risk factors, hx of DVT/PE, hx of stroke, smokers >35yo)
- ▶ Migraines w/ aura, severe liver disease (eg cirrhosis), bariatric surgery(pills)



# How to Rx

- ▶ Lowest dose possible of Estrogen
- ▶ Pick Progestin that is best suited to the patient (bleeding, acne, etc)
- ▶ Can be prescribed at any time in the cycle with respect to last menses as long as long as pt is not pregnant
  - ▶ Even if patient is pregnant, there are no known risks to the fetus of OCPs



# Troubleshooting breakthrough bleeding with cOCPs

- ▶ #1 = Ensure adequate adherence (missed pills, taking it late, etc can cause)
- ▶ #2 = Consider polyp, cervicitis, etc
- ▶ #3 = if they are on non-levonorgestrel pill (eg norethindrone or drospirinone), change to levonorgestrel as it is longest acting
- ▶ #4 = consider increase in estrogen dose if changing progestin is not effective



# Pearls

- ▶ If someone requests birth control, try to provide it during that visit, avoid rescheduling
- ▶ Intrapartum
  - ▶ Start discussing BC options in early third trimester, state requirements for tubal ligation
- ▶ Postpartum
  - ▶ Work with you hospital and OB providers to expand immediate PP options, injections, arm implant, IUDs, tubal ligation
  - ▶ Make solid attempt to get people in for postpartum visits for birth control, utilize support staff when available
- ▶ Vasectomies!!!
- ▶ Counsel all patients on what to expect with their BC choice ahead of time, i.e. irregular bleeding for 2-6mo, setting expectations is crucial
- ▶ Be aware of your state laws for medical emancipation of minors
- ▶ Always counsel on STI protection



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