More than Just a Pill

A Review and Update of Hormonal Contraception

Kara Markin, MD
Assistant Professor
Dept of Internal Medicine

University of Nebraska Medical Center

I have no financial disclosures or conflicts of interest.

Objectives

- ✓ Discuss the History of Contraception
- ✓ Review the Prescription of Contraception
- ✓ Evaluate Special Cases

"On average, U.S. women want to have two children. To accomplish that goal, a woman will spend close to three years pregnant, postpartum or attempting to become pregnant, and about three decades—more than three-quarters of her reproductive life—trying to avoid pregnancy."

- Adam Sonfield, Kinsey Hasstedt, Benson Gold
Moving Forward: Family Planning in the Era of Health Reform (2014)

1800 – 1500 BC

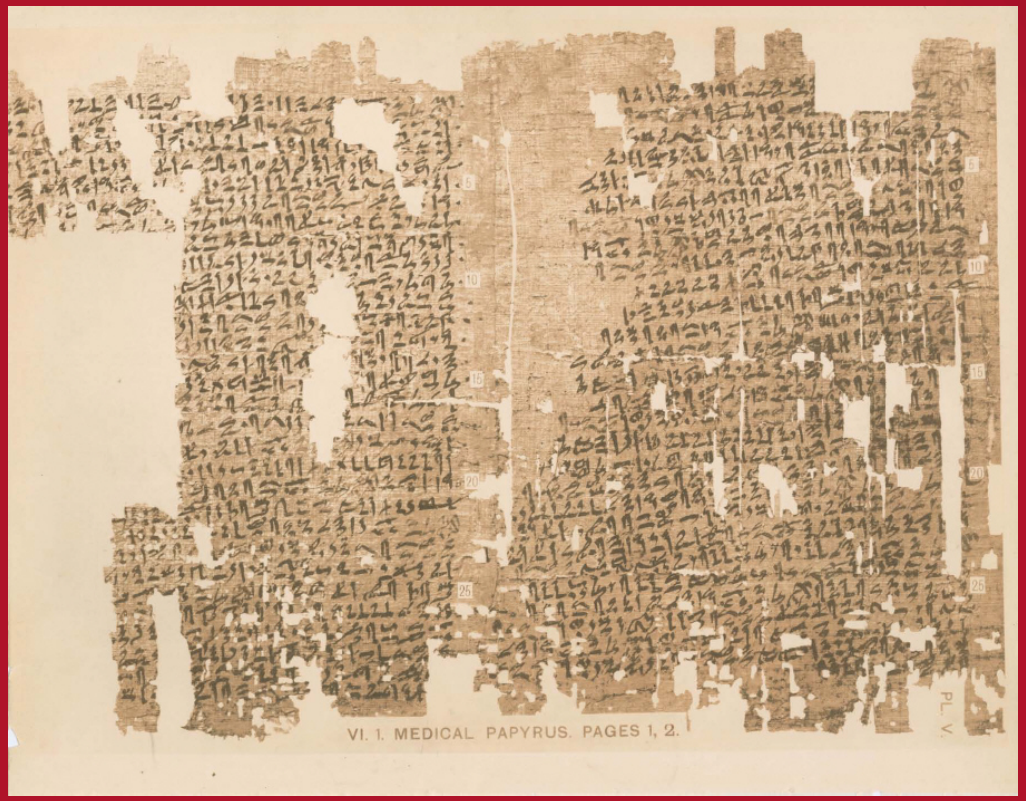


Image: https://commons.wikimedia.org/wiki/File:PKahun_VI1-12.jpg

600 BC

Image: https://www.atlasobscura.com/articles/silphium-seed-pod-heart-shape

350 BC

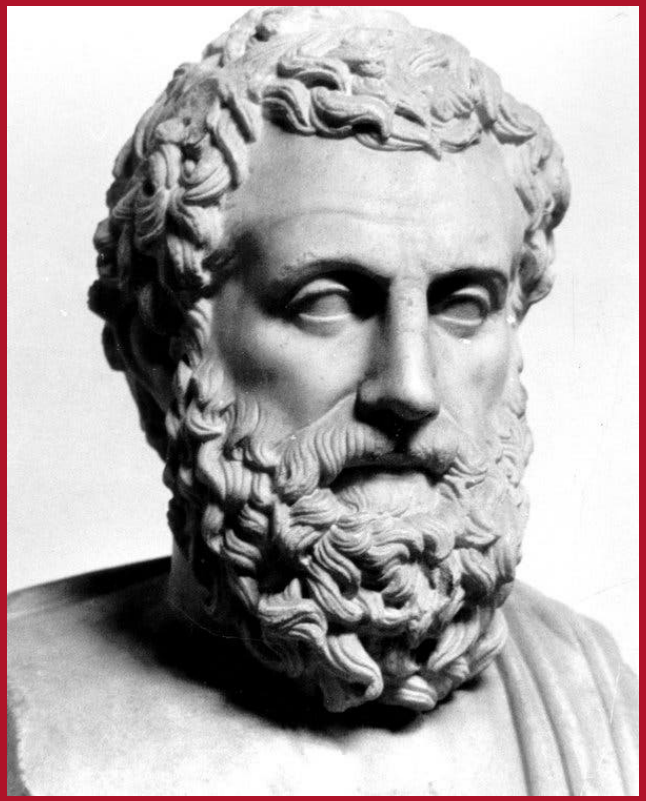


Image: https://www.nytimes.com/2016/05/27/world/europe/greece-aristotle-tomb.html

200 BC

Image: https://collection.sciencemuseumgroup.org.uk/objects/co88665/bronze-pessary-roman-200-bce-400-ce-pessary.

1600s AD

Image: https://www.historyundressed.com/2016/02/a-brief-history-of-condom-by-kathleen.html

1700s AD

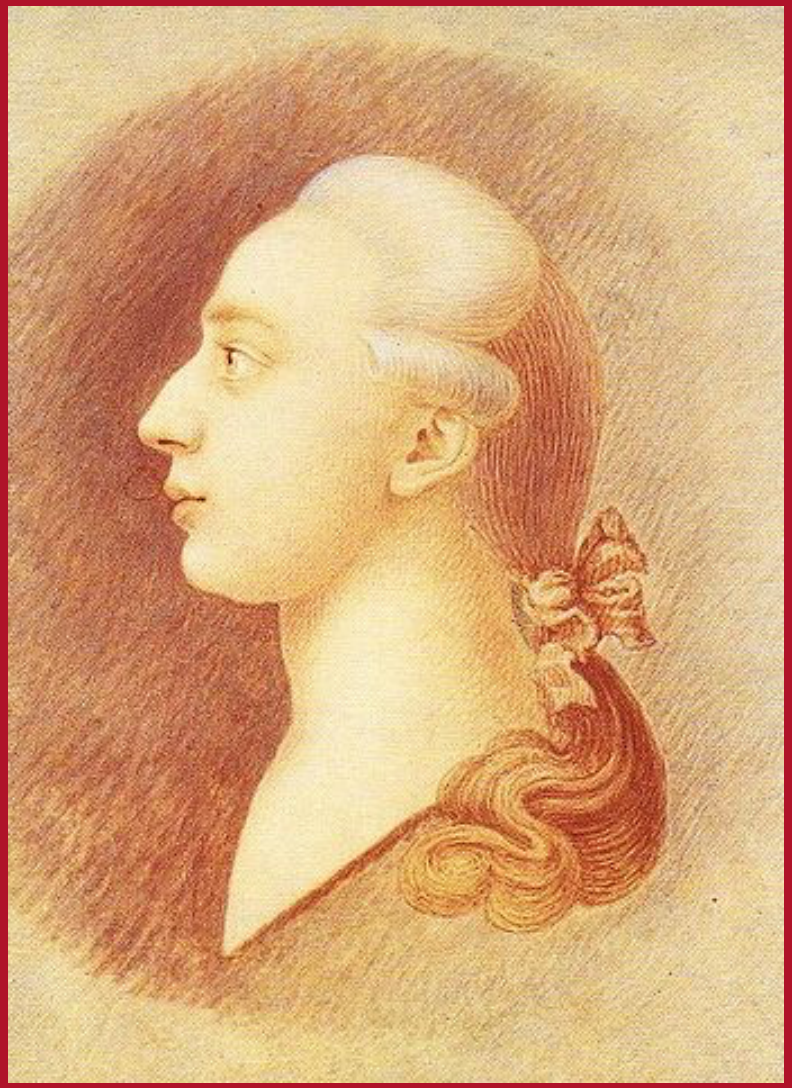


Image: https://commons.wikimedia.org/wiki/File:Casanova_ritratto.jpg

1800s AD

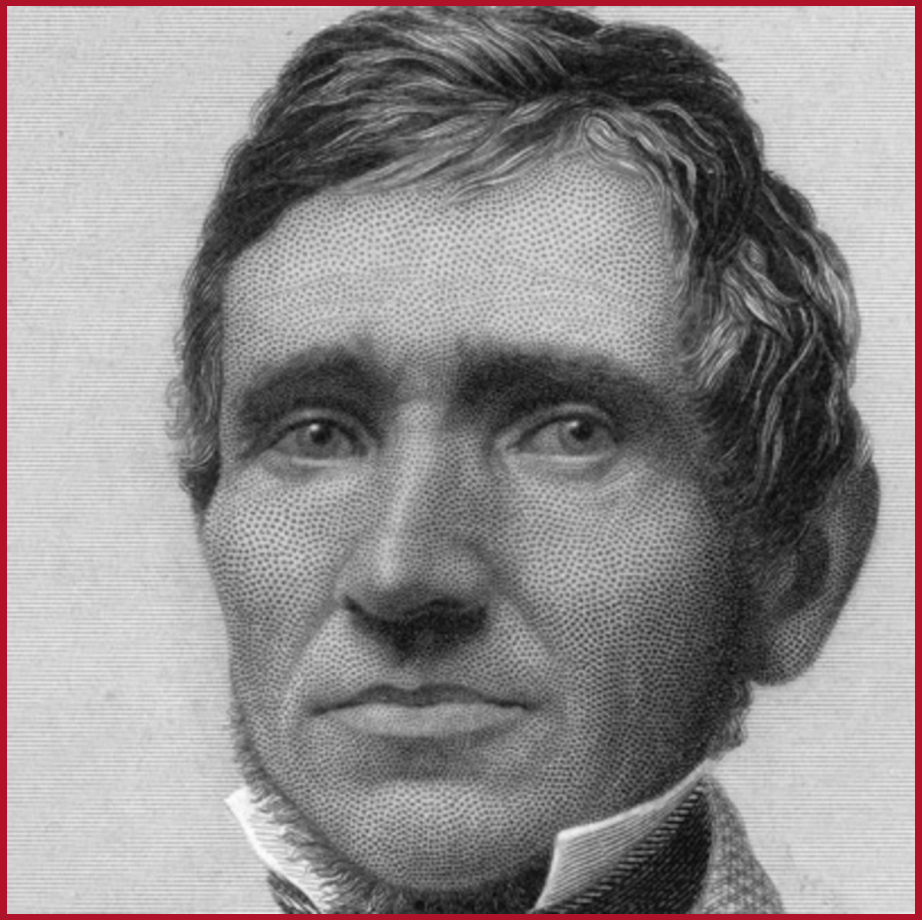
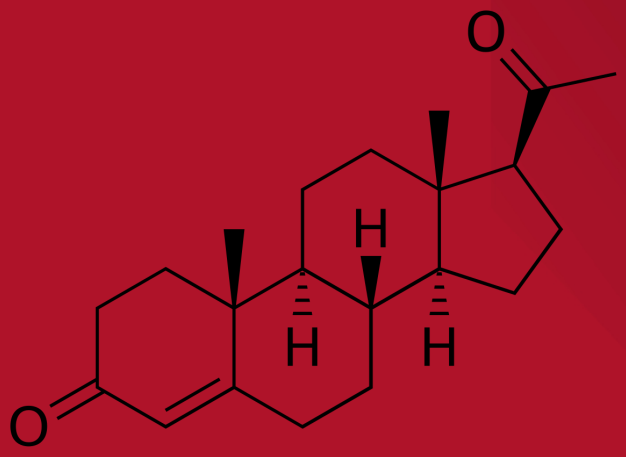


Image: https://www.biography.com/inventor/charles-goodyear

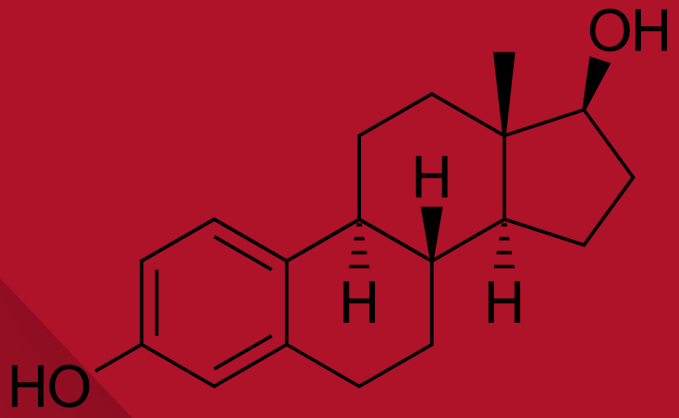
1800s AD

Image: https://collection.sciencemuseumgroup.org.uk/objects/co96315/wishbone-or-gold-spring-pessary-europe-1880-1936-intra-uterine-device

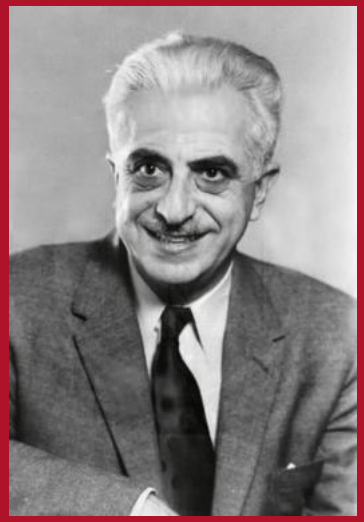
1900s AD

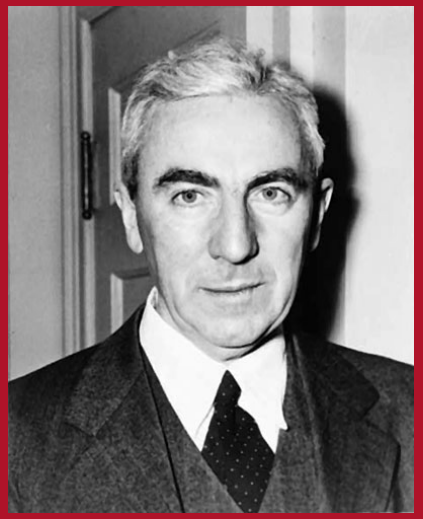


Progesterone



Estrogen





Images: https://en.wikipedia.org/wiki/Kyusaku_Ogino
https://en.wikipedia.org/wiki/File:Gregory_Pincus.jpg
https://embryology.med.unsw.edu.au/embryology/index.php/File:John_Rock.jpg

1950s AD

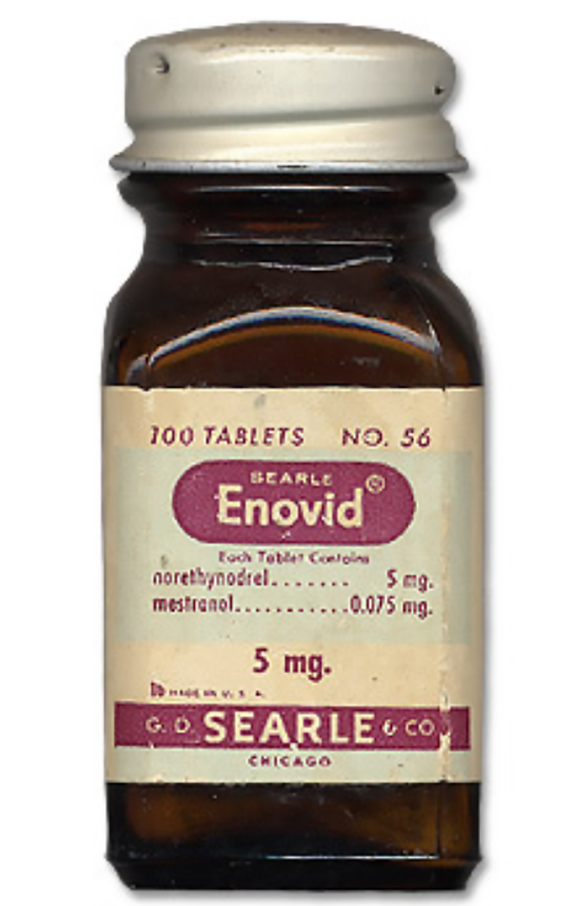
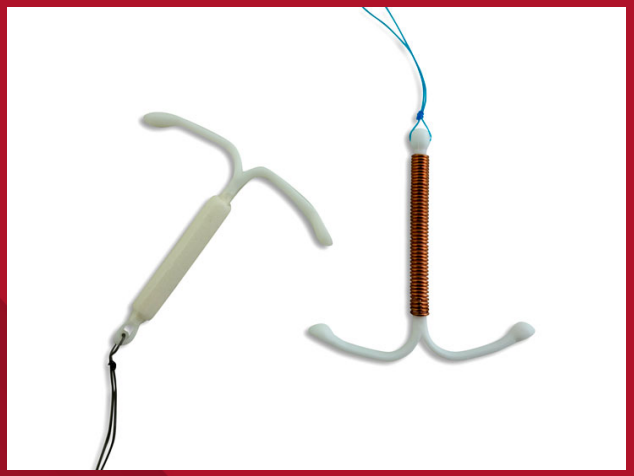


Image: https://www.pbs.org/wgbh/americanexperience/features/pill-gallery/

1990s-2000s AD



Images: see Citation

The Basics

EFFECTIVENESS OF FAMILY PLANNING METHODS*

*The percentages indicate the number out of every 100 women who experienced an unintended pregnancy within the first year of typical use of each contraceptive method.

MOST EFFECTIVE

Less than 1 pregnancy per 100 women in a year

6-12 pregnancies per 100 women in a year

18 or more pregnancies per 100 women in a year

LEAST EFFECTIVE

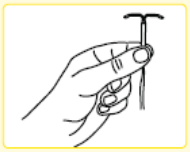
REVERSIBLE

Once in place, little or nothing to do or remember.

Implant

0.05%

Intrauterine Device (IUD)



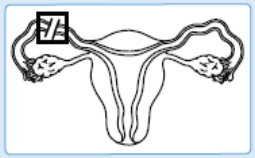
0.2% LNG

0.8% Copper T

PERMANENT STERILIZATION

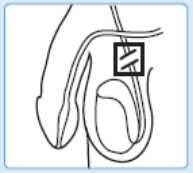
After procedure, little or nothing to do or remember.
Use another method for first 3 months (Hysteroscopic, Vasectomy).

Female (Abdominal, Laparoscopic, and Hysteroscopic)



0.5%

Male (Vasectomy)

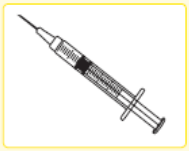


0.15%

REVERSIBLE

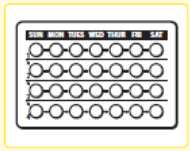
Get repeat injections on time. | *Take a pill each day.* | *Keep in place, change on time.* | *Use correctly every time you have sex.*

Injectable



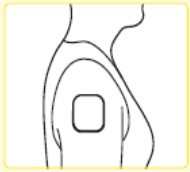
6%

Pill



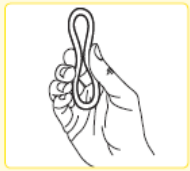
9%

Patch



9%

Ring



9%

Diaphragm

12%

REVERSIBLE

Use correctly every time you have sex.

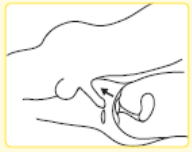
Male Condom

18%

Female Condom

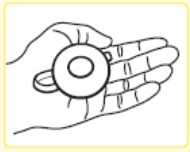
21%

Withdrawal



22%

Sponge



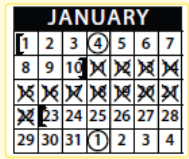
12% Nulliparous Women

24% Parous Women

Condoms should always be used to reduce the risk of sexually transmitted infections.

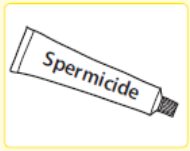
Fertility Awareness-Based Methods

Abstain or use condoms on fertile days.



24%

Spermicide



28%

Other Methods of Contraception: (1) **Lactational Amenorrhea Method (LAM):** is a highly effective, temporary method of contraception; and (2) **Emergency Contraception:** emergency contraceptive pills or a copper IUD after unprotected intercourse substantially reduces risk of pregnancy.

Adapted from World Health Organization (WHO) Department of Reproductive Health and Research, Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP). Knowledge for health project. Family planning: a global handbook for providers (2011 update). Baltimore, MD; Geneva, Switzerland: CCP and WHO; 2011; and Trussell J. Contraceptive failure in the United States. *Contraception* 2011;83:397–404.

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

Before starting…

- ✓ Reasonably certain not pregnant

Image: https://www.huffingtonpost.ca/2017/01/27/predictor-pregnancy-test-ad_n_14436948.html

How to Be Reasonably Certain That a Woman is Not Pregnant

A health-care provider can be reasonably certain that a woman is not pregnant if she has no symptoms or signs of pregnancy and meets any one of the following criteria:

- is ≤7 days after the start of normal menses
- has not had sexual intercourse since the start of last normal menses
- has been correctly and consistently using a reliable method of contraception
- is ≤7 days after spontaneous or induced abortion
- is within 4 weeks postpartum
- is fully or nearly fully breastfeeding (exclusively breastfeeding or the vast majority [≥85%] of feeds are breastfeeds), amenorrheic, and <6 months postpartum

Curtis et al. MMWR. 2016.

Before starting…

- ✓ Reasonably certain not pregnant
- ✓ Blood pressure
- ✓ History of blood clots
- ✓ Smoking status

~~Cervical cancer screening~~

~~STI screening~~

~~Pelvic Exam~~

Choosing Wisely®
CELEBRATING OUR 7TH YEAR
An initiative of the ABIM Foundation

American Academy of Family Physicians

View all recommendations from this society

Released September 24, 2013

Don't require a pelvic exam or other physical exam to prescribe oral contraceptive medications.

Back-Up Contraception:

If the start of a woman's period was >5 days ago, 7 days of abstinence or use of a back-up method of contraception are recommended.

Emergency Contraception

Unprotected sexual intercourse (UPSI)

TIME 00

HRS 72

Levonorgestrel
Maximum effect if taken within first 12 hours. Double dose in obese.

HRS 120

Ulipristal
Effectiveness may be reduced if the patient has been taking a progestogen.

Copper IUD
Is the most effective form of emergency contraception. Can be left in situ for up to ten years

STIs & Safeguarding

ALWAYS THINK

@RCEMLearning

Plan B®
(OTC)

ella®
(Prescription)

Paraguard®
(Prescription)

Beyond The Basics

Obesity
Hypertension
Hypercoaguability
Breast Disease

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

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

Condition	Sub-Condition	Cu-IUD		LNG-IUD		Implant		DMPA		POP		CHC	
		I	C	I	C	I	C	I	C	I	C	I	C
Age		Menarche to <20 yrs: **2**		Menarche to <20 yrs: **2**		Menarche to <18 yrs: **1**		Menarche to <18 yrs: **2**		Menarche to <18 yrs: **1**		Menarche to <40 yrs: **1**	
		≥20 yrs: **1**		≥20 yrs: **1**		18-45 yrs: **1**		18-45 yrs: **1**		18-45 yrs: **1**		≥40 yrs: **2**	
						>45 yrs: **1**		>45 yrs: **2**		>45 yrs: **1**			
Anatomical abnormalities	a) Distorted uterine cavity	**4**		**4**									
	b) Other abnormalities	**2**		**2**									
Anemias	a) Thalassemia	**2**		**1**		**1**		**1**		**1**		**1**	
	b) Sickle cell disease‡	**2**		**1**		**1**		**1**		**1**		**2**	
	c) Iron-deficiency anemia	**2**		**1**		**1**		**1**		**1**		**1**	
Benign ovarian tumors	(*including cysts*)	**1**		**1**		**1**		**1**		**1**		**1**	
Breast disease	a) Undiagnosed mass	**1**		**2**		**2***		**2***		**2***		**2***	
	b) Benign breast disease	**1**		**1**		**1**		**1**		**1**		**1**	
	c) Family history of cancer	**1**		**1**		**1**		**1**		**1**		**1**	
	d) Breast cancer‡												
	i) Current	**1**		**4**		**4**		**4**		**4**		**4**	
	ii) Past and no evidence of current disease for 5 years	**1**		**3**		**3**		**3**		**3**		**3**	
Breastfeeding	a) <21 days postpartum					**2***		**2***		**2***		**4***	
	b) 21 to <30 days postpartum												
	i) With other risk factors for VTE					**2***		**2***		**2***		**3***	
	ii) Without other risk factors for VTE					**2***		**2***		**2***		**3***	
	c) 30-42 days postpartum												
	i) With other risk factors for VTE					**1***		**1***		**1***		**3***	
	ii) Without other risk factors for VTE					**1***		**1***		**1***		**2***	
	d) >42 days postpartum					**1***		**1***		**1***		**2***	
Cervical cancer	Awaiting treatment	**4**	**2**	**4**	**2**	**2**		**2**		**1**		**2**	
Cervical ectropion		**1**		**1**		**1**		**1**		**1**		**1**	
Cervical intraepithelial neoplasia		**1**		**2**		**2**		**2**		**1**		**2**	
Cirrhosis	a) Mild (*compensated*)	**1**		**1**		**1**		**1**		**1**		**1**	
	b) Severe‡ (*decompensated*)	**1**		**3**		**3**		**3**		**3**		**4**	
Cystic fibrosis‡		**1***		**1***		**1***		**2***		**1***		**1***	
Deep venous thrombosis (DVT)/Pulmonary embolism (PE)	a) History of DVT/PE, not receiving anticoagulant therapy												
	i) Higher risk for recurrent DVT/PE	**1**		**2**		**2**		**2**		**2**		**4**	
	ii) Lower risk for recurrent DVT/PE	**1**		**2**		**2**		**2**		**2**		**3**	
	b) Acute DVT/PE	**2**		**2**		**2**		**2**		**2**		**4**	
	c) DVT/PE and established anticoagulant therapy for at least 3 months												
	i) Higher risk for recurrent DVT/PE	**2**		**2**		**2**		**2**		**2**		**4***	
	ii) Lower risk for recurrent DVT/PE	**2**		**2**		**2**		**2**		**2**		**3***	
	d) Family history (*first-degree relatives*)	**1**		**1**		**1**		**1**		**1**		**2**	
	e) Major surgery												
	i) With prolonged immobilization	**1**		**2**		**2**		**2**		**2**		**4**	
	ii) Without prolonged immobilization	**1**		**1**		**1**		**1**		**1**		**2**	
	f) Minor surgery without immobilization	**1**		**1**		**1**		**1**		**1**		**1**	
Depressive disorders		**1***		**1***		**1***		**1***		**1***		**1***	

Condition	Sub-Condition	Cu-IUD		LNG-IUD		Implant		DMPA		POP		CHC	
		I	C	I	C	I	C	I	C	I	C	I	C
Diabetes	a) History of gestational disease	**1**		**1**		**1**		**1**		**1**		**1**	
	b) Nonvascular disease												
	i) Non-insulin dependent	**1**		**2**		**2**		**2**		**2**		**2**	
	ii) Insulin dependent	**1**		**2**		**2**		**2**		**2**		**2**	
	c) Nephropathy/retinopathy/neuropathy‡	**1**		**2**		**2**		**3**		**2**		**3/4***	
	d) Other vascular disease or diabetes of >20 years' duration‡	**1**		**2**		**2**		**3**		**2**		**3/4***	
Dysmenorrhea	Severe	**2**		**1**		**1**		**1**		**1**		**1**	
Endometrial cancer‡		**4**	**2**	**4**	**2**	**1**		**1**		**1**		**1**	
Endometrial hyperplasia		**1**		**1**		**1**		**1**		**1**		**1**	
Endometriosis		**2**		**1**		**1**		**1**		**1**		**1**	
Epilepsy†	(*see also Drug Interactions*)	**1**		**1**		**1***		**1***		**1***		**1***	
Gallbladder disease	a) Symptomatic												
	i) Treated by cholecystectomy	**1**		**2**		**2**		**2**		**2**		**2**	
	ii) Medically treated	**1**		**2**		**2**		**2**		**2**		**3**	
	iii) Current	**1**		**2**		**2**		**2**		**2**		**3**	
	b) Asymptomatic	**1**		**2**		**2**		**2**		**2**		**2**	
Gestational trophoblastic disease‡	a) Suspected GTD (immediate postevacuation)												
	i) Uterine size first trimester	**1***		**1***		**1***		**1***		**1***		**1***	
	ii) Uterine size second trimester	**2***		**2***		**1***		**1***		**1***		**1***	
	b) Confirmed GTD												
	i) Undetectable/non-pregnant ß-hCG levels	**1***	**1***	**1***	**1***	**1***		**1***		**1***		**1***	
	ii) Decreasing ß-hCG levels	**2***	**1***	**2***	**1***	**1***		**1***		**1***		**1***	
	iii) Persistently elevated ß-hCG levels or malignant disease, with no evidence or suspicion of intrauterine disease	**2***	**1***	**2***	**1***	**1***		**1***		**1***		**1***	
	iv) Persistently elevated ß-hCG levels or malignant disease, with evidence or suspicion of intrauterine disease	**4***	**2***	**4***	**2***	**1***		**1***		**1***		**1***	
Headaches	a) Nonmigraine (mild or severe)	**1**		**1**		**1**		**1**		**1**		**1***	
	b) Migraine												
	i) Without aura (includes menstrual migraine)	**1**		**1**		**1**		**1**		**1**		**2***	
	ii) With aura	**1**		**1**		**1**		**1**		**1**		**4***	
History of bariatric surgery‡	a) Restrictive procedures	**1**		**1**		**1**		**1**		**1**		**1**	
	b) Malabsorptive procedures	**1**		**1**		**1**		**1**		**3**		COCs: **3** P/R: **1**	
History of cholestasis	a) Pregnancy related	**1**		**1**		**1**		**1**		**1**		**2**	
	b) Past COC related	**1**		**2**		**2**		**2**		**2**		**3**	
History of high blood pressure during pregnancy		**1**		**1**		**1**		**1**		**1**		**2**	
History of Pelvic surgery		**1**		**1**		**1**		**1**		**1**		**1**	
HIV	a) High risk for HIV	**2**	**2**	**2**	**2**	**1**		**2***		**1**		**1**	
	b) HIV infection					**1***		**1***		**1***		**1***	
	i) Clinically well receiving ARV therapy	**1**	**1**	**1**	**1**	If on treatment, see Drug Interactions							
	ii) Not clinically well or not receiving ARV therapy‡	**2**	**1**	**2**	**1**	If on treatment, see Drug Interactions							

Key:

1 No restriction (method can be used)	**3** Theoretical or proven risks usually outweigh the advantages
2 Advantages generally outweigh theoretical or proven risks	**4** Unacceptable health risk (method not to be used)

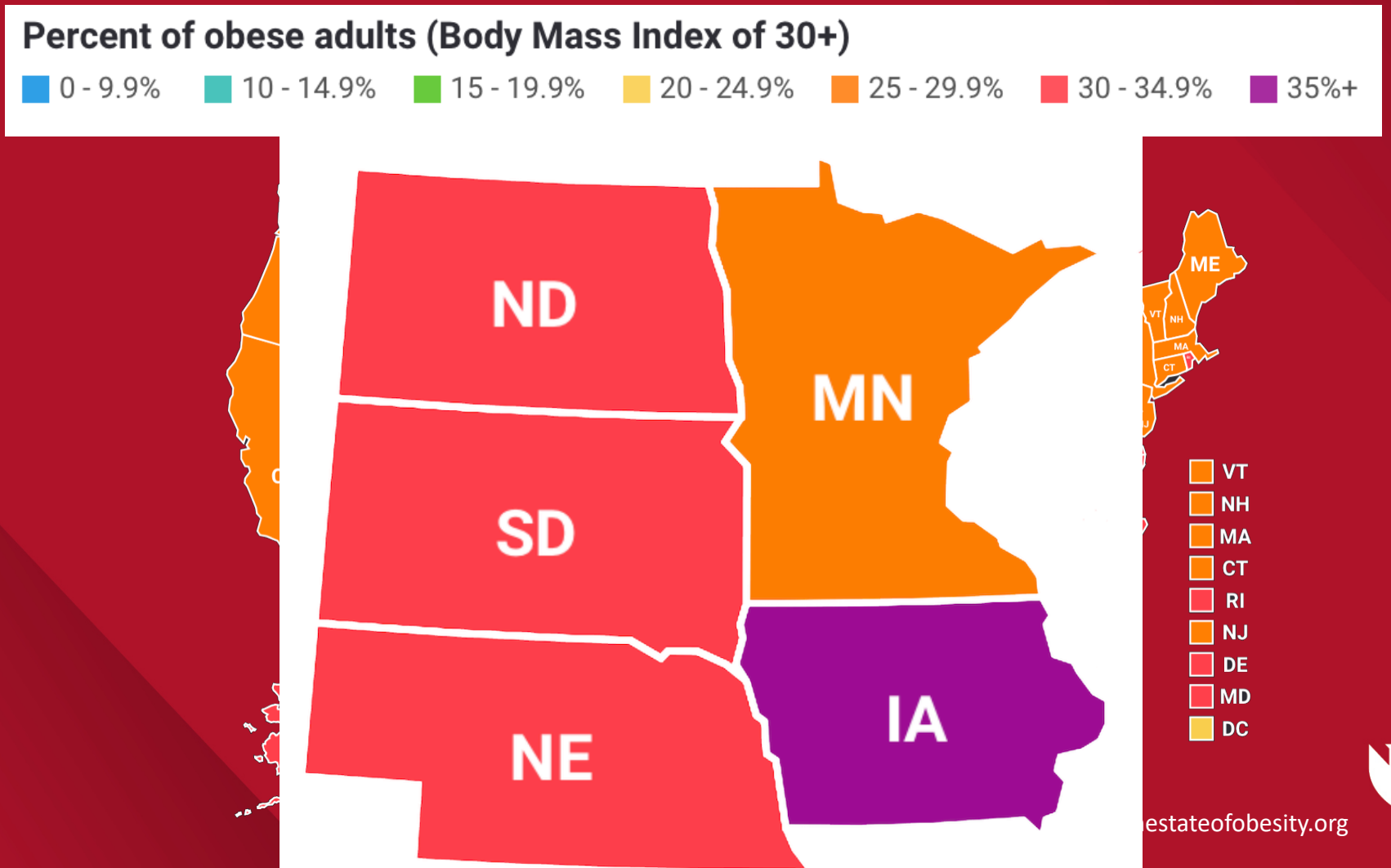
Abbreviations: C=continuation of contraceptive method; CHC=combined hormonal contraception (pill, patch, and, ring); COC=combined oral contraceptive; Cu-IUD=copper-containing intrauterine device; DMPA = depot medroxyprogesterone acetate; I=initiation of contraceptive method; LNG-IUD=levonorgestrel-releasing intrauterine device; NA=not applicable; POP=progestin-only pill; P/R=patch/ring ‡ Condition that exposes a woman to increased risk as a result of pregnancy. *Please see the complete guidance for a clarification to this classification: www.cdc.gov/reproductivehealth/unintendedpregnancy/USMEC.htm.

Condition	Sub-Condition	Cu-IUD		LNG-IUD		Implant		DMPA		POP		CHC	
		I	C	I	C	I	C	I	C	I	C	I	C
Diabetes	a) History of gestational disease	1		1		1		1		1		1	
	b) Nonvascular disease												
	i) Non-insulin dependent	1		2		2		2		2		2	
	ii) Insulin dependent	1		2		2		2		2		2	
	c) Nephropathy/retinopathy/neuropathy‡	1		2		2		3		2		3/4*	
	d) Other vascular disease or diabetes of >20 years' duration‡	1		2		2		3		2		3/4*	

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)

Obesity

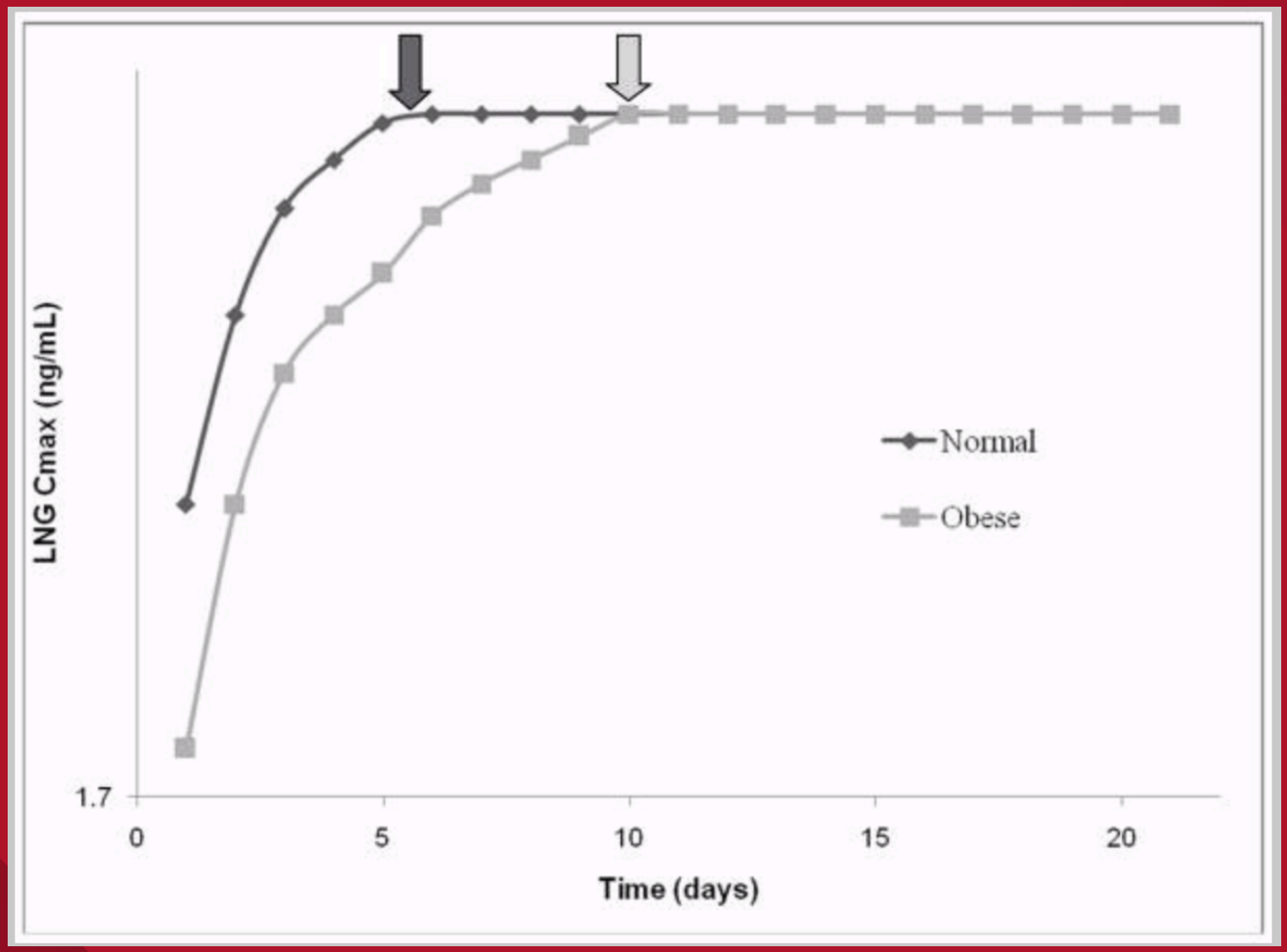
Adult Obesity Rate by State, 2017



estateofobesity.org

How does obesity affect contraceptive efficacy?

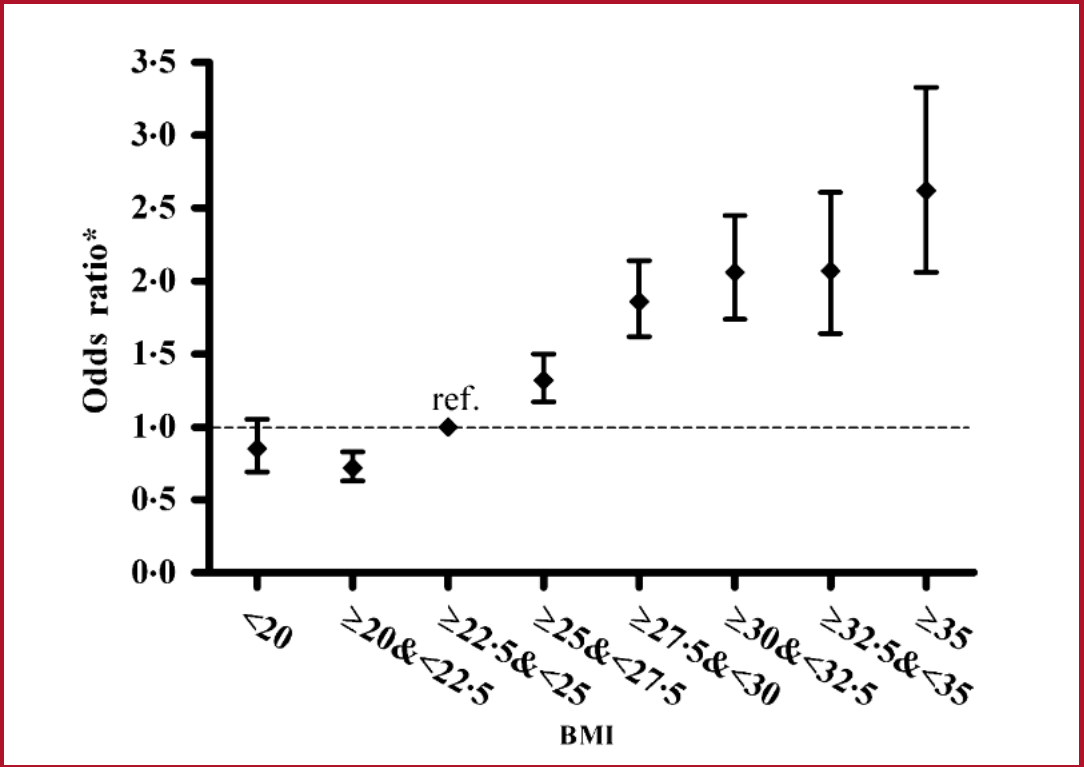
Calculated time to reach LNG steady state



Edelman et al. Contraception. 2009.

How much is the risk of blood clot increased in obese women on hormonal contraception?

Development of VTE by BMI



Pomp et al. BJH. 2007.

How much is the risk of blood clot increased in obese women on hormonal contraception?

Association of VTE by BMI and OC Use

BMI (kg/m^2)	OC use	Patients	Control subjects	OR*	95% CI
<25	No	51	167	1	
≥25 & <30	No	27	34	2·52	1·38–4·57
≥30	No	28	30	3·04	1·66–5·57
<25	Yes	260	233	4·15	2·85–6·03
≥25 & <30	Yes	178	55	11·63	7·46–18·14
≥30	Yes	132	19	23·78	13·35–42·34

During Pregnancy	4.6
Postpartum (to 12 weeks)	60.1

Pomp et al. BJH. 2007
Pomp et al. J Throm Haem. 2008

How does bariatric surgery change risk?

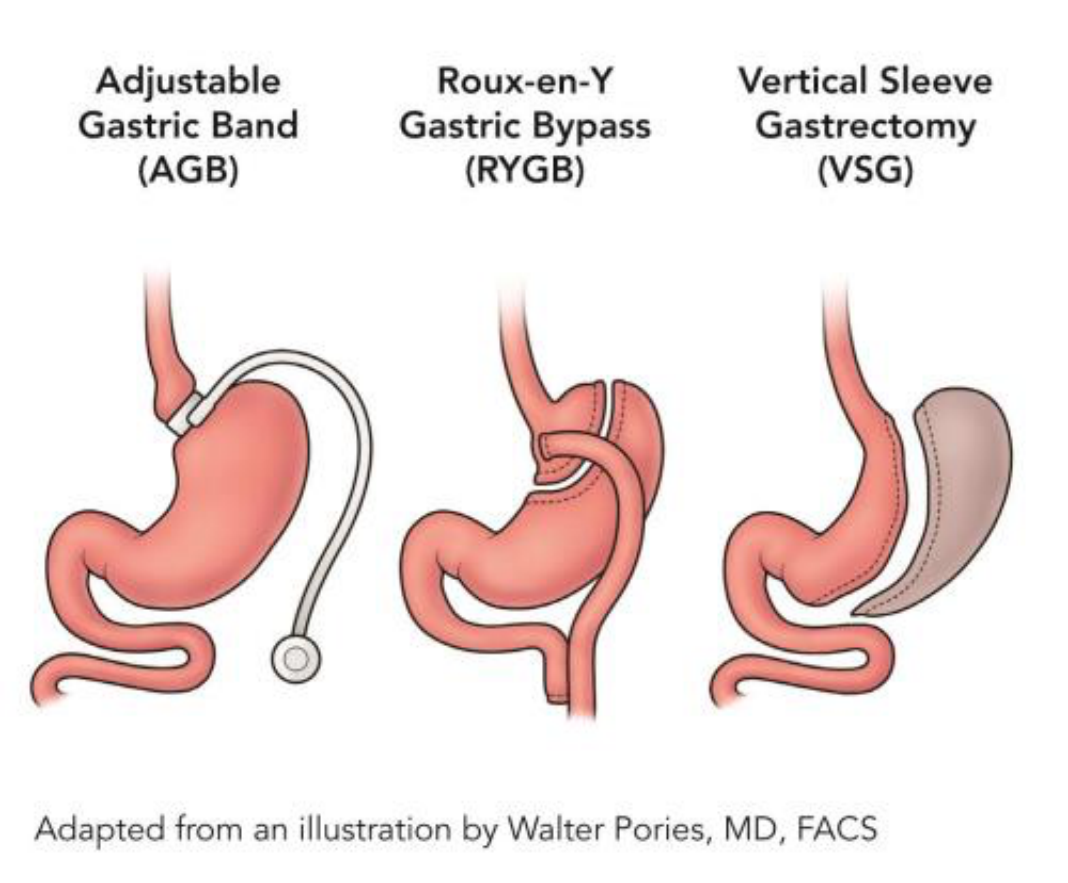


Image: https://markhochberg.files.wordpress.com/2016/06/bariatric-surgery.jpg

Obesity

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

	Cu-IUD	LNG-IUD	Implant	DMPA	POP	CHC
a) Body mass index (BMI) ≥30 kg/m^2	1	1	1	1	1	2

- ✓ All methods benefits > risk
- ✓ Extended or continuous cycle for methods with hormone-free interval
- ✓ Risk of VTE postpartum > contraception

Obesity

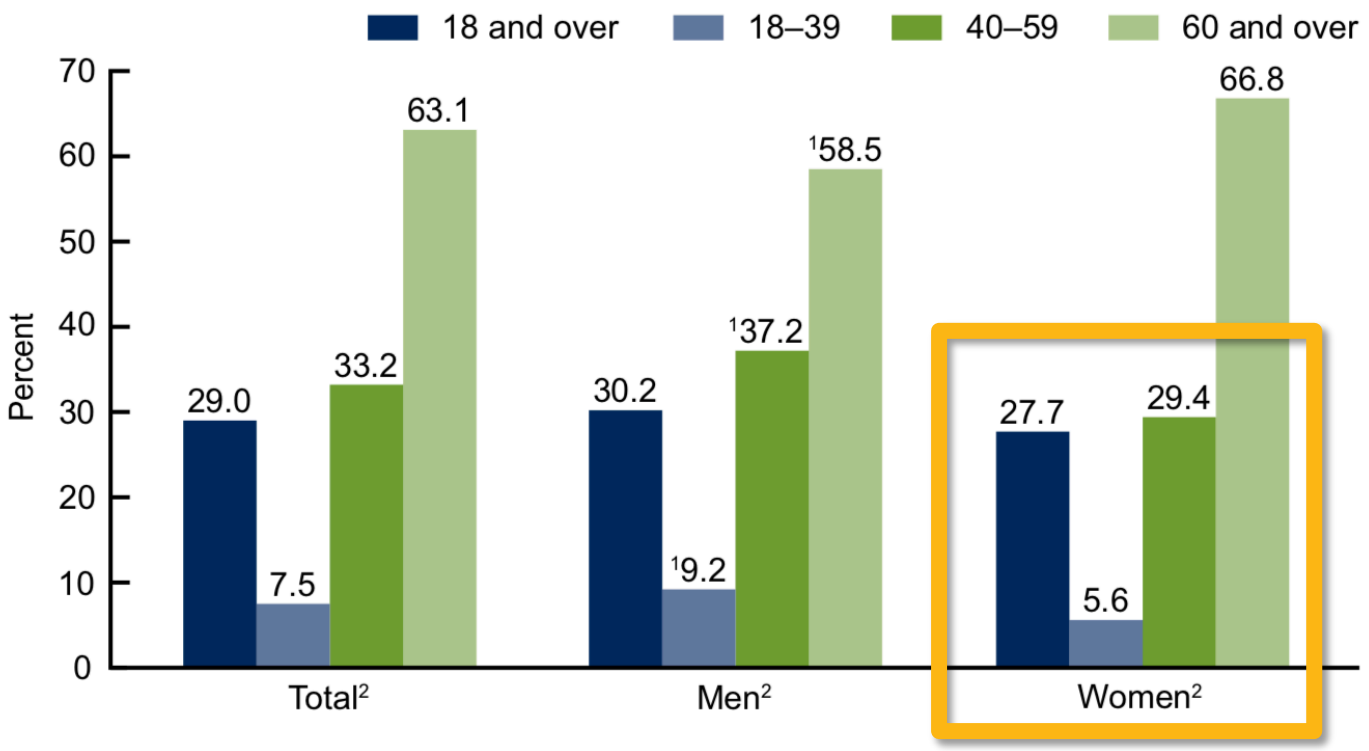
Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

	Cu-IUD	LNG-IUD	Implant	DMPA	POP	CHC
a) Restrictive procedures	1	1	1	1	1	1
b) Malabsorptive procedures	1	1	1	1	3	COCs: 3 P/R: 1

- ✓ Bariatrics: consider non-oral if malabsorptive procedure

Hypertension

Prevalence of hypertension among adults aged 18 and over by sex and age: United States 2016-2018

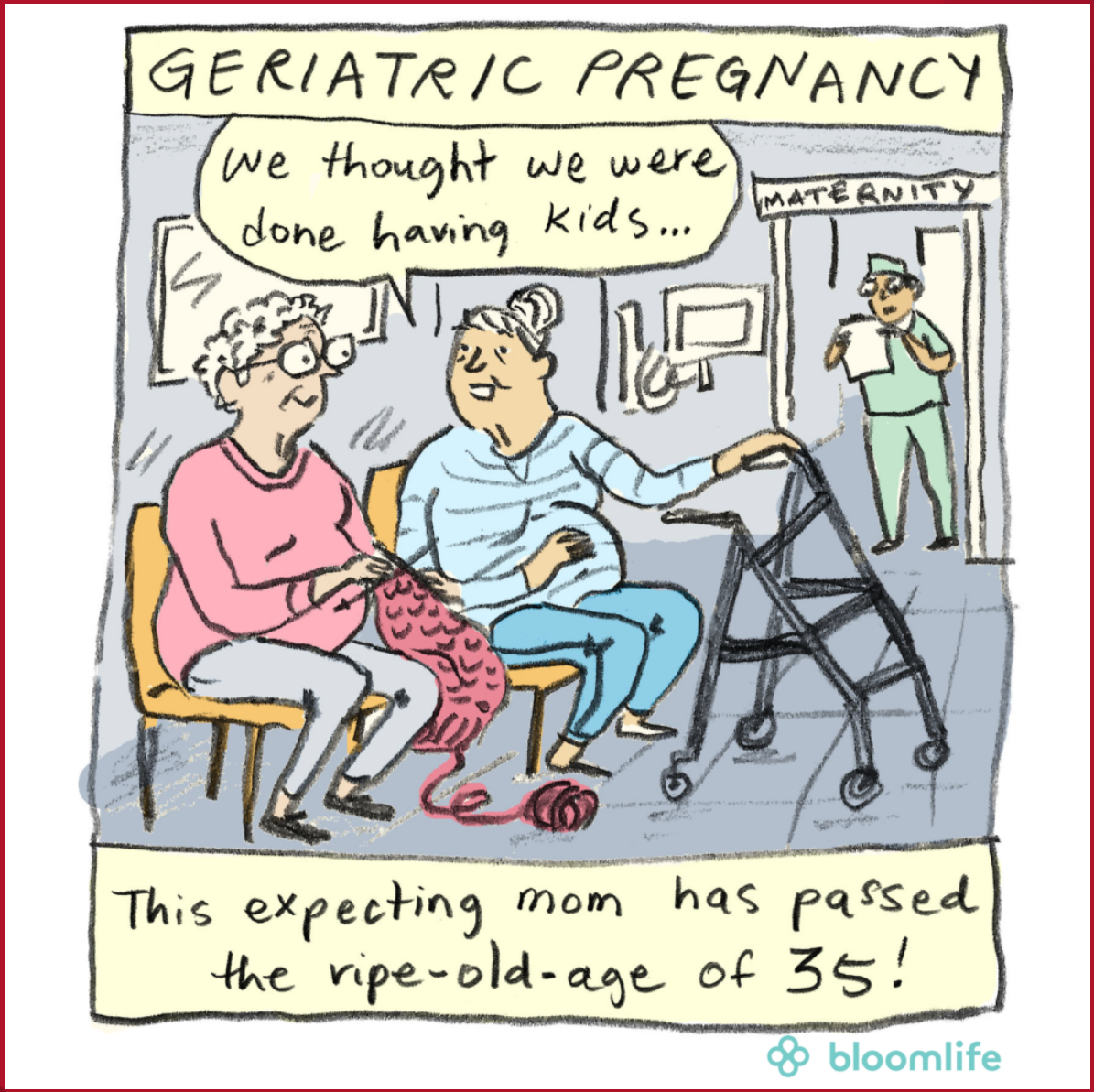


NCHS Data Brief No. 289, October 2017

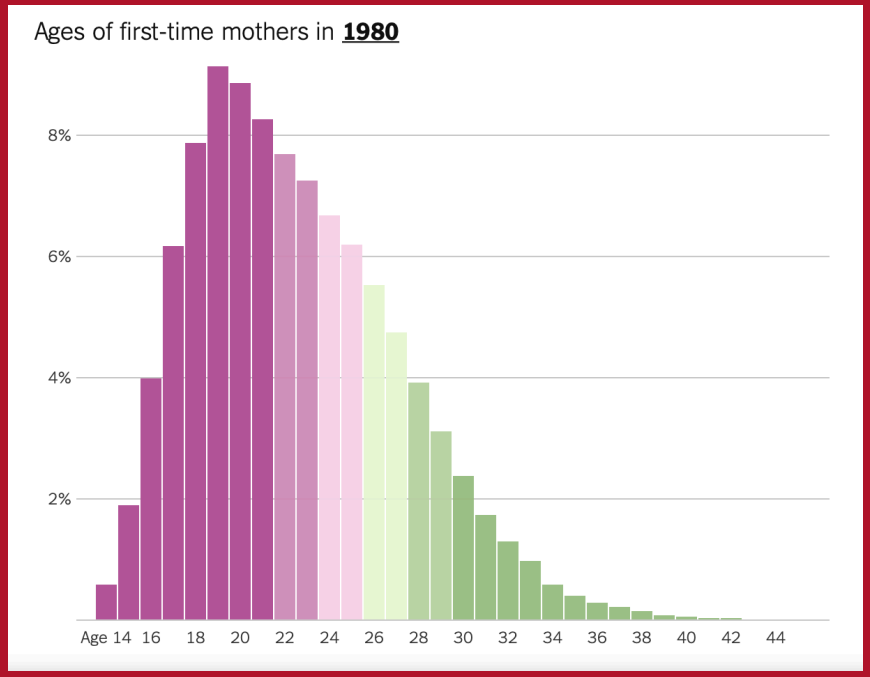
Hypertension

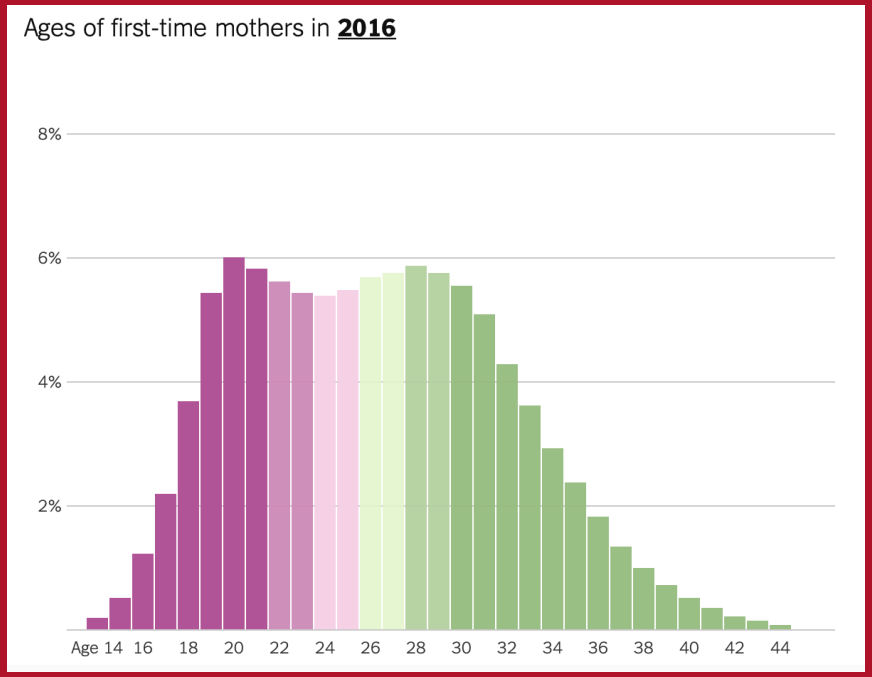
Risks of Hypertension during Pregnancy:

- Pre-eclampsia
- Fetal growth restriction
- Preterm delivery
- Placental abruption
- Delivery by C-section



https://bloomlife.com/preg-u/geriatric-pregnancy/





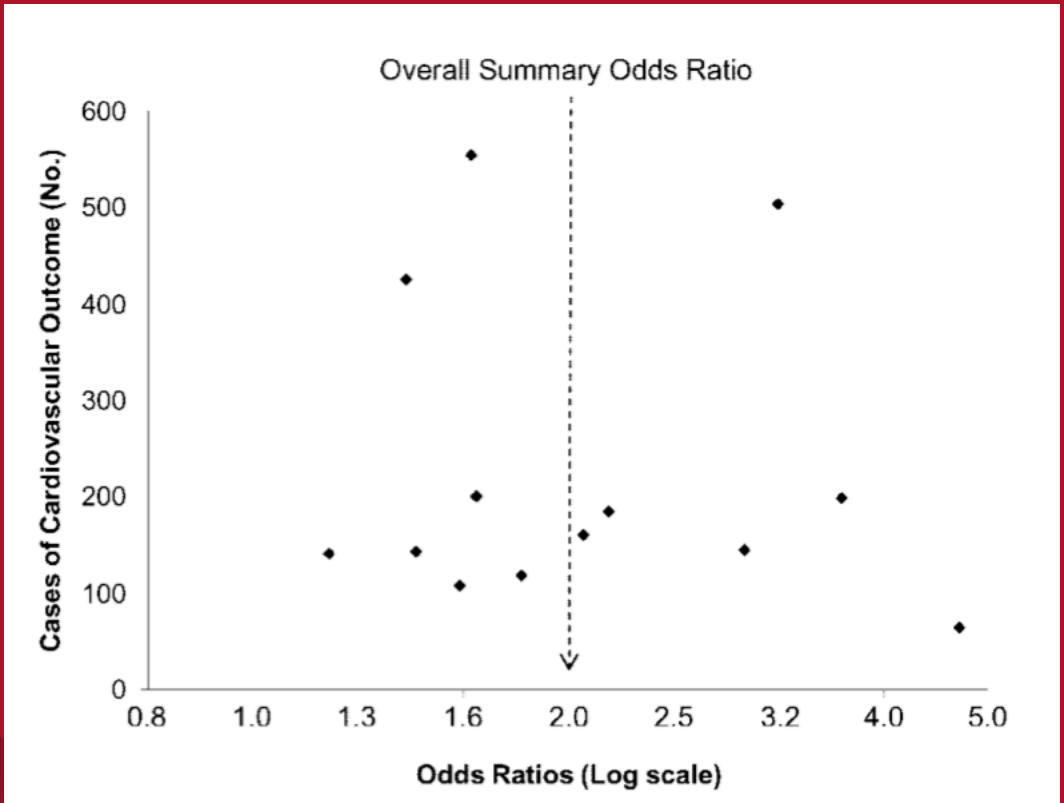
New York Times, 2018

To what extent does hormonal contraception affect blood pressure?

- ✓ 3 to 6mmHg systolic
- ✓ 2 to 5mmHg diastolic
- ✓ 5% of women
- ✓ Reversible

Woods. Hypertension. 1988.

To what extent does hormonal contraception affect cardiovascular health?



Myocardial Infarction

OR = 1.84

Ischemic Event

OR = 2.12

Baillargeon et al. J Clin Endocrinol Metab. 2005.

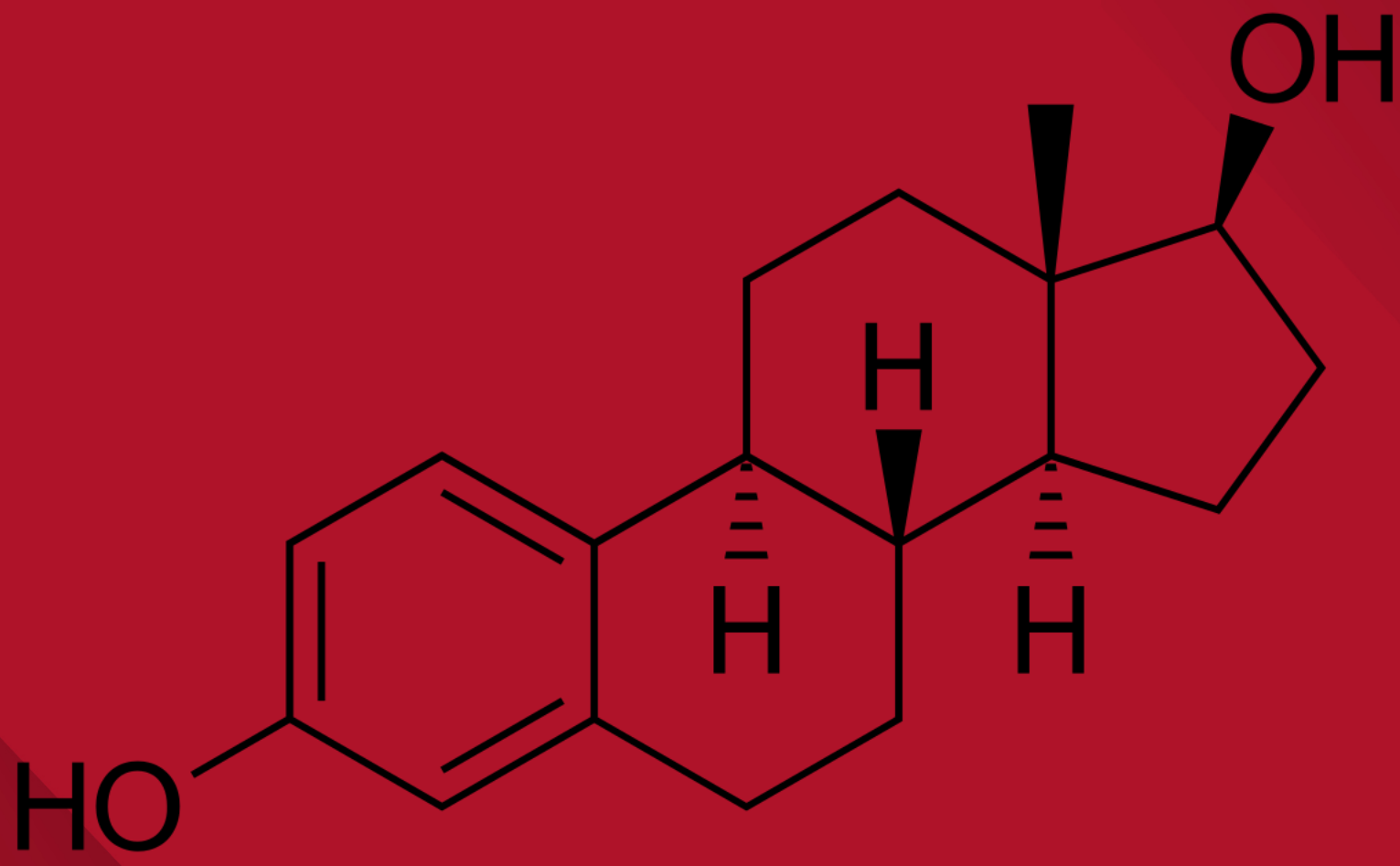
Hypertension

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

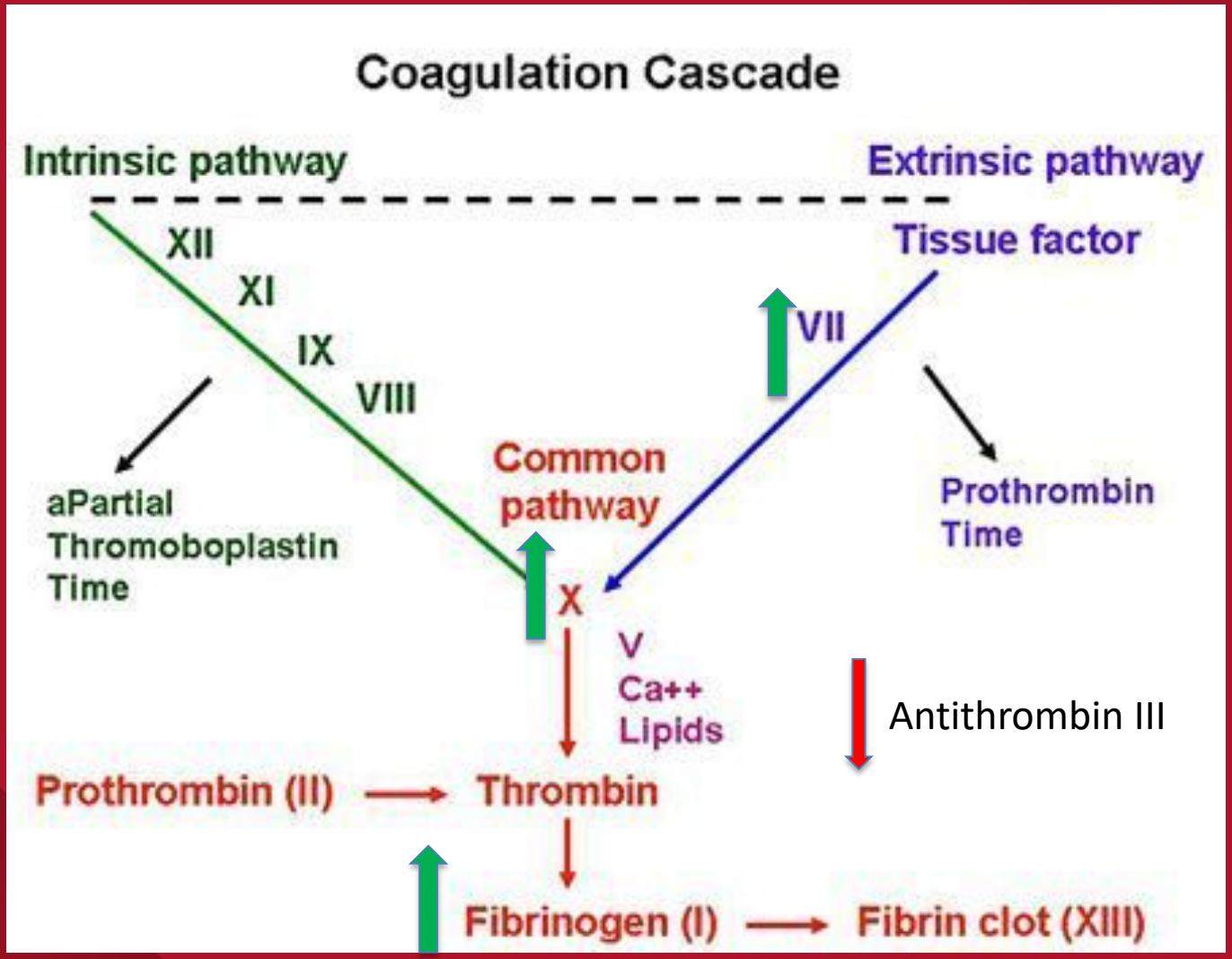
	Cu-IUD	LNG-IUD	Implant	DMPA	POP	CHC
a) Adequately controlled hypertension	1*	1*	1*	2*	1*	3*
b) Elevated blood pressure levels (*properly taken measurements*)						
i) Systolic 140-159 or diastolic 90-99	1*	1*	1*	2*	1*	3*
ii) Systolic ≥160 or diastolic ≥100‡	1*	2*	2*	3*	2*	4*
c) Vascular disease	1*	2*	2*	3*	2*	4*

- ✓ Avoid estrogen because it increases your CV risk
- ✓ Other CV Risks or uncontrolled HTN: also avoid DMPA (Depo)

Hypercoaguability



Hypercoaguability



How do I approach hormonal contraception with personal history of VTE?

- ✓ Non-hormonal or progestin-only are preferred in all cases
- ✓ Determine the risk of recurrence
  - Reversible cause? Immobilization, post-surgical state, pregnancy, obesity

ACOG Practice Bulletin No. 206

How do I approach hormonal contraception with family history of VTE?

- ✓ Unless the patient warrants further evaluation, no adjustments need to be made

- ✓ When to evaluate?
  - ✓ FH of VTE associated with inherited thrombophilia
  - ✓ Multiple 1st degree relatives with history of VTE at young age (<50)

ACOG Practice Bulletin No. 206

How do I approach hormonal contraception with known thrombogenic mutation?

Prevalence of inherited thrombophilia and associated VTE risk

Thrombophilia	Prevalence (%)		Relative risk of a first episode of VTE compared with controls
	General population	Individuals with VTE	
AT deficiency	0.02 to 0.2%	1 to 7%	16-fold increased
Protein C deficiency	0.2 to 0.5%	2 to 5%	7-fold increased
Protein S deficiency	Unknown	1%	5-fold increased
Factor V Leiden*	4 to 5%	12 to 18%	4- to 5-fold increased
Prothrombin G20210A*	2%	5 to 8%	3- to 4-fold increased

Bauer et al. UpToDate Graphic 108016. 2019.

What are the perioperative considerations surrounding hormonal contraception?

Aprepitant

Images: see Citation

Hypercoaguability

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

	Cu-IUD	LNG-IUD	Implant	DMPA	POP	CHC
a) History of DVT/PE, not receiving anticoagulant therapy						
i) Higher risk for recurrent DVT/PE	1	2	2	2	2	4
ii) Lower risk for recurrent DVT/PE	1	2	2	2	2	3
b) Acute DVT/PE	2	2	2	2	2	4
c) DVT/PE and established anticoagulant therapy for at least 3 months						
i) Higher risk for recurrent DVT/PE	2	2	2	2	2	4*
ii) Lower risk for recurrent DVT/PE	2	2	2	2	2	3*
d) Family history (*first-degree relatives*)	1	1	1	1	1	2

- ✓ Personal history: avoid estrogen
- ✓ Family history: estrogen OK

Hypercoaguability

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

	Cu-IUD	LNG-IUD	Implant	DMPA	POP	CHC
Known thrombogenic mutations‡	1*	2*	2*	2*	2*	4*
e) Major surgery						
i) With prolonged immobilization	1	2	2	2	2	4
ii) Without prolonged immobilization	1	1	1	1	1	2
f) Minor surgery without immobilization	1	1	1	1	1	1

- ✓ Known thrombogenic mutation: avoid estrogen
- ✓ Major surgery: avoid estrogen if prolonged immobilization. Stop OCP 4-6 weeks before surgery.

Breast Disease

* Cancer *

Everything else

Benign Breast Disease

- Non-proliferative (67%)
  - *RR progression to breast cancer 1.27*
- Proliferative without atypia (30%)
  - *RR progression to breast cancer 1.88*
- Proliferative with atypia (3%)
  - *RR progression to breast cancer 4.24*

Hartmann et al. NEJM. 2005

Does hormonal contraception cause breast cancer?

Duration of Use of Hormonal Contraceptive	Relative Risk of Breast Cancer (95% CI)		
	<1 Yr since Recent Use	1 to <5 Yr since Recent Use	5 to 10 Yr since Recent Use
<1 yr	0.96 (0.78–1.19)	0.96 (0.85–1.09)	1.01 (0.88–1.15)
1 to <5 yr	1.04 (0.88–1.23)	1.06 (0.96–1.18)	1.07 (0.94–1.20)
5 to 10 yr	1.33 (1.11–1.59)	1.16 (1.02–1.33)	1.30 (1.06–1.58)
>10 yr	1.52 (1.17–1.98)	1.16 (0.89–1.49)	NA†

Morch et al. NEJM. 2012

Benefits of hormonal contraception:

- ✓ **Decreased risk of**
  - Colorectal cancer (IRR 0.81)
  - Endometrial cancer (IRR 0.66)
  - Ovarian cancer (IRR 0.67)
  - Lymphatic & Hematopoietic cancer (IRR 0.76)

- ✓ **Treatment of irregular uterine bleeding**

- ✓ **Perimenopausal vasomotor symptom relief**

Iversen et al. Gynecology. 2017.

How do I approach hormonal contraception with increased risk of breast cancer?

No modification

- Family History of Breast Cancer …>20% lifetime risk?
- Benign Breast Disease …proliferative with atypia?

Silvera et al. Cancer Causes Control. 2005.
Milne et al. Cancer Epi Bio. 2005.
Rohan et al. Int Jour Cancer. 1999.

Breast Disease

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

	Cu-IUD	LNG-IUD	Implant	DMPA	POP	CHC
a) Undiagnosed mass	1	2	2*	2*	2*	2*
b) Benign breast disease	1	1	1	1	1	1
c) Family history of cancer	1	1	1	1	1	1
d) Breast cancer‡						
i) Current	1	4	4	4	4	4
ii) Past and no evidence of current disease for 5 years	1	3	3	3	3	3

- ✓ Breast Cancer: non-hormonal
- ✓ Family history: all OK*
- ✓ Benign disease: all OK*

Take Home Points

Obesity

- All are OK
- Extended / continuous for methods with hormone-free interval
- Bariatric patients may need non-oral

Hypertension

- Avoid estrogen, sometimes DMPA

Hypercoaguability

- Avoid estrogen in personal hx VTE or known mutation
- CHC OK in surgery unless prolonged immobilization expected

Breast Disease

- Ever cancer – nonhormonal
- Family history of breast cancer - all OK*
- Benign breast disease – all OK*

History of Contraception

1. Sonfield A, Hasstedt K, Gold RB. *Moving Forward: Family Planning in the Era of Health Reform,* New York: Guttmacher Institute, 2014.
2. https://commons.wikimedia.org/wiki/File:PKahun_VI1-12.jpg
3. https://www.atlasobscura.com/articles/silphium-seed-pod-heart-shape
4. https://www.nytimes.com/2016/05/27/world/europe/greece-aristotle-tomb.html
5. https://collection.sciencemuseumgroup.org.uk/objects/co88665/bronze-pessary-roman-200-bce-400-ce-pessary
6. https://www.historyundressed.com/2016/02/a-brief-history-of-condom-by-kathleen.html
7. https://commons.wikimedia.org/wiki/File:Casanova_ritratto.jpg
8. https://www.biography.com/inventor/charles-goodyear
9. https://collection.sciencemuseumgroup.org.uk/objects/co96315/wishbone-or-gold-spring-pessary-europe-1880-1936-intra-uterine-device
10. https://en.wikipedia.org/wiki/Kyusaku_Ogino
11. https://en.wikipedia.org/wiki/File:Gregory_Pincus.jpg
12. https://embryology.med.unsw.edu.au/embryology/index.php/File:John_Rock.jpg
13. https://www.pbs.org/wgbh/americanexperience/features/pill-gallery/
14. https://nypost.com/2018/11/27/popular-birth-control-implant-has-the-potential-to-go-missing-in-your-body/
15. https://www.verywellhealth.com/depo-provera-advantages-vs-disadvantages-906706
16. https://www.healthline.com/health/birth-control/mirena-paragard-skyla
17. https://www.womenshealthmag.com/health/a19930636/nuvaring/
18. https://kidshealth.org/en/teens/contraception-patch.html

The Basics

1. CDC. Effectiveness of Family Planning Methods. https://www.cdc.gov/reproductivehealth/UnintendedPregnancy/PDF/Family-Planning-Methods-2014.pdf. Accessed 9 Aug 2019.
2. https://www.huffingtonpost.ca/2017/01/27/predictor-pregnancy-test-ad_n_14436948.html
3. Curtis KM, Jatlaoui TC, Tepper NK, et al. U.S. Selected Practice Recommendations for Contraceptive Use, 2016. MMWR Recomm Rep 2016;65(No. RR-4):1-66.
4. CDC. Summary Chart of U.S. Medical Eligibility Criteria for Contraceptive Use. https://www.cdc.gov/reproductivehealth/contraception/pdf/summary-chart-us-medical-eligibility-criteria_508tagged.pdf. Accessed 9 Aug 2019.

Obesity

1. www.thestateofobesity.org
2. Simmons KB, Edelman AB. Hormonal Contraception and Obesity. Fertil Steril. 2016 Nov; 106(6):1282-1288.
3. Robinson JA, Burke AE. Obesity and hormonal contraceptive efficacy. Women's Health (Lond Engl). 2013 Sept;9(50): 453-466.
4. Lopez LM, Bernhole A, Chen M, Grey TW, Otterness C, Westhoff C, et al. Hormonal contraceptives for contraception in overweight or obese women. Cochrane Database of Systemic Reviews. 2016. CD008452.
5. Edelman AB, Cherala G, Munar MY, Dubois B, McInnis M, Stanczyk FZ, Jensen JT. Prolonged monitoring of ethinyl estradiol and levonorgestrel levels confirms an altered pharmacokinetic profile in obese oral contraceptive users. Contraception. 2013; 87(2): 220-226.
6. Edelman AB, Carlson NE, Cherala G, Munar MY, Stouffer RL, Cameron JL, Stanczyk FZ, Jensen JT. Impact of obesity on oral contraceptive pharmacokinetics and hypothalamic-pituitary-ovarian activity. Contraception. 2009; 80(2): 119-127.
7. Edelman AB, Cherala G, Munar MY, Dubois B, Mcinnis M, Stanczyk FZ, Jensen TT. Correcting oral contraceptive pharmacokinetic alterations duet to obesity: a randomized controlled trial. Contraception 2014;90:550-556.
8. Practice Committee of the American Society for Reproductive Medicine. Combined hormonal contraception and the risk of venous thromboembolism: a guideline. Fertil Steril. 2017;107(10): 43.
9. Pomp ER, le Cessie S, Rosendaal FR. Risk of venous thrombosis: obesity and its joint effect with oral contraceptive use and prothrombotic mutations. Br J Haematol. 2007; 139(2):289.
10. Pomp ER, Lenselink AM, Rosendaal FR, Doggen CJM. Pregnancy, the postpartum period and prothrombotic defects: risk of venous thrombosis in the MEGA study. J Thromb Haemost. 2008;6: 632–7.
11. American College of Obstetricians and Gynecologists. *Use of Hormonal Contraception in Women with Coexisting Medical Condition. ACOG Practice Bulletin No. 206.* Obstet Gynecol 2019;133(2):e128-150.

Hypertension

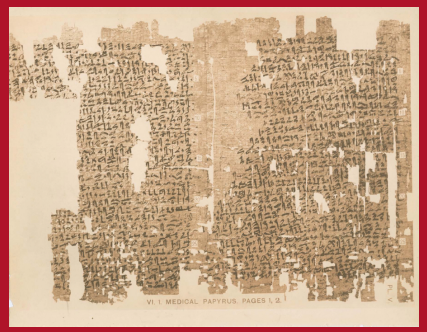
1. Fryar CD, Ostchega Y, Hales CM, Zhang G, Kruszon-Moran D. Hypertension prevalence and control among adults: United States, 2015–2016. NCHS data brief, no 289. Hyattsville, MD: National Center for Health Statistics. 2017.
2. Finer LB, Zolna MR. Unintended pregnancy in the United States: incidence and disparities, 2006. *Contraception*. 2011;84:478-485.
3. Bui Q, Miller CC. *The Age That Women Have Babies: How a Gap Divides America.* New York Times: 4 Aug 2018.
4. Woods JW. Oral contraceptives and hypertension. Hypertension. 1988 Mar;11(3 Pt 2):II11-5.
5. Baillargeon JP, McClish DK, Essah PA, Nestler JE. Association between the Current Use of Low-Dose Oral Contraceptives and Cardiovascular Arterial Disease: A Meta-Analysis. J Clin Endocrinol Metab 90: 3863–3870, 2005

Hypercoaguability

1. American College of Obstetricians and Gynecologists. *Use of Hormonal Contraception in Women with Coexisting Medical Condition. ACOG Practice Bulletin No. 206.* Obstet Gynecol 2019;133(2):e128-150.
2. Mohllajee AP, Curtis KM, Martins SL, Peterson HB. Does use of hormonal contraceptives among women with thrombotic mutations increase their risk of venous thromboembolism? A systemic review. Contraception 2006;73:166-78.
3. https://www.accessdata.fda.gov/drugsatfda_docs/label/2015/022225lbl.pdf

Breast Disease

1. Hartmann LC, Sellers TA, Frost MH, et al. Benign breast disease and the risk of breast cancer. N Engl J Med 2005; 353:229-237.
2. Mørch LS, Skovlund CW, Hannaford PC, Iversen L, Fielding S, Lidegaard Ø. Contemporary hormonal contraception and the risk of breast cancer. N Engl J Med 2017;377:2228-39.
3. Silvera SA, Miller AB, Rohan TE. Oral contraceptive use and risk of breast cancer among women with a family history of breast cancer: a prospective cohort study. Cancer Causes Control 2005; 16:1059-63.
4. Milne RL, Knight JA, John EM, et al. Oral contraceptive use and risk of early-onset breast cancer in carriers and non-carriers of BRCA1 and BRCA2 mutations. Cancer Epidemiol Biomarkers Prev 2005;14:350-6.
5. Vessey M, Yeates D. Oral contraceptives and benign breast disease: an update of findings in a large cohort study. Contraception. 2007; 76(6): 418-24.
6. Rohan TE, Miller AB. A cohort study of oral contraceptive use and risk of benign breast disease. Int Jour Cancer 1999; 82(2): 191-196.




1 cm


100 TABLETS NO. 56
SEARLE
Enovid
Each Tablet Contains
norethynodrel..... 5 mg.
mestranol.....0.075 mg.
5 mg.
G.D. SEARLE & CO.
CHICAGO


Predictor
When you need to know.


BIRTH CONTROL EFFECTIVENESS
CONDOMS
99%
BIRTH CONTROL PILLS
99%
crocs
100%

Thank you

UNMC[SM]

BREAKTHROUGHS FOR LIFE.®

University of Nebraska Medical Center