
“A bit of crumpet” to
“Zig-zagging”
Contemplating
Common
Contraception
Conundrums


A bit of crumpet
doing the mystery dance
pants-off dance-off
checking the oil
making love
rolling in the hay
crashing the custard truck
grummeting
oscillating the unmentionables
two-ball in the middle pocket
sweeping the chimney
boppin' squiddles
funny business
mingling limbs
disappointing the wife
playing hide the zucchini
shaking sheets
forbidden polka
hitting a home run
noddy
whitewashing the picket fence
interior decorating
entangling the lower beards
mattress dance
afternoon delight
driving Miss Daisy
pogo in the shrub
jingle-janging
slap and tickle
glazing the donut
zig-zagging
knocking boots

Test Question

Which one of the following is a euphemism for……
you know what?

a) A bit of crumpet
b) Nurtling
c) Sklooging
d) Zig-zagging
e) All of the above

Presenter Disclosures

- **Faculty:** Grace Frankel & Karen Toews

- **Relationships with commercial interests:**
  - None

Question 1

Which of the following contraceptive options would be MOST EFFECTIVE for a 28 year-old woman with a BMI of 39kg/m^2?

a) Levonorgestrel emergency contraception (e.g. Plan-B®)
b) Combined oral contraceptives
c) Contraceptive patch (e.g. Evra®)
d) Contraceptive vaginal ring (e.g. Nuvaring®)
e) Depot medroxyprogesterone injection (e.g. Depo-provera®)

Pregnancy rate per year

Method	Typical Use (per 100 women/yr)	Correct Use (per 100 women/yr)
Intrauterine device	<1	<1
Female/Male Sterilization	<1	<1
Implant (not in Canada)	<1	<1
DMPA injection	6	<1
Patch	9	<1
Pills	9	<1
Ring	9	<1
Diaphragm	12	6
Male Condom	18	2
Female Condom	21	5
Sponge	24	20
Cervical Cap	14-29	N/A
Fertility awareness	24	3-4
Spermicides	28	18
Withdrawal	22	4
None	85	85

UpToDate: Contraceptive counseling and selection. Table 1 Pregnancy rate (present) during first year of use of contraceptives [Accessed Dec 21, 2018]

Weight and Contraception

	Weight cut-offs	Efficacy/Comments
Emergency Contraception	>75kg	May be less effective[1] but should still be offered
Oral contraceptives	None, technically? ?BMI>35	Women BMI>35 may be at increased risk of pill failure HR 1.5 (95% CI 1.3-1.8)[2]
Patch	≥90kg	Women >90kg might be at increased risk of pregnancy (5 pregnancies vs 0-2 pregnancies in other weight categories) [3]
Ring	None	Follicular development minimal regardless of BMI[4]
Depot Injection	None	Persistence of ovulation suppression after D/C as compared to normal BMI[5]
IUD	None	Effective regardless of BMI (<1 pregnancy per 100 women-years)

1. Contraception 84 (2011) 363–367 **2**. Obstet Gynecol. 2011;117(1):33 **3**. Fertil Steril. 2002;77(2 Suppl 2):S13 **4**. Am J Obstet Gynecol. 2012;207(1):39.e1 **5**. Contraception. 2010;81(6):487 **6**. Obstet Gynecol. 2012;120(1):21.

Question 2

Intrauterine contraception increases the risk of ectopic pregnancy

a) True

b) False

FACT: Intrauterine contraceptives DO NOT increase the risk of ectopic pregnancy

But: women using a LNG-IUS (who get pregnant) are more likely to have an ectopic pregnancy than women who are using a CU-IUD (and get pregnant)

However: Since the LNG-IUS has a lower failure rate than CU-IUD – the overall risk of ectopic pregnancy is ***significantly lower*** in women using LNG-IUS compared with women using CU-IUDs.

To Remove or not to Remove?

SOGC statement:

"When a pregnancy test is positive, the IUC should be removed if possible, whether the woman wishes to continue with the pregnancy or not, due to a significant increase in the risk of pregnancy complications if it remains in situ in the uterus."

Table 2
Impact of IUD removal on obstetric outcome with regard to IUD position

	Uterine cavity				Low lying			
	Removed IUD *n*=49	Retained IUD *n*=24	p value	RR (95% CI)	Removed IUD *n*=65	Retained IUD *n*=6	p value	RR (95% CI)
Gestational week at birth (median)	40 (31–41)	37.5 (22–40)	0.1		39 (24–41)	35.5 (32–39)	.9	
Birth weight (median, g)	3495 (1210–4650)	3360 (500–4000)	0.2		3330 (730–5140)	2995 (2090–3900)	1	
Preterm birth, *n* (%)	4 (8.2%)	4 (16.7%)	0.3	2.0 (0.6–7.5)	9 (13.8%)	1 (16.7%)	.9	1.2 (0.2–8.0)
Term birth, *n* (%)	28 (57.1%)	10 (41.7%)	0.2	0.7 (0.4–1.2)	45 (69.2%)	1 (16.7%)	**.01**	0.2 (0.0–1.5)
Miscarriage, *n* (%)	17 (34.7%)	11 (45.8%)	0.4	1.3 (0.7–2.4)	11 (16.9%)	4 (66.7%)	**<.01**	**3.9 (1.8–8.6)**
First-trimester bleeding, *n* (%)	11 (22.4%)	7 (29.2%)	0.5	1.3 (0.6–2.9)	7 (10.8%)	1 (16.7%)		
Birth weight under 2500 g, *n* (%)	2 (6.3%)	3 (21.4%)	0.1	3.4 (0.6–18.3)	6 (11.1%)	1 (50%)	.1	4.5 (0.9–21.8)
Apgar at 5 min <7, *n* (%)	0	2 (14.3%)	0.03		1 (1.9%)	0	.9	
Cesarean section, *n* (%)	16 (50%)	6 (42.9)	0.7	0.9 (0.4–1.7)	22 (40.7)	0	.3	
Oligohydramnios, *n* (%)	0	1 (7.1%)	0.1		2 (3.7%)	0	.8	
IUGR, *n* (%)	0	0	–	–	2 (3.7%)	0	.8	
PPROM, *n* (%)	0	1 (7.1%)	0.1		2 (3.7%)	1 (50%)	**<.01**	**13.5 (1.9–94.1)**
Adverse pregnancy outcome, *n* (%)	21 (42.9%)	14 (58.3%)	0.2	1.4 (0.9–2.2)	21 (32.3%)	5 (83.3%)	**.01**	**2.6 (1.6–4.3)**

Statistical significance (p<0.01) is stated as bold and underlined.

Contraception. 2014 May;89(5):426-30

Question 3

Mary (32 yo) had a DVT in her right calf 4 years ago from sitting on a plane too long on a trip to New Zealand. Now, she is 12 weeks post-partum & breastfeeding. She wants to discuss her options for contraception.

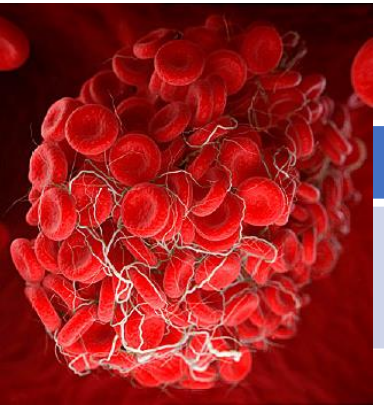
Which statement describes the BEST recommendation for Mary?

a) Hormonal contraception is contraindicated due to her DVT history

b) She may use either an IUD or progestin-only pills as these would have the least risk of DVT recurrence

c) Hormonal contraception is contraindicated because she is 12 weeks post-partum

d) She may use any type of combined oral hormonal contraception



DVT Risks

Reproductive age	Hormonal contraceptives	Pregnancy	Post partum (6 weeks)
4-5/10,000 per year **Baseline**	8-9/10,000 per year **Doubles**	29/10,000 per year **6x risk**	300-400/10,000 per year **60x risk**

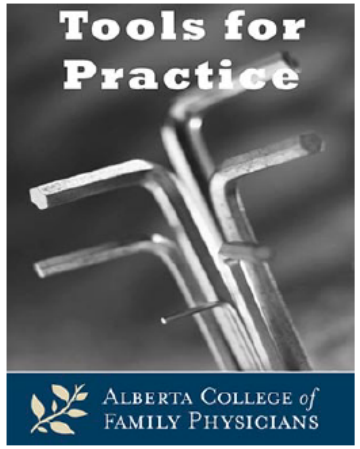
SOGC Position Statement: Hormonal Conception and Risk of Venous Thromboembolism (Feb 19. 2013)

Patient factors:

- Age 32
- Previous DVT – provoked
- Post-partum 12 weeks
- Breastfeeding
- Otherwise healthy (non-smoker, no comorbid conditions)

Category 4 (CONTRINDICATIONS)	Category 3 (Relative contraindications)
< 4 weeks post partum (BF)	4-6 weeks post partum (BF) with other VTE risks
<3 weeks postpartum (not BF)	or 3-6 weeks (not BF) with other VTE risks
Smoker >35 years (>15 cigs/day)	Smoker >35 years (<15 cigs/day)
Vascular disease	DVT/PE on anticoagulation
HTN (>160/100)	**History of DVT with lower risk of recurrent DVT**
Acute DVT/PE or Hx not receiving anticoagulation and high risk for recurrence	MS/immobility
	HTN
Major surgery/immobile	Hx Breast cancer but disease free for >5 years
Thrombophilia	Symptomatic gallbladder disease/hepatitis
Valvular heart disease	Diabetes with complications
SLE	Past COC-related cholestasis
Peripartum cardiomyopathy	Peripartum cardiomyopathy with normal fx
Migraine with aura	Malabsorptive issues (bariatric surgery)
Breast Cancer (current)	Anticonvulsant use (↓efficacy)
Hepatic disease (severe)	Rifampin therapy
Complicated organ transplant	Fosamprenavir ART therapy

J Obstet Gynaecol Can 2017;39(4):229e268



What Is the Risk of VTE with Various Hormonal Contraceptives?

Clinical Question: How does the risk of venous thromboembolism (VTE) risk compare between hormonal contraceptives?

Type of contraception	Risk in 10,000/year
Non-users	2-3
Progestin-only pills or progestin IUD	2-3
COC levonorgestrel (2nd) or norethindrone (1st)	7-9
COC 3rd generation progestin (i.e. desogestrel, norgestimate) , transdermal patch or vaginal ring	10-15
Pregnancy	29

Available at: https://www.acfp.ca/wp-content/uploads/tools-for-practice/1397838433_20120724_091425.pdf

Question 4

The use of Depo medroxy-progesterone acetate (DMPA) increases the risk of fractures

a) True
b) False

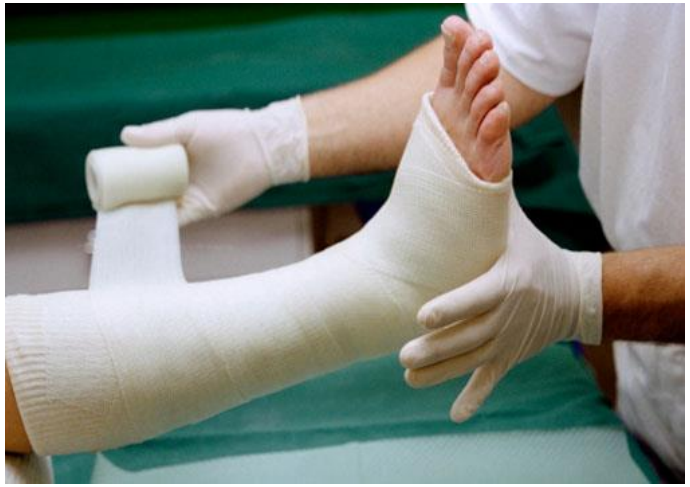
WARNING: LOSS OF BONE MINERAL DENSITY

See full prescribing information for complete boxed warning.

- **Women who use Depo-Provera Contraceptive Injection (Depo-Provera CI) may lose significant bone mineral density. Bone loss is greater with increasing duration of use and may not be completely reversible. (5.1)**
- **It is unknown if use of Depo-Provera Contraceptive Injection during adolescence or early adulthood, a critical period of bone accretion, will reduce peak bone mass and increase the risk for osteoporotic fracture in later life. (5.1)**
- **Depo-Provera Contraceptive Injection should not be used as a long-term birth control method (i.e., longer than 2 years) unless other birth control methods are considered inadequate. (5.1)**

FDA Drug Monograph: Depo-Provera CI injectable suspension for IM use (Updated 11/2016)

Fractures? Probably not according to SOGC



SOGC statement:

"The use of DMPA is associated with a decrease in bone mineral density. This decrease is most rapid in the first 2 years of use and appears to be largely reversible once DMPA is discontinued. There is no strong evidence that the use of DMPA causes osteoporosis or increases the risk of fracture."

And now the

Table 3. Incidence Rate and Crude Rate Ratio for Fracture by Ever-Use of Depot Medroxyprogesterone Acetate and by Observation Period in the Subcohort of 166,367 Women With Baseline History

	Before Starting Contraceptive		After Starting Contraceptive		After or Before
	No. With Fracture	Rate/1,000 Person-Years*	No. With Fracture	Rate/1,000 Person-Years*	Incident Rate Ratio (95% CI)
DMPA users (n=41,876)	176	8.4	1,574	9.1	1.08 (0.92–1.26)
DMPA never-users (n=124,491)	409	6.6	4,939	7.3	1.12 (1.01–1.24)
Crude incident rate ratio for DMPA compared with nonuse (95% CI)	1.28 (1.07–1.53)		1.23 (1.16–1.30)		

DMPA, depot medroxyprogesterone acetate; CI, confidence interval.

* Before starting contraceptive, person-years were 20,933 (DMPA) and 62,268 (nonuser); after starting contraceptive, person-years were 173,713 (DMPA) and 672,052 (nonuser, excluding 72,190 person-years of nonuse contributed by DMPA ever-users who used a non-DMPA contraceptive starting at the index date, before their first DMPA injection).

Obstet Gynecol 2013;121:593–600

Table 2 Exposure to DMPA and other hormonal contraceptives and relative risk of fracture

Variable	No. of cases ($N = 4189$)	Percent	No. of controls ($N = 4189$)	Percent	OR adjusted[a] (95 % CI)
DMPA					
Non-use	3729	89.0	3866	92.3	Reference
Current					
1–2	20	0.5	19	0.5	0.97 (0.51–1.86)
3–9	54	1.3	20	0.5	2.41 (1.42–4.08)
≥10	61	1.5	37	0.9	1.46 (0.96–2.23)
Past					
1–2	119	2.8	107	2.6	0.96 (0.73–1.26)
3–9	128	3.1	94	2.2	1.14 (0.86–1.51)
≥10	78	1.9	46	1.1	1.55 (1.07–2.27)
Hormonal contraception (estrogen-containing)					
Nonuse	2100	50.1	2084	49.8	Reference
Current					
1–2	94	2.2	111	2.7	0.98 (0.73–1.31)
3–9	208	5.0	184	4.4	1.39 (1.12–1.73)
≥10	265	6.3	261	6.2	1.07 (0.88–1.30)
Past					
1–2	397	9.5	426	10.2	0.90 (0.77–1.05)
3–9	570	13.6	616	14.7	0.90 (0.78–1.03)
≥10	555	13.3	507	12.1	1.04 (0.90–1.21)
Current and past use of ≥10 DMPA prescriptions by age (year)					
<30, current use	23	1.3	8	0.4	3.04 (1.36–6.81)
30–44, current use	38	1.6	29	1.2	1.34 (0.82–2.18)
<30, past use	19	1.0	11	0.6	1.83 (0.87–3.85)
30–44, past use	59	2.5	35	1.5	1.72 (1.13–2.63)

[a] Adjusted for BMI, smoking, asthma, epilepsy, use of progestins (single preparations), MPA low dose, ß-blockers, proton pump inhibitors, systemic corticosteroids, benzodiazepines, serotonin reuptake inhibitors, anti-convulsants, paracetamol, opioids, non-steroid antirheumatics, and contraceptive not under investigation

Osteoporos Int (2017) 28:291–297

Question 5

Sierra (24 years old) has a question for you. Her friend said that hormonal contraceptives increase mood disorders and that she should "get off the pill" since she suffers from depression.

What is the **BEST** response to Sierra's question?

a) Hormonal contraception may increase risk of depression, but higher quality studies are needed to confirm findings

b) There may be an increased risk of depression with use of oral contraceptives, but not with other hormonal dosage forms (e.g LNG-IUD, patch etc.)

c) Contraceptives cause depression and she should discontinue her contraceptive medication immediately

d) There is no evidence that oral contraceptives increase the risk of depression

JAMA Psychiatry | Original Investigation

Association of Hormonal Contraception With Depression

Charlotte Wessel Skovlund, MSc; Lina Steinrud Mørch, PhD; Lars Vedel Kessing, MD, DMSc; Øjvind Lidegaard, MD, DMSc

Prospective Cohort: n=1,061,997 women aged 15-34 years (Danish database)
Exposures: hormonal contraception (current/recent)
Controls: Non-users (or quit >6 months ago)
Outcome: depression (new antidepressant or new diagnostic code)

Table 2. Rate Ratio of First Use of Antidepressants and First Diagnosis of Depression in All Women[a]

Type of Hormonal Contraception	Person-years	First Use of Antidepressants			First Diagnosis of Depression		
		No. of Events	RR[b]	RR (95% CI)[c]	No. of Events	RR[b]	RR (95% CI)[c]
Nonuse	3 041 595	50 346	1	1 [Reference]	9310	1	1 [Reference]
All oral combined	3 518 381	74 126	1.2[d]	1.2 (1.22-1.25)[d]	12 211	1.0[d]	1.1 (1.08-1.14)[d]
All progestin-only	74 540	1884	1.3[d]	1.3 (1.27-1.40)[d]	296	1.1	1.2 (1.04-1.31)[d]
Nonoral							
Patch (norgestrolmin)	8081	333	2.1[d]	2.0 (1.76-2.18)[d]	60	1.9[d]	1.7 (1.34-2.23)[d]
Vaginal ring (etonogestrel)	69 605	2195	1.5[d]	1.6 (1.55-1.69)[d]	421	1.5[d]	1.6 (1.45-1.77)[d]
Nonoral							
Levonorgestrel IUS	81 281	2373	1.4[d]	1.4 (1.31-1.42)[d]	397	1.4[d]	1.4 (1.22-1.50)[d]

JAMA Psychiatry. 2016;73(11):1154-1162.

Question 6

Women who are BRCA 1 / 2 carriers should be counselled AGAINST using combined oral contraceptives

a) True

b) False

Use of Hormonal Contraceptives in Breast Cancer

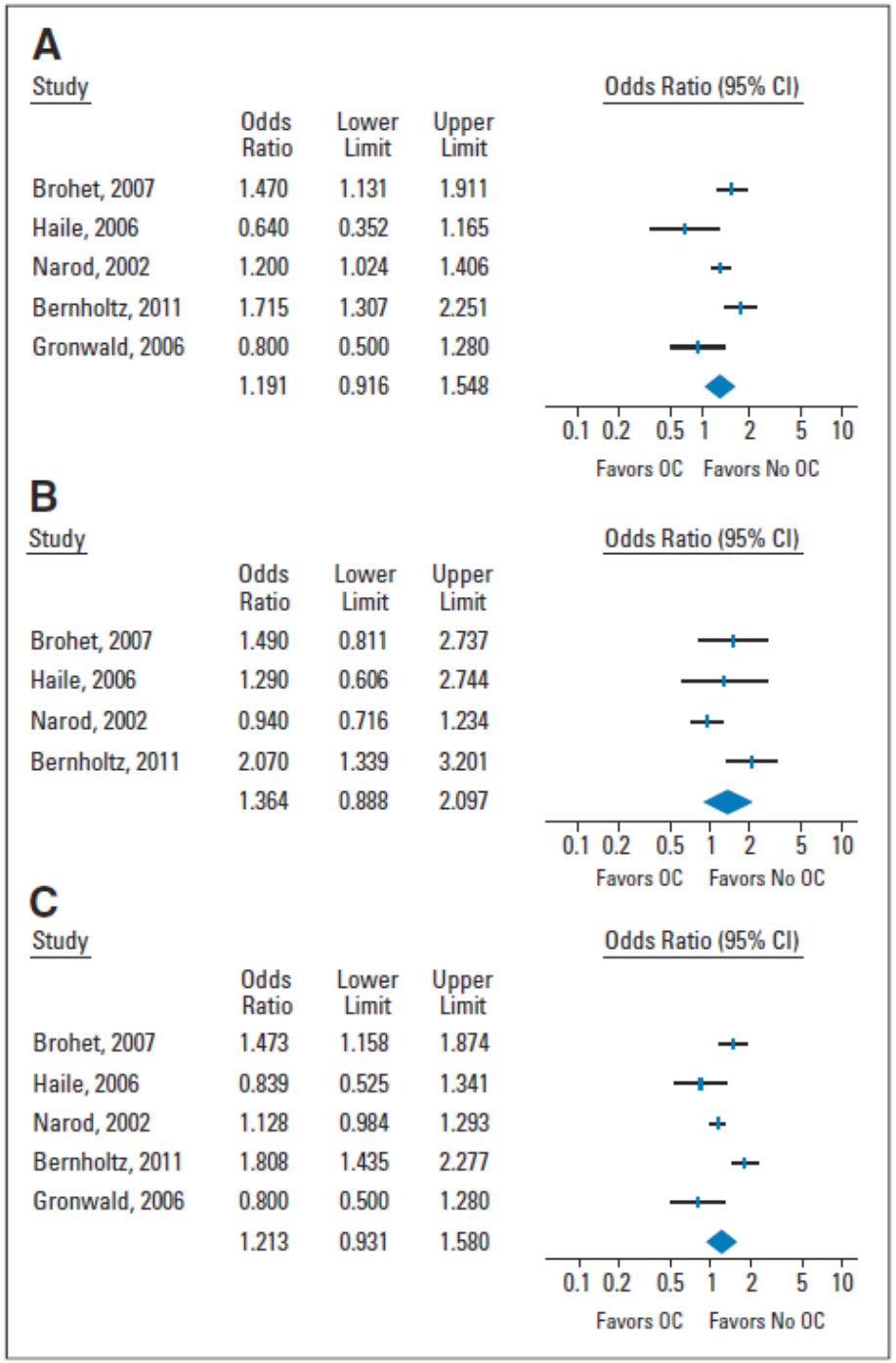
SOGC statement:

"The use of COCs in BRCA1/2 carriers is controversial but appears to be associated with a decreased risk of ovarian cancer and no increase in the risk of breast cancer"

But! The SOGC lists the following as **contraindications:**

- Current breast cancer: category 4
- History of breast cancer and no evidence of disease for 5 years: category 3

Fig 3. Forest plots for association between oral contraceptives and breast cancer among (A) *BRCA1* mutation carriers, (B) *BRCA2* mutation carriers, and (C) *BRCA1* and *BRCA2* mutation carriers combined. There was evidence of heterogeneity in these analyses. (A) Q-value = 15.1117 for 4 *df*, $P = .004$. (B) Q-value was 9.618 for 3 *df*, $P = .022$. (C) Q-value of 20.005 for 4 *df*, $P < .001$. OC, oral contraceptive.



J Clin Oncol. 2013 Nov 20;31(33):4188-98

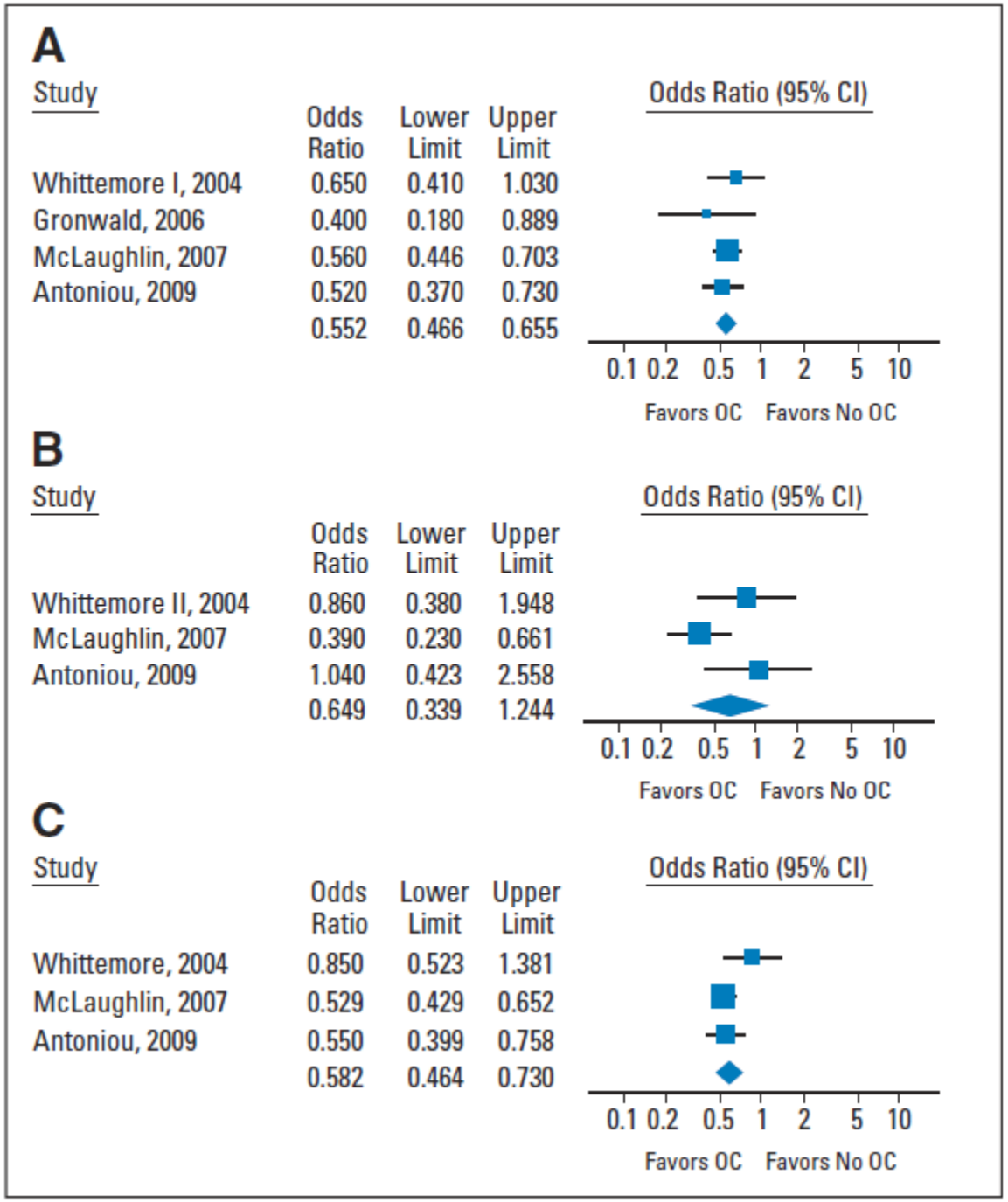


Fig 2. Forest plots for associations between oral contraceptives and ovarian cancer among (A) *BRCA1* mutation carriers, (B) *BRCA2* mutation carriers, and (C) *BRCA1* and *BRCA2* mutation carriers combined. There was no significant heterogeneity in these analyses. (A) Q-value of 1.24 for 3 *df*, $P = .743$. (B) Q-value of 4.68 for 2 *df*, $P = .096$. (C) Q-value of 3.12 for 2 *df*, $P = .210$. OC, oral contraceptive.

J Clin Oncol. 2013 Nov 20;31(33):4188-98

Question 7

Pria (18 yo) has been suffering with migraines without aura for 2 years. She experiences migraines about once every 3-4 months, always around the start of her period. She does not smoke, BMI 22 and is otherwise healthy. Today she is asking about “the pill” as things are getting “serious” in her current relationship.

What is the <u>BEST</u> recommendation for Pria?

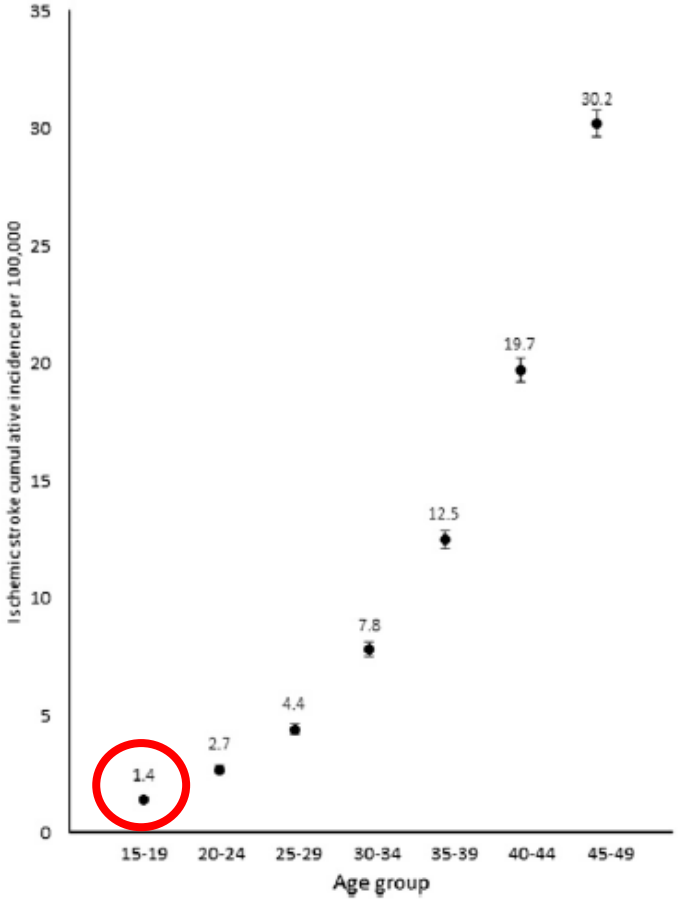
a) Pria should use barrier methods only as migraines are an absolute contraindication to any hormonal contraception

b) Pria can consider using a high dose estrogen product (≥50mcg) as her migraines are likely estrogen-associated

c) Pria can consider a COC with low estrogen (10-30mcg) as she does not have significant stroke risk factors and experiences migraine without aura

d) Pria should avoid estrogen-containing contraceptive products because she is at high risk of stroke

FIGURE 2
Average yearly cumulative incidence of ischemic stroke, 2006 through 2012



Graph of ischemic stroke incidence among women of reproductive age by 5-year age group.

Champaloux et al. Migraine, hormonal contraceptives, and stroke. Am J Obstet Gynecol 2017.

18 years old = 1.4/100,000 annual risk of stroke (baseline)

	Migraine WITH aura	Migraine NO aura	NO Migraines
WITH Oral Contraceptives	OR 6.1 (3.1-12.1)	OR 1.77 (1.09-2.88)	OR 1.39 (1.16-1.67)
WITHOUT Oral Contraceptives	OR 2.7 (1.9-3.7)	OR 2.24 (1.86-2.69)	Reference (1)

Am J Obstet Gynecol 2017;216:489.e1-7.

Table 4 Absolute risk of ischemic stroke in women aged 20 to 44 years in relation to the use of hormonal contraception and migraine status

	No migraine	Migraine with aura	Migraine without aura
Without hormonal contraception	2.5/100,000	5.9/100,000	4.0/100,000
With hormonal contraception	6.3/100,000	36.9/100,000	25.4/100,000

Data were calculated by using information provided in references #11,15,17,18,35

Sacco et al. The Journal of Headache and Pain (2017) 18:108

Question 8

Which one of the following cancers is associated with an INCREASED risk with the use of COC's?

a) Cervical cancer

b) Colorectal cancer

c) Ovarian cancer

d) Endometrial cancer

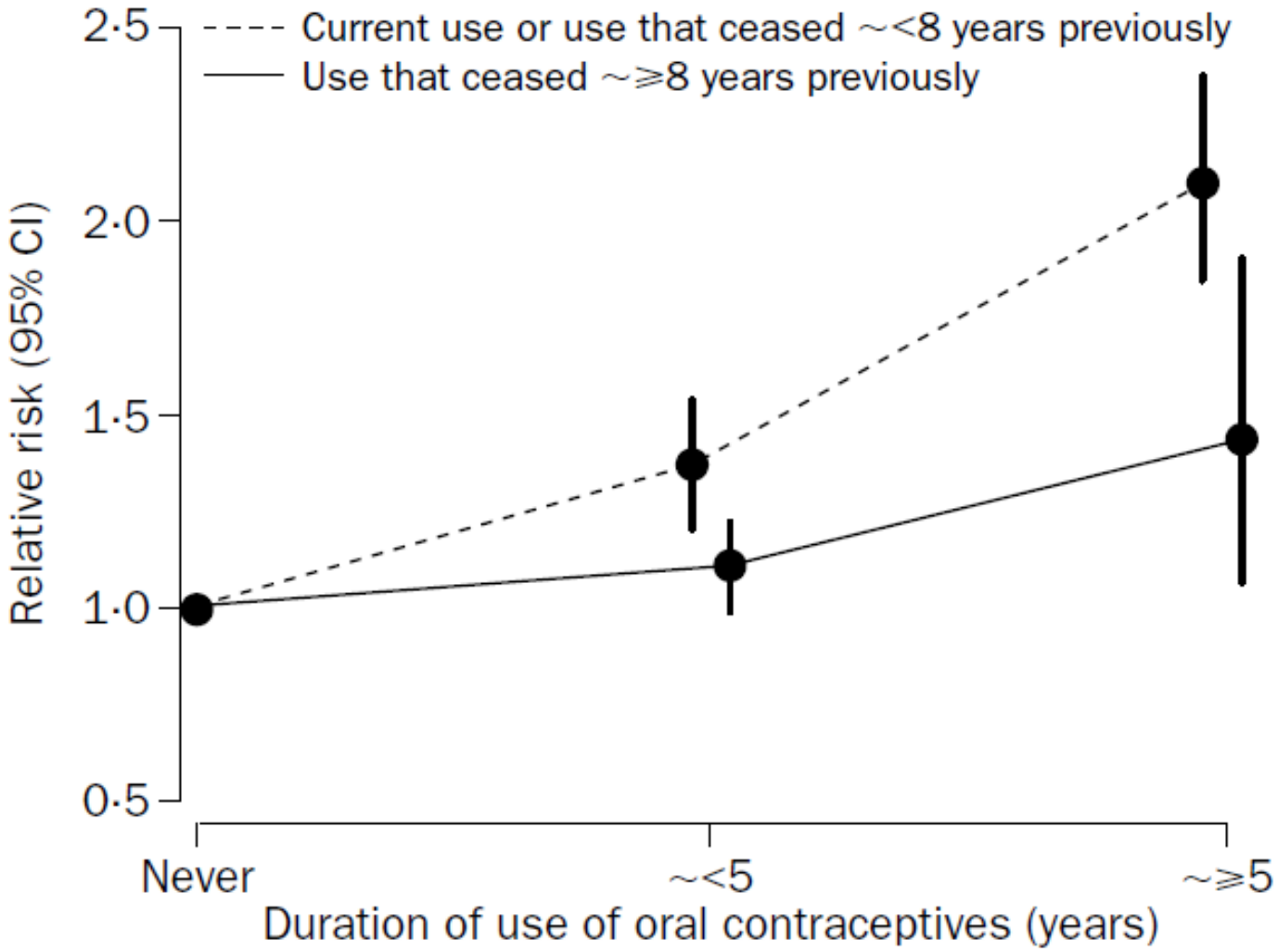


Figure 3: **Summary of results on the relative risk of cervical cancer, according to time since last use and duration of use of oral contraceptives**

Risk of Cervical Cancer

Lancet 2003; 361: 1159–67

Question 9

Paula was switched last month from brand name oral contraception Yaz® to Mya® (generic) and has been feeling terrible. She describes breakthrough bleeding in week 3, increased irritability and bloating since the switch.

What is the **BEST** response to Sierra's situation?

a) Yaz® and Mya® are bioequivalent so there is likely another cause of her symptoms
b) Paula should switch to a oral contraceptive with a higher progestin content
c) Bioequivalence can range from 80-125% of the branded drug and theoretically could have variations in metabolism
d) Paula should stop using oral contraceptives completely due to adverse effects

ACOG COMMITTEE OPINION

Number 375 • August 2007

Brand Versus Generic Oral Contraceptives

"Generic OCs approved by the FDA have been shown to be bioequivalent and pharmaceutically equivalent to the branded product and are interchangeable. There are no evidence-based data to challenge this conclusion."

SOGC POLICY STATEMENT

No. 205, March 2008

Statement on Generic Oral Contraceptives

"When a brand name and generic drug are not clinically equivalent, the decision to switch from brand name to generic oral contraceptive, or vice-versa, could have negative results, including reduced effectiveness or adherence, as well as side effects"

Oral contraceptive discontinuation: A prospective evaluation of frequency and reasons

Michael J. Rosenberg, MD, MPH,[a,b] and Michael S. Waugh, MA[a]
Chapel Hill, North Carolina

Table I. Reasons for discontinuing oral contraceptives ($n = 293$)

Side effects	
Bleeding irregularites	12%
Nausea	7%
Weight gain	5%
Mood changes	5%
Breast tenderness	4%
Headaches	4%
Clinician recommended discontinuation	9%
No further need for contraception	
Became pregnant/desired pregnancy	13%
Sexual relationship ended	10%
Method related	
Too hard to use	6%
Concern about hormones	5%
Too expensive	3%
Other, unspecified	17%

46%

Am J Obstet Gynecol 1998;179:577-82

The Implications of Choice

Prescribing Generic or Preferred Pharmaceuticals Improves Medication Adherence for Chronic Conditions

William H. Shrank, MD, MSHS; Tuyen Hoang, PhD; Susan L. Ettner, PhD; Peter A. Glassman, MBBS, MSc; Kavita Nair, PhD; Dee DeLapp, RPh; June Dirstine; Jerry Avorn, MD; Steven M. Asch, MD, MPH

Table 4. Linear Regression Evaluating Predictors of Adherence, Measured as PDC*

Predictor†	Variable Estimate	SE	*P* Value
Generic	6.6‡	1.3	<.001
Preferred formulary agent	4.6‡	1.0	<.001
Annual income			
Middle	2.2	1.5	.15
High	3.9‡	1.6	.02
Male sex	3.1‡	1.0	.001
Age	0.3‡	0.0	<.001
Oral contraceptives	−0.2	1.5	.91
CCBs	−5.5‡	1.7	.001
ACE inhibitors	1.9	1.1	.09
ARBs	0.6	2.1	.76
Inhaled corticosteroids	−37.3‡	1.3	<.001

Arch Intern Med. 2006;166:332-337

Contraception

Additional References

- **Canadian Contraception Guidelines**
  - Canadian Contraception Consensus Chapter 3 Emergency Contraception . J Obstet Gynaecol Can 2015;37(10):Suppl S20-S28
  - Canadian Contraception Consensus Part 3 of 4: Chapter 7 - Intrauterine Contraception. J Obstet Gynaecol Can 2016;38(2):182-222
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Glossary/Abbreviations

- BMI – body mass index
- COC's – combined oral contraceptives (containing estrogen and progesterone)
- CU-IUD – copper intra-uterine device
- DMPA – depo-medroxyprogesterone acetate (i.e. Depo-Provera)
- EE – ethinyl estradiol
- IUD – intra-uterine device (i.e. Mirena®)/IUS – intra-uterine system
- LNG – levonorgestrel
- OCs – oral contraceptives
- UPA – ulipristal

Questions?