

# Contraception provision in primary care

## Opening Vignette

*Miss Tan, a 27-year-old accountant, who just got married last year, visits your clinic to ask for advice on long-term contraception, as she and her husband are not planning on having children at least for the next 2 years. She is sexually active with her husband only. She has experienced headache with the combined oral contraceptive pill and wants to try an alternative form of contraception. She is otherwise well with no significant past medical history. Her menstrual cycles are regular at every 30 days with normal flow; there is no significant dysmenorrhoea, except for some mild cramps on days 1–2, with no intermenstrual bleeding. She has no other gynaecological and obstetric history, medication allergies or chronic health conditions. She does not smoke. Her blood pressure is normal and her body mass index is within the healthy range. She has no symptoms suggestive of sexually transmitted infections. She may consider pregnancy after 2 years and wants a contraception that is highly effective and fuss free.*

## INTRODUCTION

The use of contraception is key to preventing unplanned pregnancies. As patients' first port of call in the healthcare setting, primary care physicians are uniquely placed to deliver effective and suitable reversible methods of contraception.<sup>[1]</sup> This article aims to provide an update of current knowledge in prescribing contraception in primary care.

Reversible methods of contraception can be broadly divided into short-acting hormonal methods (e.g., the pill and patch), barrier methods, natural family planning, medium-acting methods (e.g., the ring and injection), and long-acting reversible contraceptives (e.g., the implant and intrauterine devices [IUDs]). There are also irreversible methods and emergency contraception. The use of contraceptives to avoid unintended pregnancies should be considered until menopause or up to the age of 55 years, as spontaneous pregnancy is very rare at this age.<sup>[2]</sup>

Primary care physicians should understand the available contraceptive options and their advantages, efficacy, common side effects and contraindications. Table 1 provides an overview of the various contraceptive methods and their effectiveness and common side effects.<sup>[3]</sup> Before prescribing any form of contraception, physicians should also check sources, such as the guidelines from UK Medical Eligibility Criteria for Contraceptive Use, for particular patient characteristics and

medical conditions that might preclude the use of a particular contraceptive.<sup>[4]</sup> One must also rule out the possibility of pregnancy before starting contraception.

## REVERSIBLE CONTRACEPTIVE METHODS

### Short-acting methods

The combined oral contraceptive pill, transdermal patch and vaginal ring contain both oestrogen and a progestin. Important non-contraceptive advantages include protection against ovarian, endometrial and colon cancers, and improvement or maintenance of bone mineral density (BMD).<sup>[5]</sup> Contraindications include women aged  $\geq 35$  years who smoke, cardiovascular disease or stroke, venous thromboembolism, migraine with aura, breast cancer and abnormal liver function.<sup>[4]</sup>

The combined oral contraceptive pill is usually taken for 21 consecutive days with a 7-day pill-free period, during which a withdrawal bleed occurs. Patients who wish to avoid monthly bleeds for lifestyle or symptom purposes may take the pill for an extended period of three strips or 63 days followed by a 4–7-day pill-free period. Alternatively, they can take the pill continuously until breakthrough bleeding occurs, during which they can stop taking the pill for 3–4 days to allow for withdrawal bleed and then restart the pill again until the next breakthrough bleeding. It is important to advise patients that with the extended or continuous use option, unscheduled bleeding or spotting may occur intermittently.<sup>[2]</sup>

The transdermal patch is applied weekly at different sites such as the buttock, outer upper arm, upper back and abdomen for 3 weeks, followed by one patch-free week to allow withdrawal bleed. Contraceptive efficacy may be reduced in women weighing more than 90 kg, and additional precautions or alternative methods are advised.<sup>[5]</sup>

The progesterone-only pill (POP) contains only progestin and may be considered in women with contraindications to oestrogen. Contraindications include breast cancer, abnormal liver function and undiagnosed uterine bleeding.<sup>[4]</sup> The POP needs to be taken at the same time each day to maximise efficacy. It is taken as a continuous daily dose with no hormone-free days.<sup>[6]</sup> It is important to advise women that irregular bleeding may occur but tends to decrease with prolonged period of use.<sup>[6]</sup>

### Barrier methods

The male condom usually comes in the latex form. For those with latex allergy, there are latex-free options available. Both forms protect against sexually transmitted infections (STIs). It is important to note that latex condoms are not compatible

**Table 1. Overview of the effectiveness and common side effects of various contraceptive methods.<sup>[3]</sup>**

Method	Pregnancies/100 women <sup>a</sup>	Common adverse effects/remarks
Sterilisation (tubal ligation/vasectomy)	<1	<ul style="list-style-type: none"> <li>Bleeding/complications from surgery</li> <li>Rarely ectopic pregnancy</li> </ul>
Implant (Nexplanon <sup>®</sup> )	<1	<ul style="list-style-type: none"> <li>Irregular, unpredictable menses</li> <li>Headache</li> <li>Breast tenderness</li> <li>Acne</li> <li>Ovarian cysts</li> </ul>
Cu-IUD	<1	<ul style="list-style-type: none"> <li>Heavier, longer and more painful menses</li> <li>Expulsion/perforation</li> <li>Pelvic infection</li> </ul>
LNG-IUS (Mirena <sup>®</sup> )	<1	<ul style="list-style-type: none"> <li>Irregular menses</li> <li>Expulsion/perforation</li> <li>Pelvic infection</li> <li>Ovarian cysts</li> </ul>
DMPA	6	<ul style="list-style-type: none"> <li>Irregular menses</li> <li>Weight gain</li> <li>Mood changes</li> <li>Breast tenderness</li> <li>Headaches</li> <li>Decreased BMD</li> </ul>
COC	9	<ul style="list-style-type: none"> <li>Headache</li> <li>Nausea and vomiting</li> <li>Breast tenderness</li> <li>Mood changes</li> <li>Breakthrough bleeding</li> <li>Rare but serious adverse effects<sup>c</sup></li> </ul>
CHP	9	<ul style="list-style-type: none"> <li>Skin irritation</li> <li>As for COC</li> </ul>
CHR <sup>b</sup>	9	<ul style="list-style-type: none"> <li>Comfortable with vaginal insertion</li> <li>Increase in vaginal discharge</li> <li>As for COC</li> </ul>
POP	9	<ul style="list-style-type: none"> <li>Irregular menses</li> <li>Mood changes</li> <li>Ovarian cysts</li> </ul>
Male condom	18	<ul style="list-style-type: none"> <li>Skin irritation, allergic reaction to latex</li> <li>Tear/break/slip off</li> </ul>
Withdrawal	22	<ul style="list-style-type: none"> <li>Nil</li> </ul>
Natural rhythm method	24	<ul style="list-style-type: none"> <li>Requires good understanding of menstrual cycles<sup>d</sup></li> <li>Affected by illness, stress, medications, recent miscarriage or abortion</li> </ul>

<sup>a</sup>Pregnancies per 100 women within first year of typical use. Typical use refers to use of the contraceptive method by couples who do not use it consistently and correctly all the time.<sup>[2]</sup> <sup>b</sup>Not available in Singapore currently. <sup>c</sup>The risk is higher in smokers, women aged > 35 years and those with cardiovascular comorbidities (e.g., raised BMI, hypertension) including venous thromboembolism, stroke and myocardial infarction. <sup>d</sup>Assume that the woman's cycles are regular. BMD: bone mineral density, BMI: body mass index, CHP: combined hormonal patch, CHR: combined hormonal ring, COC: combined oral contraception, Cu-IUD: copper intrauterine device, DMPA: depot medroxyprogesterone acetate, LNG-IUS: levonorgestrel-releasing intrauterine system, POP: progestogen-only pill

with oil-based lubricants as the lubricants will damage the latex and increase the likelihood of breakage.

### Natural family planning

Natural family planning involves the woman determining her fertile days and avoiding unprotected intercourse during that period. If a woman opts for the natural rhythm method, she should be counselled on how to identify when she would likely ovulate (it is usually 14 days before the start of her next

period). However, ovulation can occur in the 4 days before the midpoint of the cycle, taking into account her shortest and longest cycle lengths. For example, if a woman's shortest cycle is 26 days, she should subtract 18 from the total number of days in her shortest cycle (=8) and this would represent the first fertile day of her cycle. Assuming her longest cycle is 32 days, the last fertile day is determined by subtracting 14 from the total number of days in her longest cycle plus

1 (=19). This means that her fertile period is from day 8 to 19 of the cycle (with cycle day 1 being the first day of the menstrual period). A number of commercially available apps track fertility through cycle  $\pm$  basal body temperature recording. Cervical secretions, which are of an egg white consistency preovulation, may also be monitored. It is important to counsel the woman that she can theoretically get pregnant anytime in her natural cycle, but chances are highest in the 4 days leading up to and on the day of ovulation.<sup>[7]</sup> Natural family planning requires the woman to have a good understanding of her cycles. Factors such as illness, stress, weight loss or gain and recent miscarriage or abortion affect cycle regularity. Typical failure rates are higher in these circumstances.<sup>[3]</sup>

### Medium-acting methods

Depot medroxyprogesterone acetate (DMPA) injection is given three monthly and is available in the intramuscular or subcutaneous injectable form. Only intramuscular preparations are available in Singapore. The use of DMPA should be reviewed every 2 years due to its effect on BMD.<sup>[8]</sup> Physicians should also consider likely compliance. Contraindications include severe (decompensated) liver disease, unexplained vaginal bleeding, breast cancer, as well as any cardiovascular risk factors, ischaemic heart disease, stroke, clotting disorders and use of anticoagulants, or decreased bone mass.<sup>[4]</sup> There may be a delay in return of fertility for up to 1 year after stopping the intake of DMPA.

The combined vaginal ring is not available in Singapore. It is self-inserted and left in place for 3 weeks and removed for 1 ring-free week.

### Long-acting reversible contraceptives

Long-acting reversible contraceptive methods require less than one administration per month.<sup>[9]</sup> These include the progestogen-only implant, injectable progestin (DMPA) and intrauterine contraceptive devices (IUCDs) such as nonhormonal copper intrauterine device (Cu-IUD) and levonorgestrel (LNG)-releasing intrauterine system (LNG-IUS). Their effectiveness is not dependent on patient compliance, and they are the most effective reversible forms of contraception.<sup>[10]</sup>

Implant (Nexplanon<sup>®</sup>) is a single flexible plastic tube inserted subdermally into the upper arm. It has the advantage of being better than female sterilisation; it is long acting yet quickly reversible, extremely effective in preventing pregnancy<sup>[10]</sup> and is minimally invasive. While licensed for use for up to 3 years, there is limited evidence to support use for up to 5 years, which is outside of the product licence and not routinely recommended.<sup>[11]</sup> Irregular, unpredictable bleeding is common, and the bleeding pattern may change at any time. Other common side effects can be found in Table 1. Contraindications include abnormal liver function, unexplained vaginal bleeding and breast cancer (previous history or current).<sup>[4]</sup>

The IUCD is a small intrauterine plastic device that is available in two forms — the Cu-IUD and the LNG-IUS such as Mirena<sup>®</sup>. Both are highly effective in preventing pregnancy, with <1% failure rates.<sup>[3]</sup> The Cu-IUD available in Singapore is the Multisafe Cu-375. It is licenced for up to 5 years and has the advantage of not containing systemic hormones. However, it can be associated with longer, heavier and more painful periods. The LNG-IUS lasts for 5 years and has the advantages of reducing heavy menstrual bleeding, anaemia and dysmenorrhoea, and treating endometrial hyperplasia.<sup>[12]</sup> Generally, few contraindications exist for IUCD insertion, such as suspected or active pelvic infection, distorted uterine cavity, copper allergy for Cu-IUD, and unexplained vaginal bleeding, breast cancer and severe decompensated liver disease for LNG-IUS.<sup>[4]</sup>

### IRREVERSIBLE CONTRACEPTIVE METHODS

Irreversible methods refer to female and male sterilisation and are permanent. There may be regret if the procedure is performed under the age of 30. For male sterilisation, it is performed under local or general anaesthesia. Its success is confirmed by semen analysis 3 months postprocedure. For female sterilisation, it is performed under general anaesthesia. Its failure rate is higher than that of implant and LNG-IUS. If the patients are unwilling to use or intolerant to reversible methods, they can be recommended by physicians to consider the irreversible methods.

### EMERGENCY CONTRACEPTION

In the event of a lapse in contraceptive use, contraception failure or sexual assault, emergency contraception (EC) can be provided. Physicians should perform a pregnancy test (urine or serum) to rule out any possibility of pregnancy before prescribing any EC. The EC is not an abortifacient and cannot be used for that purpose. There are two forms of EC — oral EC and the Cu-IUD.<sup>[7]</sup> There are a few contraindications for the use of EC such as pregnancy, drug allergy and contraindications to the use of Cu-IUD.<sup>[4]</sup> Broad considerations when picking an appropriate form of EC include the timing of unprotected sexual intercourse (UPSI), drug–drug interaction, drug allergy, weight, efficacy and the woman's desire for ongoing, long-term contraception. Menses usually occur within 1 week of the expected date. Therefore, if the menses is delayed by more than 7 days, lighter than usual or associated with atypical abdominal pain, a pregnancy test should be performed.<sup>[7]</sup>

The Cu-IUD can be used up to 5 days after UPSI or up to 5 days after the expected ovulation, e.g., in a 28-day cycle, ovulation would be expected to occur on day 14. A Cu-IUD can, therefore, be inserted on up to day 19 of the cycle. It is the most effective form of EC, with a pregnancy rate of <0.1%, and has the added benefit of providing long-term contraception.<sup>[13]</sup> It is not affected by weight or drug interactions and should be offered to all women, including young women and nullips.<sup>[7]</sup>

Side effects include heavier, longer and more painful periods, which are usually resolve within a few months.<sup>[2]</sup> There is a six times higher risk of uterine perforation during IUD insertion if the woman is breastfeeding.<sup>[7]</sup>

There are two formulations of oral EC, UA 30 mg (ellaOne®) and LNG 1.5 mg (Postinor®-2), which are licenced for up to 5 days and 3 days after UPSI, respectively. The pregnancy rate of UA and LNG is 1.8% and 2.6%, respectively; therefore, UA should be first line, unless contraindicated.<sup>[14]</sup> Both can be used more than once in the same cycle if there is further UPSI. If a woman has a body mass index (BMI) >26 kg/m<sup>2</sup> or weight >70 kg, UA 30 mg or LNG 3.0 mg should be prescribed. Common side effects of both formulations include headaches, dizziness, nausea or vomiting, abdominal discomfort and unscheduled bleeding.<sup>[7]</sup>

Physicians should counsel the woman on adopting a regular, effective form of contraception and not solely depend on EC. After the use of oral EC, women may be started on any regular contraceptive with the next menses. However, there is a pregnancy risk if there is further UPSI and ovulation occurs later in the same cycle. Women can be quick started on contraception immediately with LNG EC or wait for 5 days before starting hormonal contraception after using UA.<sup>[7]</sup> In both cases, women should be advised to use the condom or practise abstinence — 7 days for combined hormonal contraception, DMPA, implant and LNG-IUS, and 2 days for POP — until the method is effective.

**DRUG INTERACTIONS**

With regards to drug interactions, the effectiveness of combined hormonal contraception, POP, implant and oral EC may be reduced for women using liver enzyme-inducing drugs (e.g., antiepileptics, antibiotics such as rifampicin, St. John’s Wort, etc.). Even if the women stopped taking liver enzyme-inducing drugs, their effect lasts for a further 28 days. For women taking liver enzyme-inducing drugs, DMPA, Cu-IUD and the IUS should be recommended.

Regarding EC, the Cu-IUD, if appropriate, would be first line. If oral EC is requested, 3 mg of LNG can be given, but the patient should be counselled that its effectiveness is unknown. A double dose of UA is not recommended. If a woman has taken progestin 7 days before taking UA or progestogen 5 days after taking UA, the effectiveness of UA is reduced. For women taking oral glucocorticoids for severe asthma, UA is also not recommended due to its antiglucocorticoid effects.<sup>[7]</sup> These women should use Cu-IUD or LNG instead.

**WHAT CAN I DO IN MY PRACTICE?**

**History taking**

At every clinic visit, family physicians should use the opportunity to discuss family planning needs with women of reproductive age who are sexually active. Such discussions should take into consideration the woman’s preferences for

the various contraceptive methods and her religious, cultural or personal beliefs with regard to family planning.

A good history should include the woman’s menstrual cycles, gynaecological, obstetric and sexual history, medication allergies, chronic health conditions, smoking history, age, postpartum status, breastfeeding status, and any plans for future pregnancies, which may alter her eligibility for certain contraceptives. Medical eligibility for contraception use should be checked and the most appropriate, effective and safe methods offered.<sup>[4]</sup> Important factors to consider would be her adherence to the method and ability to understand and use the particular contraceptive method correctly. Additional non-contraceptive benefits such as reduction in dysmenorrhoea, heavy menstrual bleeding and cancer risk should also be considered.

**Physical examination**

Clinicians should rule out the possibility of any pregnancy before starting the woman on any form of contraception. Blood pressure as well as the height and weight to determine BMI should be measured before prescribing a hormonal method of contraception.<sup>[4]</sup> Before IUD insertion, signs of STI/pelvic inflammatory disease should be ruled out. A bimanual examination is essential to confirm the uterine position and size, and check for cervical excitation. On speculum examination, look for abnormal discharge and consider STI testing. Opportunistic swabs can be taken for STI screen, in particular, *Chlamydia*, as well as for cervical cancer screening using Pap smear or human papillomavirus DNA.<sup>[2]</sup>

**Counselling**

For women with a new partner for less than 3 months or with more than one sex partner in the past 12 months, additional barrier contraception should be advised, as other contraceptive methods do not protect against STIs. Physicians should also counsel women on the common side effects of the particular contraceptive method to minimise early discontinuation and encourage consistency in use.<sup>[2]</sup> It is also important that women are advised on when to use backup contraception after initiation of contraceptives [Table 2].<sup>[2]</sup>

**Table 2. Backup contraception after initiation of contraceptives.**

Contraceptive	Contraceptive initiation	Backup contraceptive
Cu-IUD	Day of insertion	None required
LNG-IUS	7 days after start of menses	Abstinence or barrier methods for next 7 days
Implant/CHC <sup>a</sup>	5 days after start of menses	Abstinence or barrier methods for next 7 days
DMPA	7 days after start of menses, or later than 13 weeks, 6 days	Abstinence or barrier methods for next 7 days
POP	5 days after start of menses	Abstinence or barrier methods for next 2 days

<sup>a</sup>CHC includes the pill, patch or ring. CHC: combined hormonal contraception, Cu-IUD: copper intrauterine device, DMPA: depot medroxyprogesterone acetate, LNG-IUS: levonorgestrel-releasing intrauterine system, POP: progestogen-only pill

## Skills and training competency

Both insertion and removal of the subdermal implant and IUD should only be undertaken by trained and accredited doctors. Training includes theoretical as well as model arms and pelvis-supervised insertion and removal.

## Suggested follow-up visits

Physicians should review the women on different contraceptives as shown: (a) short-acting methods: review at 3 months to check blood pressure, compliance and any side effects, and then review annually; (b) DMPA: review at 2 years of use; and (c) implants or IUDs: review at expiry. Specific population groups such as adolescents and women with medical conditions may need closer follow-up. Women should be advised to return at any time to discuss any concerns. During follow-up or other routine health visits, physicians should assess the woman for satisfaction with the chosen method, any concerns, changes in health or medications that might alter her eligibility for that particular contraceptive, as well as adherence to and correct use of the contraceptive if she is on a short-acting hormonal method. Physicians should also measure the blood pressure if she is on the combined hormonal method.<sup>[2]</sup> Implants should be palpable and IUD threads visible.

## WHEN TO REFER TO SECONDARY CARE?

Physicians should refer the patients to secondary care in the following situations: (a) complex medical history (medical eligibility criteria 3–4); (b) need a second opinion; (c) side effects requiring investigation (e.g., breakthrough bleeding); (d) options are not available; (e) difficult/failed IUD insertion; (f) IUD perforation; and (g) IUD/implant insertion safety concerns (e.g., anticoagulants, epileptic). Patients should also be referred to secondary care if they opt for male/female sterilisation.

## TAKE-HOME MESSAGES

1. Physicians should be familiar with the types of contraception available in Singapore, their properties, contraindications for use and non-contraceptive benefits.
2. The mode of contraception chosen will depend on the woman's plans for reproduction, medical comorbidities, preferences and previous experience, breastfeeding status, the timing postpartum and cost.
3. For women at risk of STIs, it is good practice to remind patients that non-barrier methods do not offer protection and that condoms should be used.
4. When prescribing an EC, patients should be counselled on the efficacy and side effects. In addition, patients should also be advised to see a physician for evaluation of possible pregnancy, if menstruation is delayed.

## Closing Vignette

*Taking into consideration the patient's wishes, you discuss long-acting reversible contraceptives first, as well as counsel her on the potential side effects and duration. She decides on the implant. You insert the implant under a sterile technique into her left arm, as she is right-handed. There are no postprocedural complications, and the side of the arm that the implant was inserted in and that it was palpable on completion were recorded. You advise the patient to return in 3 years, or earlier if she has any concerns.*

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## Conflicts of interest

There are no conflicts of interest.

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## SMC CATEGORY 3B CME PROGRAMME

Online Quiz: <https://www.sma.org.sg/cme-programme>

**Deadline for submission: 6 pm, 10 December 2024**

Question: Answer True or False
1. Non-contraceptive advantages of the combined oral contraceptive pill (COCP) include protection against endometrial cancer.
2. The COCP is contraindicated in women aged $\geq 35$ years who smoke.
3. A 32-year-old woman who smokes, has no significant past medical history, and a body mass index (BMI) of 26.5 kg/m <sup>2</sup> , can be prescribed the combined hormonal contraception.
4. A 29-year-old woman, with a history of menstrual migraines and BMI that is within the healthy range, can be prescribed the combined hormonal contraception.
5. Levonorgestrel-releasing intrauterine system (LNG-IUS) (Mirena®) is an appropriate form of reversible contraception for the following patient: 28-year-old; obese (BMI 35 kg/m <sup>2</sup> ); regular menstrual cycles with heavy bleeding on days 1–3 and occasional cramps; no smoking or past medical history; and unremarkable physical examination.
6. Weight gain is a possible side effect of COCP.
7. Male condoms protect against sexually transmitted infection.
8. Latex condoms can be used with water-based lubricants.
9. For natural family planning, a woman whose periods are generally regular, with her shortest and longest cycle being 26 days and 30 days, respectively, should be advised to avoid sexual intercourse during days 8–17 of her cycle.
10. For menopausal women aged $>50$ years, it is safe to stop using contraception 12 months after the last period.
11. There may be a delay in return of fertility for up to a year after a woman on 3 monthly depot medroxyprogesterone acetate (DMPA) injections stops the intake of DMPA.
12. The progestogen-only implant (Nexplanon®) is licensed for up to 2 years of use.
13. The LNG-IUS is licensed for up to 5 years of use.
14. The effectiveness of long-acting reversible contraceptive is dependent on patient compliance.
15. Nulliparity is a contraindication to the intrauterine device.
16. A 25-year-old woman with regular menstrual cycles, a healthy BMI of 28kg/m <sup>2</sup> , and no known allergies or past medical history needs emergency contraception after unprotected sexual intercourse 4 days ago. She can be prescribed the ulipristal acetate 30 mg (ellaOne®) tablet.
17. A 25-year-old woman is prescribed the Levonorgestrel 1.5 mg tablet as an emergency contraception after unprotected sexual intercourse 2 days ago. She agrees to adopt a regular effective form of contraception, the COCP. Her last menstrual period was 13 days ago, so she can be started on the COCP immediately.
18. A 28-year-old woman with a history of seizure disorders on liver enzyme-inducing drugs had unprotected sexual intercourse 3 days ago. Her periods are regular with no heavy bleeding or dysmenorrhea. Copper intrauterine device (Cu-IUD) can be offered as a first line method.
19. The Cu-IUD is the most effective form of emergency contraception.
20. A 25-year-old woman has just started on the COCP. She has regular menstrual cycles, a healthy BMI, no smoking or past medical history, and an unremarkable physical examination. Her last menstrual period was 8 days ago, so barrier methods (such as condom) are advised for the next 7 days.