PIPADOR REVISION

MRCOG Part 1 Revision Notes

Effects of Contraceptives on the Reproductive Tract

PHYSIOLOGY • LECTURE 149

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG PART 1 REVISION NOTES | PHYSIOLOGY

149 Effects of Contraceptives on the Reproductive Tract

Mechanisms of action, tissue effects, benefits and risks, return of fertility and UKMEC

< 1% Perfect-use failure: COC (typical ≈ 9%)	**8 years** LNG-IUS 52 mg (contraception)	**10 years** Copper IUD (T380)
3 years Etonogestrel implant	**13 weeks** DMPA interval (up to 14 wk)	**5 days** Cu-IUD / ulipristal emergency window

■ KEY FACTS: Learning objectives

- Describe the mechanisms of action of hormonal and non-hormonal contraceptives.
- Describe their effects on the ovary, endometrium, cervix, fallopian tube and bleeding pattern.
- Describe non-contraceptive benefits, cancer risks, VTE risk and return of fertility.
- Apply UKMEC principles to common clinical scenarios.

149.1 Mechanisms of action

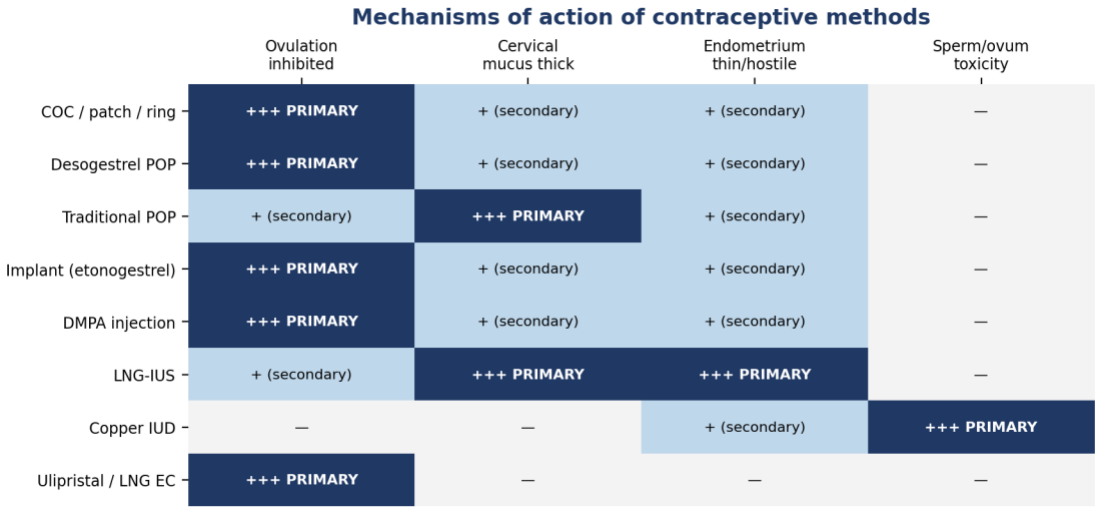


Figure 149.1 — Primary and secondary mechanisms by method

Method	Components	Key physiology
Combined hormonal (pill, patch, ring)	Ethinylestradiol (or estradiol) + progestogen	Progestogen ↓ LH (no surge); oestrogen ↓ FSH (no follicle selection) → anovulation; stabilises endometrium (withdrawal bleed in hormone-free interval)
Desogestrel POP	Desogestrel 75 µg	Inhibits ovulation (≈ 97%); 12-h window
Traditional POP	Levonorgestrel, norethisterone	Cervical mucus primarily; ovulation inhibited in ≈ 50%; 3-h window
Implant	Etonogestrel (Nexplanon)	Ovulation inhibition; most effective reversible method (≈ 0.05%)
DMPA injection	Medroxyprogesterone acetate 150 mg IM (or 104 mg SC)	Ovulation inhibition (suppresses gonadotrophins; low oestradiol)

Method	Components	Key physiology
LNG-IUS	Levonorgestrel 52 mg (≈ 20 µg/day initially)	Local: endometrial decidualisation/atrophy, thick mucus, impaired sperm function; ovulation usually continues
Copper IUD	Copper ≥ 300 mm^2	Cu^{2+} ions toxic to sperm and ova; sterile inflammatory reaction → prevents fertilisation (and implantation as EC)
Emergency (oral)	LNG 1.5 mg (≤ 72 h); ulipristal 30 mg (≤ 120 h)	Delay ovulation — LNG ineffective once LH surge begins; ulipristal (SPRM) works later, up to the LH peak

149.2 Effects on the reproductive tract

Structure	Combined hormonal	Progestogen-only (systemic)	LNG-IUS	Copper IUD
Ovary	Quiescent; small follicles; ↓ functional cysts	DMPA/implant quiescent; POP: functional cysts possible	Ovulation continues; functional cysts ↑	Normal cycles
Endometrium	Thin, inactive glands, decidualised stroma	Atrophic/irregular; fragile vessels	Marked decidualisation and atrophy	Inflammatory (foreign-body) reaction; prostaglandins ↑
Cervix	Thick mucus; ectropion ↑	Thick, scanty mucus	Thick mucus	—
Tube	↓ PID severity, ↓ ectopic (no ovulation)	Altered motility (POP — ↑ proportion ectopic if failure)	If failure, ↑ proportion ectopic (absolute risk ↓)	If failure, ↑ proportion ectopic
Bleeding	Regular withdrawal bleeds; ↓ HMB, ↓ dysmenorrhoea	Unpredictable (implant); amenorrhoea ≈ 50–70% at 1 yr (DMPA)	Light; amenorrhoea ≈ 20% at 1 yr; treats HMB	↑ Loss and dysmenorrhoea

149.3 Benefits and risks

	Combined hormonal contraception
Non-contraceptive benefits	↓ HMB, dysmenorrhoea, PMS, acne/hirsutism (↑ SHBG ↓ free testosterone), endometriosis pain, functional cysts, benign breast disease
Cancer — reduced	Ovarian ≈ 30–50% and endometrial ≈ 50% — protection persists for decades after stopping; colorectal ↓
Cancer — increased	Breast: small ↑ during use, returns to baseline ≈ 10 years after stopping; cervical: ↑ with use > 5 years (declines after stopping)
VTE	↑ 2–6-fold; depends on progestogen (Figure 149.2); highest in first year; smaller than pregnancy
Arterial	Stroke and MI (↑ with smoking, age, migraine with aura, hypertension)
Other	↑ BP; hepatic adenoma (rare); drug interactions (enzyme inducers ↓ efficacy)

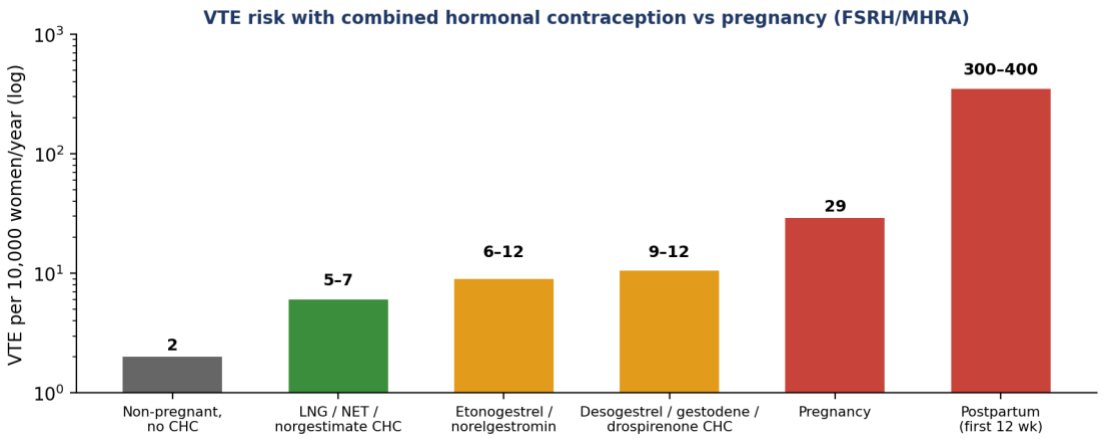


Figure 149.2 — VTE risk with CHC compared with pregnancy and postpartum

Method	Specific considerations
DMPA	↓ Bone mineral density (hypo-oestrogenic; largely reversible) — review every 2 years, caution < 18 and > 45 yr; weight gain; delayed return of fertility
LNG-IUS	Endometrial protection with oestrogen HRT; first-line treatment for HMB; small ↑ functional cysts
Copper IUD	Most effective emergency contraception (up to 5 days after UPSI or earliest ovulation); actinomyces-like organisms incidental; perforation ≈ 1–2/1000 (↑ breastfeeding/postpartum)
Female sterilisation	Tubal occlusion (Filshie clips) or salpingectomy — ↓ ovarian (high-grade serous) cancer risk; ectopic if failure

149.4 Return of fertility

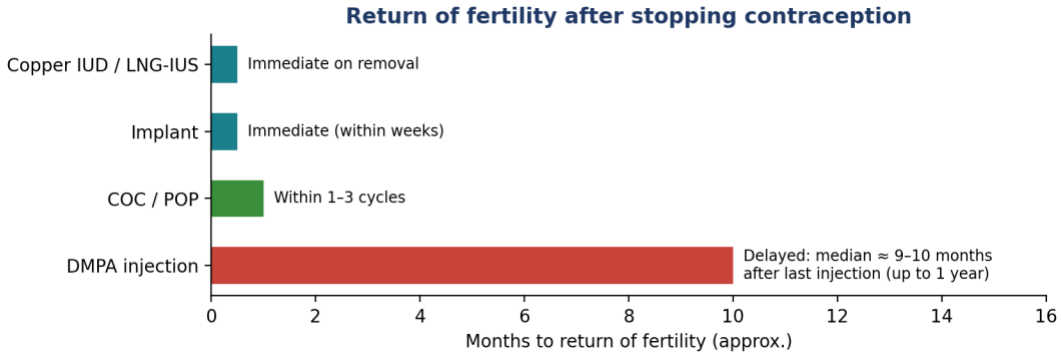


Figure 149.3 — Return of fertility after stopping

149.5 UKMEC — key examples

Condition	CHC	Progestogen-only / IUD
Migraine with aura (any time)	UKMEC 4	POP/implant/DMPA/IUS: 2; Cu-IUD: 1
Smoker ≥ 35 yr, ≥ 15/day	UKMEC 4	1
BMI ≥ 35	UKMEC 3	1
Current breast cancer	UKMEC 4	UKMEC 4 (hormonal); Cu-IUD 1
History of VTE / known thrombogenic mutation	UKMEC 4	2
Postpartum, breastfeeding < 6 weeks	UKMEC 4	POP/implant 1; IUD after 4 weeks (or < 48 h)
Hypertension (systolic ≥ 160 or diastolic ≥ 100)	UKMEC 4	1–2
Enzyme-inducing drugs	3	POP 3; implant 2; DMPA and IUDs 1 (unaffected)

UKMEC: **1** = no restriction; **2** = advantages generally outweigh risks; **3** = risks generally outweigh advantages; **4** = unacceptable health risk. Verify against the current FSRH UKMEC edition.

149.6 Must-know summary

■ EXAM TIP

- CHC, desogestrel POP, implant and DMPA act mainly by **ovulation inhibition**; traditional POP and LNG-IUS mainly by **cervical mucus/endometrium**; Cu-IUD by **gamete toxicity**.
- CHC: ↓ **ovarian and endometrial cancer** (long-lasting); small ↑ breast and cervical cancer.
- VTE per 10,000/yr: **non-user 2; LNG CHC 5–7; desogestrel/drospirenone 9–12; pregnancy 29; postpartum 300–400**.
- DMPA: ↓ BMD and **fertility delay up to 1 year**; everything else returns promptly.
- Emergency: **Cu-IUD most effective**; ulipristal ≤ 120 h; LNG ≤ 72 h — both delay ovulation.

■ MNEMONIC / MEMORY AID

CHC UKMEC 4 — 'MAD SHOVEL': Migraine with Aura, DVT history/thrombophilia, Smoker ≥ 35 (≥ 15/day), Hypertension (severe), Oncology (breast), Vascular disease/stroke, Early postpartum breastfeeding, Liver disease (severe).