

Oral contraception: the pros and cons of COCs and POPs

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Oral contraceptives are effective, reversible, independent of intercourse and for the majority of users safe with added health benefits. Our Drug review considers the properties and efficacy of both combined and progestogen-only pills, followed by sources of further information and an analysis of the prescription data.

Since their introduction in the 1960s, oral contraceptives have been rapidly accepted as an effective method of contraception, with over 60 million users worldwide. Lower-dose pills have been formulated over the years so that, for the majority, the Pill is extremely safe, often with added health benefits. Major risks related to Pill use are now also recognised so that women at particular risk can be identified and offered alternative contraception.

Combined oral contraceptives

In the UK combined oral contraceptives (COCs), containing both oestrogen and progestogen, are the most popular method of contraception for women under age 30. The most common oestrogen used is ethinyl-estradiol (EE), in doses between 20 and 35µg.

Several different progestogens are available in current formulations, often known as second and third generation. Second-generation progestogens include norethisterone and levonorgestrel; these tend to 'oppose' the action of oestrogen, resulting in Pills that have relatively high progestogenic activity ('progestogen dominant'). Third-generation progestogens include desogestrel, gestodene and norgestimate, although the latter acts mostly, but not exclusively, through conversion to levonorgestrel; these do not oppose the effects of oestrogen, resulting in relatively higher oestrogenic activity ('oestrogen dominant').

Drospirenone differs from other progestogens in COCs: it has very mild diuretic properties due to antimineralocorticoid activity. This may help to oppose the salt- and fluid-retaining effects of EE and



CPD questions available for this article. See page 32

so reduce symptoms of fluid retention. Drospirenone is also an antiandrogen, so the combination may be an alternative to cyproterone acetate for conditions such as polycystic ovarian syndrome (PCOS).

The progestogen dienogest has antiandrogenic activity of approximately one-third of that of cyproterone acetate. It is combined with oestradiol valerate, a natural oestrogen that is metabolised to 17-beta-oestradiol, the same hormone produced by the ovaries. This COC (Qlaira) has four different phases over 26 days delivering hormones in an oestrogen step-down and a progestogen step-up sequence, followed by two placebo pills. The next pack is started immediately, without a break. A potential advantage of the short two-day hormone-free interval is that it may lessen the likelihood of 'withdrawal' symptoms such as headaches.

The missed pill advice is notably different from standard pills: if one pill is missed in the first 24 days,

additional precautions are necessary for the next nine days. To avoid confusion, missed pill instructions are printed on every pill pack.

Studies published in 1995 suggested that the relatively oestrogen-dominant pills might be associated with a higher risk of venous thromboembolism (VTE) compared to the more progestogen-dominant pills. However, data from the European Active Surveillance Study (EURAS) suggest that there is no difference in VTE rates between any of the COCs studied, with an approximate incidence of 90 per 100 000 woman-years. This postmarketing study observed 58 674 women for 142 475 woman-years.¹ Particularly notable was that obese women (BMI ≥ 30) had an approximately threefold-higher VTE risk compared to women with normal weight (BMI 20.0–24.9). VTE rates for nonusers (23 per 100 000 woman-years) and pregnant women (194 per 100 000 woman-years) are higher than the usual considered rates of 5 and 60 per 100 000 woman-years respectively.²

The natural oestrogen in Qlaira confers a neutral clotting profile compared to ethinylestradiol but whether that translates to better safety is not yet known. Until further data are available, the indications and contraindications are the same for other COCs.

Most formulations are monophasic, *ie* fixed doses are maintained throughout the 21-day pill-taking cycle. This is usually followed by a seven-day pill-free interval, during which there is a withdrawal bleed. Biphasic and triphasic preparations are less popular, but may be useful – once pathology has been excluded – for the control of persistent breakthrough bleeding that has not settled after at least three COC cycles.³ However, no randomised trials exist to confirm this approach.

Mode of action

Contraceptive efficacy is maintained by several mechanisms. The principal mode of action is to suppress

folliculogenesis, inhibiting ovulation. Secondary mechanisms include:

- development of a suppressed endometrium that is unreceptive to implantation
- development of viscous cervical mucus that impedes sperm transport
- possible interference with gamete transport through the fallopian tubes and therefore interference with fertilisation.

Efficacy

The efficacy of a contraceptive method is expressed as the failure rate per 100 woman-years of exposure (Pearl Index). The theoretical failure rate of COCs is extremely low, being 0.3 per 100 woman-years.⁴ However, poor adherence is a major factor in limiting effectiveness, particularly in younger users. Although up to four pills can be missed in the middle week of a pack without the need for emergency contraception, late starts are the main problem when the pill-free

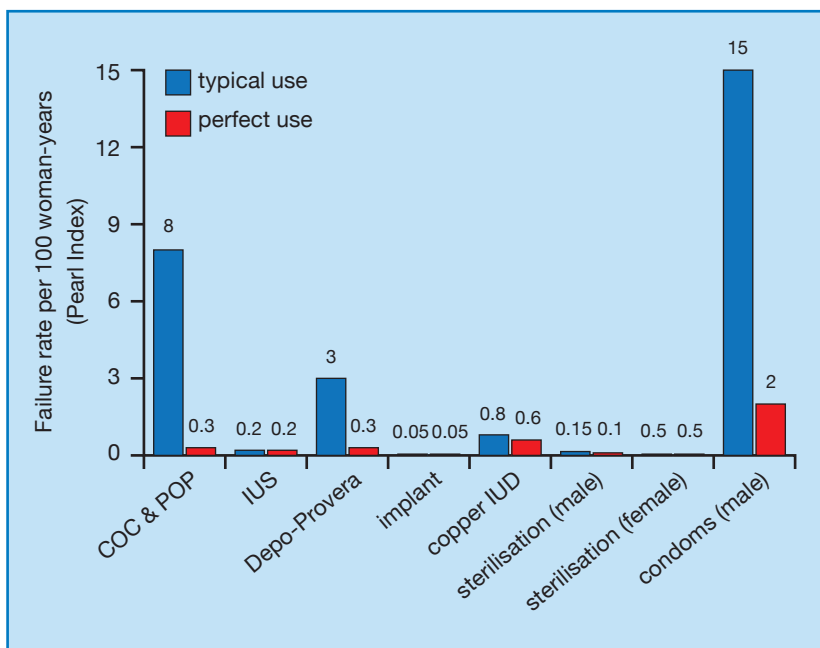


Figure 1. Comparison of failure rates (Pearl Index) for different contraceptive methods; after reference 4

interval is extended beyond the usual seven days. Consequently the failure rate with typical use can be up to 8 per 100 woman-years (see Figure 1).⁴

Advantages

COCs provide a reversible and convenient method of contraception that is independent of intercourse.

An extensive body of evidence has established several noncontraceptive benefits of COCs including better cycle control, improved premenstrual symptoms, acne, dysmenorrhoea, heavy menstrual bleeding and iron-deficiency anaemia, and reduction in ovarian cysts, benign breast disease and possibly pelvic inflammatory disease (PID).^{5,6} Their use is associated with a 40–50 per cent reduction in risk of ovarian, endometrial and possibly colorectal cancer.⁷ If used by women over age 40, there may be reduced risk of postmenopausal hip fracture.⁸

Category	Definition
1	no restriction
2	advantages of using method generally outweigh the theoretical proven risks
3	theoretical or proven risks usually outweigh the advantages
4	unacceptable health risk if contraceptive method is used

Table 1. UKMEC criteria definitions for contraceptive use¹¹

Principal side-effects

Breakthrough bleeding is common in early use. In most cases this settles with time, although missed pills can be a common cause. Further evaluation, particularly exclusion of sexually transmitted infections, pregnancy and gynaecological pathology, is indicated if breakthrough bleeding persists or develops for the first time in established users.

Other side-effects are often specific to the relative excess of oestrogen or progestogen in different formulations. Symptoms of nausea, fluid retention and increased noninfective vaginal discharge can indicate a relative excess of oestrogen. This is usually resolved by changing to a progestogen-dominant combined pill.

Similarly, progestogenic symptoms of vaginal dryness, depression, acne and loss of libido may respond to an oestrogen-dominant combined pill.

Side-effects are mostly limited to the first few cycles of use, so women should be advised to persevere for at least three cycles before considering a different formulation. Reassurance and adequate counselling can usually prevent unnecessary discontinuation and enhance compliance.

Principal risks

COCs have been the subject of intense research since their introduction. The results of these studies confirm the overall safety of this method but have also highlighted some important risks relevant to a minority of users.

VTE Many factors increase the risk of VTE, including smoking, hypertension and diabetes, as well as obesity.^{9,10} These should be taken into consideration when deciding which is the most suitable method of contraception, and COCs should be prescribed with caution to obese women (BMI >35).¹¹ VTE risks are also much higher in women who are carriers of hereditary thrombotic conditions.^{10,12}

• **Practical prescribing.** Based on the available evidence of risks, the Faculty of Sexual and Reproductive Healthcare (FSRH) has developed the UK medical eligibility criteria (UKMEC), based on WHO criteria, for use of the different contraceptive methods available (see Table 1).

A thrombophilia screen is necessary if a close blood-relative has had a VTE under the age of 45 without clear precipitating factors. If the thrombophilia screen is positive, COCs remain contraindicated (UKMEC 4). The COC remains relatively contraindicated (UKMEC 2/3) for a woman with a positive first-degree family history and negative test results, since currently unidentified thrombophilias may exist.

- breast feeding <6 weeks postpartum
- smoking ≥15 cigarettes per day in a woman ≥35
- BP ≥160/95mmHg
- current or past history of VTE
- current or past history of stroke
- current or past history of ischaemic heart disease
- secondary Raynaud's with lupus anticoagulant
- migraine with aura or other focal neurological symptoms
- current breast cancer
- hepatocellular adenoma or malignant liver tumours
- systemic lupus erythematosus (SLE) with positive or unknown antiphospholipid antibodies
- complicated valvular heart disease (pulmonary hypertension, atrial fibrillation, history of subacute bacterial endocarditis)
- known thrombogenic mutations
- diabetes with evidence of vascular involvement or 'opathies'
- active viral hepatitis
- severe (decompensated) cirrhosis
- major surgery with prolonged immobilisation

Table 2. Contraindications to COC use (UKMEC 4)¹¹

Alternatives include all progestogen-only methods since there is no evidence that contraceptive doses of progestogens increase the risk of VTE.¹³

Arterial thromboembolism Myocardial infarction (MI) is not increased in healthy COC users compared to nonusers. Age, smoking, hypertension, diabetes, obesity and family history are additional risk factors, increasing risk. Limited data suggest that in women with risk factors for arterial disease, the increased risk of MI is significant in users of progestogen-dominant COCs and may be less with oestrogen-dominant COCs.¹⁴ This is in keeping with the theory that, although oestrogen-dominant pills increase thrombotic risks, they may have some beneficial effects on atherosclerotic risks compared to progestogen-dominant pills.¹⁵

Haemorrhagic stroke is not increased in healthy COC users. In contrast, COC use is associated with a two-fold increased risk of ischaemic stroke in healthy users, which translates to an additional 4.1 ischaemic strokes per 100 000 nonsmoking, normotensive women using low-dose COCs, or one additional ischaemic stroke per year per 24 000 such women.¹⁶ Hypertension and smoking are the most important independent risk factors for both conditions. There is also evidence that migraine, particularly with aura, increases the risk of ischaemic stroke.¹⁷

• Practical prescribing. Blood pressure must be measured before and at every visit during COC use. Mild

Antiepileptic
 carbamazepine
 oxcarbazepine
 phenobarbital
 phenytoin
 primidone
 rufinamide
 topiramate

Antibiotic
 rifabutin
 rifampicin

Antidepressant
 St John's wort

Antifungal
 griseofulvin

Antiretroviral
 atazanavir
 efavirenz
 lopinavir

Table 3. Enzyme-inducing drugs that reduce the efficacy of COCs and POPs

hypertension (140–159/90–94mmHg) does not in itself absolutely contraindicate COCs unless other arterial risk factors are present. A lipid screen is not routinely recommended but should be tested if there is a known lipid disorder or arterial disease in a close relative under age 45. Smoking should be discouraged.

For women with a single relative risk factor for arterial disease consider prescribing an oestrogen-dominant pill containing desogestrel, gestodene or drospirenone.

Breast cancer A collaborative meta-analysis of 54 epidemiological studies suggested a 24 per cent increased risk of breast cancer in women using COCs versus nonusers.¹⁸ In contrast, a case-control study found that in women aged from 35 to 64 years, the relative risk of breast cancer in current COC users was 1.0, *ie* there was no increased risk, although the data in women over 45 were not definitive due to small numbers.¹⁹

Use of oral contraceptives by women with a family history of breast cancer does not appear to be associated with an increased risk of breast cancer over and above the background risk.^{19,20} The average woman has a 1 in 625 risk of developing breast cancer up to age 35, rising to 1 in 56 by age 50. A woman with two

- pain in the chest, including any sharp pain that is worse when breathing in
- breathlessness
- coughing up blood
- painful swelling in the leg(s)
- weakness, numbness or bad 'pins and needles' in an arm or leg
- severe stomach pains
- a bad fainting attack or collapse
- unusual headaches or migraines that are worse than usual
- sudden problems with speech or eyesight
- jaundice

From FPA leaflet: *Your guide to the combined pill*. London: FPA, 2009. Available at: <http://www.fpa.org.uk/helpandadvice/contraception/combinedpill>

Table 4. Patients are advised to consult their doctor straight away if they are taking the COC and experience any of these symptoms

first- or second-degree relatives with breast cancer diagnosed under age 60 has a risk two to three times higher than the background risk.

Although these data are reassuring, an increased risk in younger women cannot be ruled out, particularly those with BRCA1 or BRCA2 mutations. A population-based case-control study assessed COC use as a risk factor in Caucasian carriers and noncarriers of BRCA1 and BRCA2 mutations.²¹ Use of low-dose COCs was not associated with increased risk of breast cancer in either BRCA2 carriers or noncarriers. Furthermore, the results suggest a reduced risk of breast cancer in BRCA1 carriers.

In contrast, results from the retrospective international BRCA1/2 Carrier Cohort Study suggested that ever users of COCs had an increased risk of breast cancer – adjusted hazard ratio 1.47; 95% CI 1.16–1.87. Duration of use before first full-term pregnancy further increased risk.²²

Use of low-dose COCs may also be associated with reduced risk of ovarian cancer in BRCA1 and BRCA2 carriers.²³

• **Practical prescribing.** Women with a family history of breast cancer can use COCs (UKMEC 2) but should be counselled about the increased background risk. Further, there are the benefits of COCs to consider, in particular reduced risk of ovarian, colon and endometrial cancer and PID, as well as relief from many period-related problems.

The lowest dose of oestrogen that provides good cycle control is recommended, reassessed at least

every five years. Women can be reassured that, should they develop breast cancer while taking COCs, the prognosis is likely to be better than for women not using hormonal contraception.¹⁸

Cervical cancer The risk of cervical cancer is strongly related to the lifetime number of sexual partners, age at first intercourse, smoking and use of oral contraceptives.²⁴ COCs appear to be only a weak co-factor with smoking, and the presence of certain types of the human papilloma virus (HPV) is more important.²⁵

• **Practical prescribing.** Women using COCs should be counselled against smoking and to use condoms to protect against sexually-transmitted infections (STIs) and to avail themselves of the cervical screening programme. COCs can be started and continued during treatment for cervical intraepithelial neoplasia (CIN).

Other cancers Benign and malignant liver tumours are more common in women using COCs but both conditions remain rare.

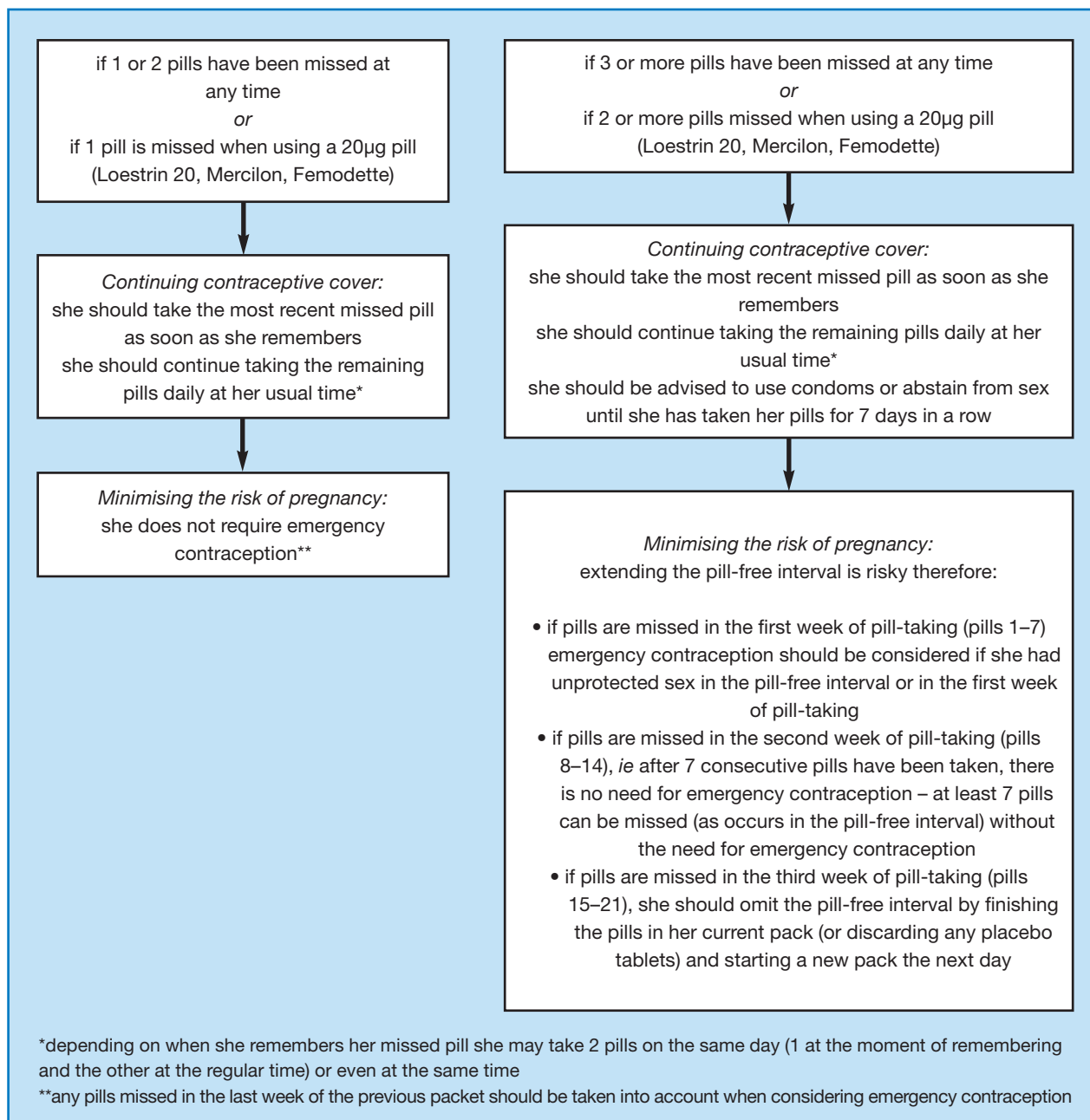


Figure 2. Advice for women missing one of their COC pills; from Clinical Effectiveness Unit. *First prescription of combined oral contraception*. London: FFPRHC, 2006 (revised 2007)

Oral contraception

Principal contraindications

Several conditions are considered to represent an unacceptable health risk if COCs are used (UKMEC 4; see Table 2). In addition, the presence of multiple relative-risk factors usually contraindicates COCs.

These contraindications affect only a minority of prospective users. Most of the above risks are related to the oestrogen component of COCs, so progestogen-only and nonhormonal methods are suitable alternatives.

Principal interactions

Drugs that induce hepatic enzymes (see Table 3) and broad-spectrum antibiotics that affect the enterohepatic circulation of EE reduce the efficacy of COCs.

- **Practical prescribing.** Consider alternative contraception such as injectable contraceptives, the intrauterine system (IUS) or nonhormonal methods. Medroxyprogesterone (Depo-Provera) is the preferred hormonal method of contraception in women taking enzyme-inducing drugs, which should be given at the usual 12-weekly interval since the rate of clearance of the drug is unchanged by enzyme inducers. If COCs are preferred, at least 50µg of EE is necessary to ensure contraceptive action; efficacy may be further increased by extended use and shortening the pill-free interval to four days or taking the pill continuously.

Rifampicin and rifabutin (Mycobutin) are such powerful enzyme inducers that alternative contraceptive methods should be used. Even short courses of two days reduce contraceptive efficacy for a month, and longer courses for up to two months, after stopping.

Additional contraceptive precautions should be used for the duration of short courses of penicillins and tetracyclines, and for seven days after stopping. The pill-free interval should be omitted if less than seven pills remain in the pack at the end of the antibiotic course.

Beyond two weeks, gut flora appear to become resistant to antibiotics. Consequently, if starting long-term tetracyclines in someone already taking COCs, such as for acne or antimalarial prophylaxis, extra barrier methods are required only for the first three weeks; additional precautions are unnecessary if COCs are started in a woman already taking long-term antibiotics.

Progestogen-only pills

Progestogen-only pills (POPs) contain the progestogens desogestrel (Cerazette), etynodiol diacetate (Femulen), levonorgestrel (Norgeston), or norethisterone.²⁶ They are taken every day, without a break.

Mode of action

The main mode of action of standard POPs is to thicken cervical mucus and thus prevent sperm penetration. They also have an effect on the endometrium, reducing uterine receptivity. Unlike COCs, ovulation is inhibited in only 15–40 per cent of cycles, which accounts for the reduced efficacy. In contrast, the primary mode of action of the desogestrel POP is ovulation inhibition, enhancing efficacy.

Efficacy

POPs can be very effective with failure rates for perfect use as low as 0.3 per 100 woman-years during the first year of use. More typical use is associated with a failure rate similar to COCs. Contraceptive efficacy improves with age as natural fertility declines.

The main cause of failure is missed pills. If a pill is taken more than 27 hours after the last dose, contraceptive protection is reduced.

The anovulant desogestrel POP is likely to have similar efficacy to COCs and can be taken up to 12 hours late without affecting efficacy.

Advantages

POPs provide a reversible and convenient method of contraception, independent of intercourse and without oestrogen-associated risks. Most women for whom EE is contraindicated can use them.

Principal side-effects

Menstrual irregularities, from breakthrough bleeding to amenorrhoea, are common. A few women develop functional ovarian cysts. If ovulation is not inhibited, ectopic pregnancy is more likely; anovulant methods are the contraceptives of choice if there is a past history of ectopic pregnancy.

- Practical prescribing. Breakthrough bleeding, once pathology or user failure has been excluded, may resolve with time but otherwise a change to a different POP is worth considering. Amenorrhoea can cause concern about possible pregnancy but, once this has been excluded, actually suggests better efficacy from an anovulant effect.

Principal risks

The only relevant risk relates to breast cancer. Although likely to be minimal, the risk of POPs and breast cancer is uncertain since studies have failed to reach statistical significance due to the small number of users.

Principal contraindications

Only current breast cancer contraindicates POP use (UKMEC 4).¹¹

Principal interactions

Hepatic enzyme-inducing drugs reduce the efficacy of POPs (see Table 3). However, since progestogen does not undergo an enterohepatic circulation, broad-spectrum antibiotics do not affect POP efficacy.

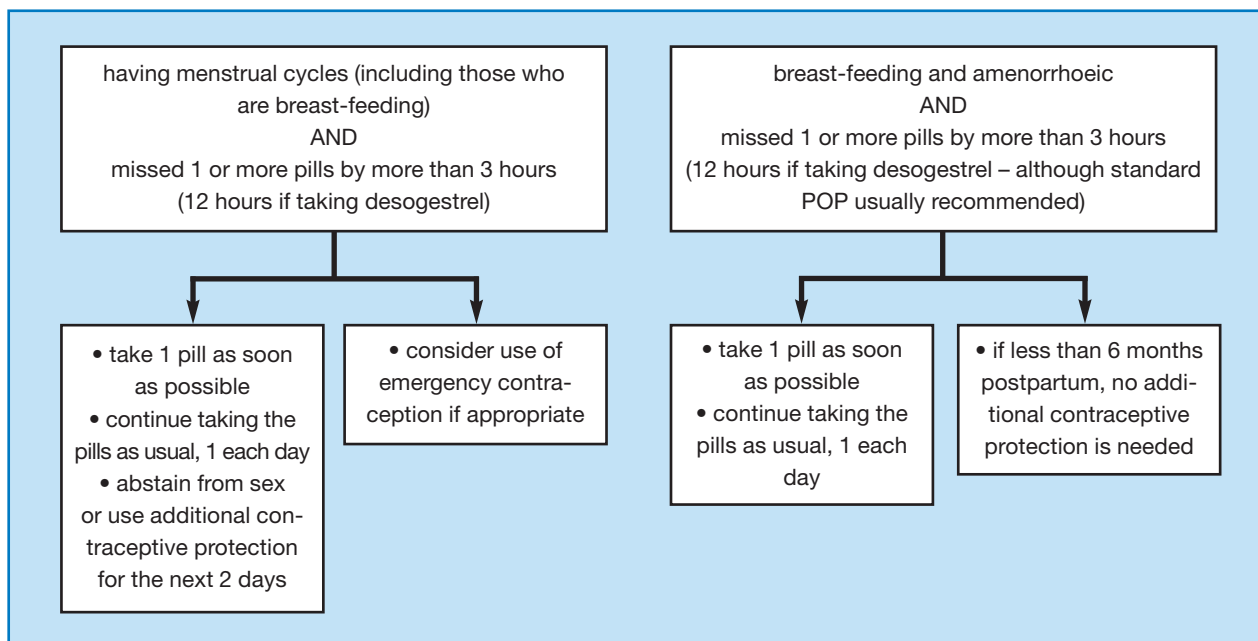


Figure 3. Advice for women who miss one or more of their POP pills; from WHO. *Selected practice recommendations for contraceptive use.* Second edition. Geneva: WHO, 2004

- Practical prescribing. POP users starting enzyme-inducing drugs should use alternative contraception such as medroxyprogesterone (Depo-Provera), the intrauterine system (IUS) or nonhormonal methods.

Place of COCs and POPs in contraception

COCs are the most popular method of contraception for young women in the UK. They have the advantage of being effective, reversible and independent of intercourse. For the majority of users they are very safe with added health benefits, and can be used by healthy women right up to the menopause.

Although it is unlikely that COCs are over-prescribed, women are often not counselled about the full range of contraceptive methods available, many of which are associated with lower failure rates. Similarly, it is important to counsel women about potential side-effects and the importance of compliance. A review three months after initiating the method should be scheduled in order to assess the method and consider if a change is necessary.

Women should also be alerted to the list of symptoms in the Family Planning Association (FPA) leaflets for which urgent medical attention is recommended and which may require immediate cessation of COCs (see Table 4). Emergency contraception may be indicated if there is a risk of pregnancy.

If adherence is an issue, consider the combined contraceptive patch (Evra), which is changed weekly for three out of every four weeks. Another option is the combined vaginal ring (NuvaRing), which is used continuously for three out of every four weeks. Risks and benefits are otherwise the same as for COCs.

For a minority of women risks outweigh benefits and alternative methods of contraception are recommended. These include the POP, which also benefits from being effective, reversible and independent of intercourse. In younger women standard POP efficacy is lower than for the COC, but both are of similar efficacy in women over 35. However, the anovulant desogestrel POP has similar efficacy to the COC. The POP can be used in most conditions that contraindicate

oestrogen-containing contraceptives, and by breast-feeding women.

Despite their popular use, oral contraceptives are only one of a number of different contraceptive methods. Of greater efficacy are the user-independent reversible methods, such as the IUD, IUS, implants and injectables (see Figure 1). Each of these methods has different advantages and disadvantages and it is important that women are aware of all the options available to them. The FPA leaflets are very helpful aids to discussion.

New developments are constantly being marketed, which will give women even more choice. A combined contraceptive injectable is already available in some countries. Extended-cycle and continuous COCs are licensed in several countries. They improve contraceptive efficacy by reducing the number of hormone-free days and show greater improvement in menstrual-associated symptoms compared to cyclical regimens. Clinical trials show that there is an initial increase in unscheduled bleeding and spotting days with extended-cycle oral contraceptive use, but an absolute decrease in total days of bleeding and spotting from the first cycle of use with 80–100 per cent of women experiencing amenorrhoea by 10 to 12 months of use.²⁷ Although not currently available in the UK, they can be prescribed 'off-licence'.²⁸

References

1. Dinger JC, *et al.* *Contraception* 2007;75:344–54.
2. CSM. *Current Problems in Pharmacovigilance* 2004;30:7.
3. Guillebaud J. *Contraception: your questions answered*. 5th ed. Edinburgh: Churchill Livingstone, 2009.
4. Trussell J. Contraceptive efficacy. In: Hatcher RA, *et al.* *Contraceptive technology: nineteenth revised edition*. New York: Ardent Media, 2007.
5. Kaunitz AM. *Contraception* 1999;59(1 Suppl):29S–33S.
6. Arowojolu AO, *et al.* *Combined oral contraceptive pills for treatment of acne*. *Cochrane Database Syst Rev* 2009(3):CD004425.
7. Hannaford PC, *et al.* *BMJ* 2007;335:651–4.
8. Michaelsson K, *et al.* *Lancet* 1999;353:1481–4.
9. Farmer RD, *et al.* *Br J Clin Pharmacol* 2000;49:580–90.
10. Ageno W, *et al.* *Circulation* 2008;117:93–102.



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11. Faculty of Sexual and Reproductive Healthcare. *UK medical eligibility criteria for contraceptive use (UKMEC 2009)*. Available at: www.fsrh.org/admin/uploads/UKMEC_2009.pdf.
12. Vandembroucke JP, et al. *Lancet* 1994;344:1453–7.
13. Vasilakis C, et al. *Lancet* 1999;354:1610–1.
14. Tanis BC, et al. *N Engl J Med* 2001;345:1787–93.
15. Kubba A, et al. *Lancet* 2000;356:1913–9.
16. Gillum LA, et al. *JAMA* 2000;284:72–8.
17. MacGregor EA. *J Fam Plann Reprod Health Care* 2007; 33(3):159–69.
18. Collaborative Group on Hormonal Factors in Breast Cancer. *Lancet* 1996;347:1713–27.
19. Marchbanks PA, et al. *N Engl J Med* 2002;346:2025–32.
20. Gaffield ME, et al. *Contraception* 2009;80:372–80.
21. Milne RL, et al. *Cancer Epidemiol Biomarkers Prev* 2005;14:350–6.
22. Brohet RM, et al. *J Clin Oncol* 2007;25:3831–6.
23. Whittemore AS, et al. *Br J Cancer* 2004;91:1911–5.
24. Green J, et al. *Br J Cancer* 2003;89:2078–86.
25. Moreno V, et al. *Lancet* 2002;359:1085–92.
26. Faculty of Sexual and Reproductive Healthcare. *Progestogen-only pills*. Available at: www.fsrh.org/admin/uploads/CEUGuidanceProgestogenOnlyPill09.pdf.
27. Archer DF. *Contraception* 2006;74:359–66.
28. FSRH. *Statement from the FSRH Clinical Standards Committee, the Clinical Effectiveness Committee and the Associate Members' Working Group on the prescription, administration or supply of contraceptive medicines for use outside the terms of their licences*. FSRH 2009. Available at: www.fsrh.org/admin/uploads/JointStatementOffLabelPrescribing.pdf.

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Resources

Organisations

Healthcare professionals

Faculty of Sexual and Reproductive Health Care of the Royal College of Obstetricians and Gynaecologists: www.ffprhc.org.uk. (see website for telephone and e-mail contact details).

International Planned Parenthood Federation: www.ippf.org. Tel: 020 7939 8200; e-mail: info@ippf.org.

Healthcare professionals and public

FPA (Family Planning Association): www.fpa.org.uk. Helpline: 0845 122 8690 (Mon–Fri 9am–6pm). Tel: 0845 122 8600; e-mail: fpadirect@fpa.org.uk.

Margaret Pyke Centre: www.margaretpyke.org. Tel: 020 3317 3737.

Patients

Brook Advisory Centres: www.brook.org.uk. There are 17 Brook Centres around the UK offering free and confidential sexual health advice and contraception to young people up to the age of 25. Tel: 0808 802 1234 for details of closest centre.

Further reading

Healthcare professionals

Contraception today. Guillebaud J. 6th ed. Informa Healthcare, 2007.

Contraception: your questions answered. Guillebaud J. 5th ed. Churchill Livingstone, 2009.

Handbook of contraception and reproductive sexual health. Everett S. 2nd ed. Bailliere Tindall, 2004.

Handbook of family planning and reproductive healthcare. Glasier A, et al. 5th ed. Churchill Livingstone, 2008.

Women's sexual health. Andrews G. 3rd ed. Elsevier, 2005.

Management guidelines

Healthcare professionals

World Health Organization: www.who.int/reproductivehealth/en/

– *Selected practice recommendations for contraceptive use*. WHO, 2005.

– *Medical eligibility criteria for contraceptive use*. 3rd ed. WHO, 2004.

Contraception – assessment – management. NHS Clinical Knowledge Summaries. www.cks.nhs.uk/contraception_assessment.

Faculty of Family Planning and Reproductive Health Care of the Royal College of Obstetricians and Gynaecologists: www.fsrh.org. Articles that can be downloaded include: Combined oral contraception – first prescription of COC, Emergency contraception guidance, UK selected practice recommendations for contraceptive use, Combined oral contraception – missed pills, Drug interactions with hormonal contraception, Contraception for women aged over 40 years, Oral contraception use and cancer risk, The use of contraception outside the terms of the product licence.

Prescription review

GPs in England wrote 5.56 million prescriptions for COCs in 2009 at a total cost of £44.9 million. The largest category was COCs containing EE 30µg (73 per cent of volume, 72 per cent costs), which included Microgynon 30, the biggest selling formulation (44 per cent of all COCs and 25 per cent of costs). High-dose formulations (EE 35µg) accounted for 14 per cent of COC scrips and 9 per cent of costs; low-dose brands (EE 20µg) accounted for 7 per cent of volume and 8 per cent of costs. There were 240 000 scrips for phased formulations (4 per cent), costing £1.4 million (3 per cent).

There were 2.2 million prescriptions for COCs containing third-generation progestogens (desogestrel,

gestodene, norgestimate) or drospirenone (Yasmin) – 39 per cent of all COCs. Three of these COCs were among the top five brands prescribed (see Table 5). For comparison, there were 57 000 prescriptions for the Evra patch, 3200 for NuvaRing and 1.8 million for POPs.

	No. scrips (000s)	Cost (£millions)
Microgynon 30	2 437	11.1
Yasmin	739	7.3
Cilest	695	12.4
Marvelon	323	3.5
Ovranette	208	0.8

Table 5. Number of prescriptions and costs for selected COCs. England, 2009

CPD: oral contraception

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1. One of these statements about COCs is false – which is it?

- A COC containing the progestogen desogestrel is classed as 'progestogen dominant'
- Drospirenone is an antiandrogen with very mild diuretic activity
- Oestradiol valerate is metabolised to 17-beta-oestradiol, the same hormone that is produced by the ovaries
- If one Qlaira pill is missed in the first 24 days of the pack, additional contraceptive measures should be taken for the next nine days

2. Which one of these statements is false?

- The principal mode of action of a COC is to inhibit ovulation by suppressing folliculogenesis
- The failure rate associated with typical use of a COC may be up to 8 per 100 woman-years of use
- The main problem contributing to contraceptive failure with COCs is missing pills in the middle of the cycle
- Noncontraceptive benefits of COCs include a reduction in ovarian cysts

3. Which one of these statements about the risks associated with COCs is false?

- COCs are relatively contraindicated in women with a positive first-degree family history of venous thromboembolism even if a thrombophilia screen is negative
- In women with risk factors for arterial disease, the increased risk of myocardial infarction is significant with oestrogen-dominant COCs and may be less with progestogen-dominant COCs
- Mild hypertension is not an absolute contraindication to COCs in the absence of other risk factors
- Women with a family history of breast cancer can use COCs but should be counselled about the increased background risk

4. One of these statements about drug interactions with COCs is false – which one?

- Alternative contraceptive methods should be considered for women taking enzyme-inducing drugs
- For a woman taking an enzyme-inducing drug, the minimum effective dose of EE in a COC is 75µg
- The efficacy of a COC in a woman taking an enzyme-inducing drug can be increased by shortening the pill-free interval to four days or omitting it entirely
- When starting long-term treatment with a tetracycline in a woman taking a COC, additional contraceptive measures should be taken for three weeks

5. Which one of these statements about progestogen-only pills (POPs) is false?

- The risk of breast cancer during use is uncertain
- Ovulation is inhibited in 15–40 per cent of cycles
- Menstrual irregularities are common
- Unlike COCs, hepatic enzyme-inducing drugs do not reduce the effectiveness of POPs

6. Regarding the place of COCs and POPs in contraception, which one of these statements is false?

- A review should be scheduled after three months to assess the method and consider if a change is necessary
- POPs are less effective than COCs in women aged over 35
- The combined contraceptive patch (Evra) and the combined vaginal ring (NuvaRing) should be considered if adherence is an issue
- Extended-cycle and continuous COCs improve menstrual-associated symptoms compared with cyclical regimens despite an initial increase in unscheduled bleeding