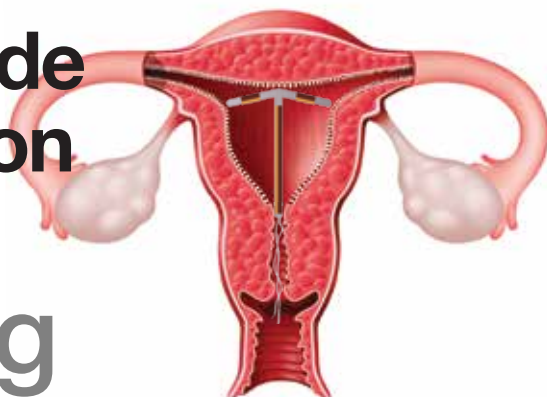




A practical guide to contraception

Part 2:

Long-acting reversible methods



Key points

- Long-acting reversible methods of contraception (LARCs) are acceptable to women and can offer cost-effective 'fit and forget' contraception.
- The longest acting LARCs, the contraceptive implant and intrauterine devices (IUDs), have very similar efficacies in typical and perfect use.
- There are few absolute or relatively strong contra-indications to LARCs, and few serious risks associated with their use.
- The efficacies of depot medroxyprogesterone acetate injections and IUDs are not affected by the concurrent use of medications that induce liver enzymes.
- Use of LARCs has not been shown to have a long-term effect on fertility once the method has been stopped.
- Include a discussion of the benefits of LARCs when women present for renewal of oral contraceptive pill or vaginal ring scripts.

CAROLINE HARVEY MB BS(Hons), FRACGP, DRANZOG, MPM, MPH; **KATHLEEN McNAMEE** MB BS, FRACGP, DipVen, GradDipEpiBio, MEpi; **MARY STEWART** MB BS, DFFP, MPH(Health Promotion), MA(Oxon), MSC(LSHTM)

Women using long-acting reversible methods of contraception – the contraceptive implant, copper and hormonal intrauterine devices and the contraceptive injection – have a lower risk of unintended pregnancy compared with those using oral contraceptive pills, the vaginal ring or barrier methods.

Long-acting reversible methods of contraception (LARCs), defined as those requiring administration less than once a month, have several advantages over other contraceptive methods. They are highly effective and relatively inexpensive compared with combined hormonal methods, and the longest acting methods – implants and intrauterine devices (IUDs) – have the benefit of 'fit and forget'. Recent research has shown that one year after their initiation, the IUD (copper or levonorgestrel) and the etonogestrel (ENG) implant have a continuation rate of around 80%, compared with around 50% for depot medroxyprogesterone acetate injections (DMPA) and the combined contraceptive pill.¹ In addition, women using implants and IUDs have a 20 times lower risk of method failure

compared with women using pills, vaginal rings or contraceptive patches (patches are not available in Australia).² When given accurate advice about LARCs, women of all ages have a high uptake of these methods.³ Although their use in Australia seems to be increasing gradually, their provision in general practice is lagging, with only 15% of contraceptive consultations concerning the use of a LARC method compared with 69% for the combined pill.^{4,5}

This article, the second in a series of three, includes important information to consider when initiating LARCs as well as some of the common clinical issues that arise during their use. Other contraceptive methods are covered in the other articles in the series. The first, published in the July 2013 issue of *Medicine Today*, covered aspects

Dr Harvey is Medical Director of Family Planning Queensland, Brisbane, Qld. Dr McNamee is Medical Director of Family Planning Victoria, Box Hill and Adjunct Senior Lecturer of the Department of Obstetrics and Gynaecology, Monash University, Melbourne, Vic. Dr Stewart is Acting Medical Director of Family Planning NSW, Sydney, NSW.

DEFINITION OF MEDICAL ELIGIBILITY CRITERIA CATEGORIES*7

- MEC Category 1: A condition for which there is no restriction for the use of the contraceptive method
- MEC Category 2: A condition where the advantages of using the method generally outweigh the theoretical or proven risks
- MEC Category 3: A condition where the theoretical or proven risks generally outweigh the advantages of using the method. The provision of a method requires expert clinical judgement and/or referral to a specialist contraceptive provider, since use of the method is not usually recommended unless other more appropriate methods are not available or acceptable
- MEC Category 4: A condition that represents an unacceptable risk if the contraceptive method is used

*Adapted from: WHO. Medical eligibility criteria for contraceptive use, 4th ed. Geneva: WHO; 2010.⁷

of contraception history taking and consultations on contraception choices and discussed in depth the short-acting methods, the contraceptive pills and the vaginal ring.⁶ The third article, to be published in a subsequent issue, will cover barrier methods, permanent methods, fertility awareness-based methods, the lactational amenorrhoea method, withdrawal and emergency contraception.

As outlined in the first article in this series, the Medical Eligibility Criteria (MEC) tables for contraceptive use are an internationally recognised system for categorising the risk of various contraceptive methods in women with specific medical conditions.^{6,7} This categorisation is a very useful guide for clinicians in the safe provision of contraceptive methods and will be referred to throughout the text (see the box on this page).

THE CONTRACEPTIVE IMPLANT AND CONTRACEPTIVE INJECTION

The contraceptive implant and contraceptive injection are progestogen-only methods of contraception. The only contraceptive implant available in Australia is a single ethylene vinyl acetate rod that contains the progestogen ENG (Figure 1). The contraceptive injection contains medroxyprogesterone acetate and is known as depot medroxyprogesterone acetate (DMPA; Figure 2). The subdermal implant lasts for three years, after which time it needs to be removed and replaced, and the intramuscular injection is given once every 10 to 14 weeks.

In Australia, the ENG implant is marketed as Implanon NXT and the contraceptive injection as Depo-Provera and Depo-Ralovera. The injection is more often referred to simply as DMPA or

'depo'. Both the implant and the injection are listed on the Pharmaceutical Benefits Scheme (PBS).

Mechanism of action and efficacy

Both the implant and DMPA effectively inhibit ovulation as well as thickening cervical mucus. DMPA has a failure rate of 0.2% in perfect use (under research type conditions) but 6% in typical use (in real life settings), whereas the ENG implant has estimated typical and perfect use failure rates of 0.05%.⁸

It is important for women to understand that a 6% failure rate means that of every 100 women who use the method, six may get pregnant in the first year of use. For DMPA, the requirement to return to a clinic for regular injections can be a disadvantage and failure to do so impacts on typical use efficacy. A lower dose formulation of DMPA suitable for self-administered subcutaneous injection is available in other countries but is not yet marketed in Australia.

Initiating implants and injections

DMPA can be initiated in women of any age and, if there are no medical contraindications, can be continued until the age of 50 years, after which another method of contraception is recommended.⁹ Ovarian suppression by DMPA causes lowered endogenous oestradiol levels and associated decrease in bone density, and also unfavourable effects on lipid profiles.⁹⁻¹¹ Because of the effect on bone density, some caution is advised in its use in women aged under 18 years and over 45 years; however, the benefits are generally considered to outweigh the risks (MEC 2).¹² The effect of DMPA on lipids needs to be considered in women with risk factors for cardiovascular disease. The ENG implant can be used in women of any age requiring contraception, including those with cardiovascular risk factors.

Both the contraceptive implant and injection are immediately effective if initiated on day 1 to 5 of a normal menstrual cycle and also in several other situations, as listed in the box on page 41. Both



Figure 1. The etonogestrel implant Implanon in place subdermally.



Figure 2. The contraceptive injection depot medroxyprogesterone acetate.

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methods can be initiated at other times using the 'quick start' method (starting a method outside the recommended time, such as on the day of the consultation) but will then require seven days of use before contraceptive protection is achieved. A detailed sexual and menstrual history is required to confidently exclude a potential conception or early pregnancy; a negative pregnancy test alone is insufficient. If using the quick start method and pregnancy is not excluded, a pregnancy test in four weeks' time is essential, regardless of whether bleeding occurs.¹³ When a potential pregnancy cannot be excluded, the readily reversible implant is generally preferred over DMPA. Neither method is considered teratogenic.

Contraindications

There are few absolute or strong relative contraindications (MEC 3 or 4) to the use of progestogen-only contraceptives (Table 1). The use of DMPA is relatively strongly contraindicated (MEC 3) in women with multiple risk factors for cardiovascular disease or who have a past history of arterial disease, including ischaemic heart disease, stroke or transient ischaemic attack. The continued use of DMPA or the ENG implant is relatively strongly contraindicated (MEC 3) in women who develop arterial disease during use. Use of either method in women with a personal history of breast cancer is strongly contraindicated (MEC 3) and is absolutely contraindicated if the cancer has been active within the previous five years (MEC 4).

Drug interactions

Although the ENG implant is highly effective, in 2007 the Therapeutics Goods Administration reported 32 failures with Implanon, resulting in unintended pregnancy, due to concurrent use of a liver enzyme-inducing medication.¹⁴ Concurrent long-term use of liver enzyme-inducing drugs (including many of the antiepileptic drugs, the antibiotics rifampicin and rifabutin, and the herbal remedy St John's wort) decreases the efficacy of the ENG implant but does not

TIMING OF EFFECTIVENESS OF THE ENG IMPLANT AND DMPA

The ENG implant and DMPA will be effective immediately in the following situations:

- on day 1 to 5 of a normal menstrual cycle
- when changing from an ENG implant inserted in the previous three years or a DMPA injection given within the previous 14 weeks
- on day 1 to 5 for women who menstruate regularly while using a copper or levonorgestrel IUD
- any time when changing from a contraceptive pill or vaginal ring that has been taken/used correctly*†
- any time within five days of an abortion or miscarriage
- any time within 21 days of giving birth.

* Product information (PI) for the ENG implant states that the implant should be inserted from the first day after the last active pill of a combined contraceptive pill until the day following the pill-free or placebo-tablet interval. However, the authors recommend that the implant can be inserted any time if pills have been taken correctly.¹³

† PI for the ENG implant states that the implant should be inserted on the day after the last POP. However, the authors recommend that a POP be taken each day up to and including the day of insertion of implant or first injection to ensure maintenance of thickened progestogenic cervical mucus.¹³

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; ENG = etonogestrel; IUD = intrauterine device; POP = progestogen-only pill.

decrease the efficacy of DMPA.¹⁵ International guidelines indicate that for women using these medications the benefits of using the contraceptive implant outweigh the risk (MEC 2) provided the woman consistently uses condoms.^{12,15,16} However, in Australia, another method unaffected by liver enzyme inducers is generally recommended because although the risk of pregnancy may be low for women using both methods correctly, the typical use failure rate of condoms is high and women using implants may not recognise a pregnancy due to the absence of a regular menstrual cycle.⁸

Examination and investigations

In well women commencing use of the ENG implant or DMPA a blood pressure check is the only examination necessary, although measurement of body mass index (BMI) is useful for documentation of weight gain as a side effect.¹³ Routine bone density testing is not recommended for either method and no other routine investigations are necessary.

Measurement of lipids is recommended in women with any cardiovascular risk factors who are considering DMPA.

Benefits

DMPA and the ENG implant are highly effective methods of contraception with minimal action required on the part of the user and both are listed on the PBS. As nonoral methods, they may be useful for women with inflammatory bowel disease or other malabsorptive conditions. Both decrease dysmenorrhoea.^{17,18}

Both the contraceptive implant and injection are options for women with medical contraindications to, or unacceptable side effects from, oestrogen-containing contraceptives. However, although use of DMPA and the ENG implant are MEC 2 for women with a past history of venous thromboembolism, DMPA use is MEC 3 for women with a past history of, or strong risk factors for, cardiovascular disease.

Insertion and removal of implants is well within the scope of all GPs although attendance at an approved short training course is a requirement of most medical indemnity providers. The insertion device (Implanon NXT) introduced into Australia in 2011 has further facilitated correct subdermal placement.

The benefits of the ENG implant are that it:

TABLE 1. DMPA AND ENG IMPLANTS: MEC CATEGORIES FOR SIGNIFICANT CONDITIONS¹²

Condition		MEC category	
		DMPA	ENG implant
Personal characteristics and reproductive history			
Postpartum: breastfeeding	Less than six weeks	2	1
	Six weeks to six months, fully or mostly breastfeeding	1	1
Postpartum: nonbreastfeeding		1	1
Arterial disease and risk factors			
Multiple risk factors for cardiovascular disease (e.g. older age, smoking, diabetes, hypertension and obesity)		3	2
Hypertension, with vascular disease		3	2
Past history of ischaemic heart disease, stroke or TIA		3	2
Develops ischaemic heart disease, stroke or TIA during use		3	3
Breast and reproductive tract conditions			
Unexplained vaginal bleeding (suspicious for a serious condition) before evaluation		3	3
Current breast cancer		4	4
Previous breast cancer with no evidence of disease for at least five years		3	3
Gastrointestinal conditions			
Severe (decompensated) cirrhosis		3	3
Hepatocellular adenoma or malignant liver tumour		3	3
SLE			
Positive (or unknown) antiphospholipid antibodies		3	3

Adapted from: Faculty of Sexual and Reproductive Healthcare. UK medical eligibility criteria for contraceptive use 2009. London: Faculty of Sexual and Reproductive Healthcare, RCOG; 2009.¹²
 ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; ENG = etonogestrel; MEC = Medical Eligibility Criteria; SLE = systemic lupus erythematosus; TIA = transient ischaemic attack.

- is an extremely effective LARC
- has the advantage of being effective for up to three years before replacement is necessary
- is rapidly reversible
- may have a beneficial effect on acne.¹⁹ DMPA use has the following benefits:
- is associated with at least a 50% chance of amenorrhoea¹⁹⁻²¹

- carries no increased risk of failure with concurrent use of liver enzyme-inducing drugs¹⁵
- can be easily concealed from others.

Side effects and disadvantages

Many side effects are attributed to the ENG implant and DMPA methods of contraception but evidence is limited.

Women using these methods have reported headaches, mood changes including emotional lability, weight gain, breast tenderness and loss of libido.

Both methods

Unscheduled bleeding and amenorrhoea. It is important to inform women commencing use of either DMPA or the ENG implant that their bleeding pattern will change from their usual menstrual cycle, and to provide specific information on the range of expected bleeding patterns. Use of either method can be associated with bleeding varying from amenorrhoea to daily light bleeding. Amenorrhoea occurs in around 50 to 70% of DMPA users after 12 months of use, and in around 20% of ENG implant users.¹⁸⁻²² Although this can be highly acceptable to many users, it might be perceived by some women as undesirable. Therefore, attitudes to menstrual bleeding should be explored before initiation of these methods.

Weight gain. Weight gain is a frequently reported side effect for both DMPA and the ENG implant.^{20,23} The evidence is inconsistent for DMPA but it seems that weight gain may be more likely in subgroups such as adolescents, particularly those who were overweight or obese at baseline.²³⁻²⁶ Studies have suggested that early weight gain is of significance, with the 20 to 25% of women who gained more than 5% of body weight in the first six months of use continuing to gain further weight after this time.^{24,27}

There is no consistent causal evidence of weight gain from use of the contraceptive implant.

ENG implant

Insertion and removal of the ENG implant may cause scarring and local reaction. Deep insertion may sometimes occur, and then specialist intervention is required for removal.

Users may develop acne; however, acne may be improved in users in whom it is pre-existing.¹⁸

LATE DMPA INJECTION OR ENG IMPLANT CHANGE¹²

Women presenting late for a DMPA injection or three-yearly ENG implant replacement should be advised to:

- consider a pregnancy test but be aware of its limitations in not detecting recent conception
- consider emergency contraception if there has been unprotected sex in the previous five days
- use condoms for sex for the next seven days
- have a pregnancy test in four weeks' time regardless of bleeding

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; ENG = etonogestrel.

DMPA

Use of DMPA is associated with about a 7% mean reduction of hip and spine bone density compared with nonusers over a period of four years.²⁸ The effect is considered reversible in adult users;²⁹ the limited information available relating to adolescent users shows that it may be substantially or fully reversible.^{30,31} Evidence on fracture risk is inconclusive.^{32,33}

Use of DMPA in adolescents aged under 18 years and women aged over 45 years is MEC 2 because of the theoretical concerns relating to bone density. This means although not always a first choice, DMPA can be used in women in whom other methods are unsuitable. A detailed assessment of the woman and advice regarding osteoporosis risk factors should take place for new users and every two years for continuing users.³⁴

There can be a delay in return to fertility of up to 18 months following DMPA discontinuation but there is no evidence of long-term reduction in fertility in past users.^{35,36}

Serious risks

Limited evidence is available on the risk of venous thromboembolism with progestogen-only contraceptives and is reassuring regarding the lack of any causal association.¹¹ Progestogen-only contraceptive methods do not appear to increase the risk of cardiovascular disease even in smokers.^{34,37,38} However, with DMPA, there is theoretical concern regarding its hypo-oestrogenic effect reducing high density lipoprotein (HDL) levels.¹¹

Management of special situations***Late for DMPA injection or ENG implant replacement***

The management of a woman presenting late for a DMPA injection or three-yearly ENG implant replacement is discussed in Case study 1 and summarised in the box on this page.³⁹⁻⁴³

Frequent or prolonged bleeding: DMPA and ENG implant

The management of a woman with an ENG implant presenting with frequent bleeding is discussed in Case study 2 and the treatment options for frequent and/or prolonged bleeding with DMPA or ENG implants are outlined in the box on page 45.

COPPER AND LEVONORGESTREL IUDS

Two types of IUDs are available in Australia: copper and levonorgestrel (LNG). The copper IUD is marketed as the Multi-load 375 and the TT380 (a banded copper T device), which last for five and 10 years respectively, and the LNG IUD as Mirena, which lasts for five years (Figures 3a and b). Extended time frames of use can be considered when a copper IUD is inserted in a woman 40 years or older and a LNG IUD is inserted in a woman

CASE STUDY 1. LATE DMPA INJECTION

Rozita, aged 25 years, presents for a repeat DMPA injection two weeks late. As this is her first visit to your practice, you contact the previous practice and ascertain that it is 16 weeks and five days since her previous injection. She is now therefore nearly three weeks beyond the recommended maximum injection interval of 14 weeks.

Rozita has continued to have unprotected sex, most recently yesterday. You suggest she take the emergency contraception pill, obtainable from a pharmacy, as soon as possible. A urine pregnancy test is negative and you explain to her that this does not rule out an early or potential pregnancy, although the chance of this is low within 17 weeks of the last injection.³⁹

You discuss with Rozita the options of using an interval method of contraception (condoms or pills) and returning in three weeks' time for a repeat pregnancy test or having the injection now, telling her that although DMPA is not considered teratogenic, this cannot be completely excluded.^{40,41} She chooses to have her injection now. You advise her to use condoms for the next seven days and arrange a pregnancy test for four weeks from now regardless of bleeding, placing a reminder for recall in your clinical software program. You ask her to put a reminder in her phone for her pregnancy test and also for her next injection in 12 weeks' time.

You provide her with information on the 'fit and forget' benefit of the contraceptive implant and IUDs. Rozita is very happy with the amenorrhoea caused by DMPA so is not keen to change methods at this point.

Although small studies show the ENG implant is likely to remain effective beyond three years, it is considered to have expired after three years.^{42,43} If Rozita had been using the implant and more than three years had passed, the same advice as for a late DMPA injection would apply (see the box above).

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; ENT = etonogestrel; IUD = intrauterine device.

45 years or older, because of decreasing fertility. A lower dose LNG IUD lasting three years is expected to be available in Australia in 2014.

Hormonal IUDs are listed on the PBS. Although copper IUDs are not PBS listed, they can be very cost effective, particularly the device lasting 10 years.

IUDs are inserted by gynaecologists, some GPs and specialised clinics (including family planning clinics and some other reproductive and sexual health services). Although medical indemnity provider requirements vary, additional premiums are generally not required. GPs inserting IUDs are responsible for ensuring that they are appropriately trained and maintain their clinical competence. Insertion by an individual of fewer than 10 IUDs over a six- to 12-month period is associated with a higher perforation rate than insertion of greater numbers.⁴⁴ It is recommended that during insertion an assistant is present and that the practitioner maintains skills and equipment to deal with emergencies, specifically vasovagal reactions, which can occasionally be profound. Where insertion difficulties are predicted or encountered, referral to specialists or clinics with facilities for sedation or general anaesthesia should be considered.

IUD removal is a simple procedure that can be performed by all GPs.

Mechanism of actions and efficacy

Both types of IUD act by inhibiting sperm migration to the upper genital tract, inhibiting ovum transport and preventing implantation. In addition, the LNG IUD causes endometrial changes (including atrophy), thickens cervical mucus (preventing sperm penetration) and prevents or delays ovulation in some users, although not necessarily consistently. The LNG IUD is estimated to have a failure rate of 0.2% in both perfect and typical use, and the copper IUD is estimated to have a failure rate of 0.6% in perfect use and 0.8% in typical use.⁸

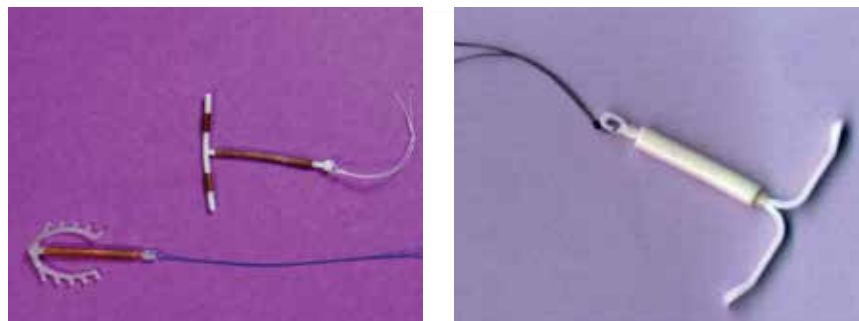


Figure 3. IUDs. a (left). Copper IUDs: TT 380 (top) and Multiload-Cu 375 (bottom). b (right). Levonorgestrel IUD (Mirena).

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CASE STUDY 2. FREQUENT BLEEDING WITH ENG IMPLANT

Ellie, aged 20 years, had an ENG implant inserted two years ago. She initially had short light episodes of infrequent bleeding, but for the past 10 weeks has bled on most days. A chlamydia test is negative, as was her first Pap test three months ago.

You consider the treatments for frequent and/or prolonged bleeding with DMPA or ENG implants (see the box below), although you are aware they have been shown to have only a short-term effect. Ellie has no contraindications to oestrogen, but when she previously used the combined contraceptive pill she would sometimes forget to take it; this is why she chose the implant. You reassure her that in this situation, missing a pill will not affect her contraceptive cover and so you prescribe two cycles of a combined contraceptive pill to settle the bleeding. Ellie returns 10 weeks later stating that her bleeding restarted once she stopped taking the pill. She mentions a friend of hers had a similar problem and her bleeding settled after having her implant changed early.

The mechanism of unscheduled bleeding that occurs with progestogen-only contraception is poorly understood, and unfortunately there is no strong evidence to guide your management. Ellie could either continue to take the combined contraceptive pill cyclically or in an extended cycle regimen or have her implant changed early on the assumption that, for her, returning to the higher serum levels of ENG associated with initial use may restore her original bleeding pattern. She needs, however, to understand that there is no guarantee of this.

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; ENG = etonogestrel.

FREQUENT AND/OR PROLONGED BLEEDING WITH DMPA OR ENG IMPLANTS¹³

- Combined contraceptive pill: can be given cyclically or continuously*
- Mefenamic acid 500 mg twice daily for five days
- Tranexamic acid 500 mg twice daily for five days

* Generally women are offered a one to three month trial of a combined contraceptive pill to bring relief from unacceptable bleeding. However, there is no limit to the number of months or repeated courses that may be used. Women will usually remain amenorrhoeic while taking hormonal pills but will experience withdrawal bleeds on ceasing active pills. On ceasing the combined contraceptive pill, the bleeding pattern will generally revert to what it was without the combined contraceptive pill.

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; ENG = etonogestrel.

TABLE 2. IUDS: MEC CATEGORIES FOR SIGNIFICANT CONDITIONS¹²

Condition	MEC Category	
	Copper IUD	LNG IUD
Personal characteristics and reproductive history		
Postpartum: breastfeeding or nonbreastfeeding, including post-caesarean section	48 hours to four weeks	3
	Puerperal sepsis	4
Immediate post-septic abortion	4	4
Cardiovascular disease		
IHD or stroke that develops during use (use of LNG IUD is MEC 2 and copper IUD is MEC 1 in women with pre-existing disease)	1	3
Breast and reproductive tract conditions		
Current breast cancer	1	4
Previous breast cancer with no evidence of disease for at least five years	1	3
Unexplained vaginal bleeding (suspicious for serious condition) before evaluation – initiation (use of either method is MEC 2 if develops during use)	4	4
Gestational trophoblastic disease (includes hydatidiform mole, invasive mole and placental tumour) – persistently elevated beta-hCG levels or malignant disease	4	4
Cervical cancer awaiting treatment – initiation (use of either method is MEC 2 if develops during use)	4	4
Endometrial cancer awaiting treatment – initiation (use of either method is MEC 2 if develops during use)	4	4
Ovarian cancer awaiting treatment – initiation (use of either method is MEC 2 if develops during use)	3	3
Uterine fibroids, with distortion of the uterine cavity	3	3
Distorted uterine cavity (any congenital or acquired uterine abnormality distorting the uterine cavity in a manner that is incompatible with IUD insertion)	3	3
Current pelvic inflammatory disease – initiation (use of either method is MEC 2 if develops during use)	4	4
Chlamydial or gonorrhoeal infection or purulent cervicitis – initiation (use of either method is MEC 2 if develops during use)	4	4
HIV infection/AIDS		
HIV infected and using antiretroviral therapy	2/3	2/3
Gastrointestinal conditions		
Severe (decompensated) cirrhosis	1	3
Hepatocellular adenoma and malignant liver tumour	1	3
SLE		
Positive (or unknown) antiphospholipid antibodies	1	3

Adapted from: Faculty of Sexual and Reproductive Healthcare. UK medical eligibility criteria for contraceptive use 2009. London: Faculty of Sexual and Reproductive Healthcare, RCOG; 2009.¹²

ABBREVIATIONS: AIDS = acquired immunodeficiency syndrome; beta-hCG = beta human chorionic gonadotropin; HIV = human immunodeficiency virus; IHD = ischaemic heart disease; IUD = intrauterine device; LNG = levonorgestrel; MEC = Medical Eligibility Criteria; SLE = systemic lupus erythematosus; TIA = transient ischaemic attack.

Initiating IUDs

Both IUD types can be initiated at any age and can be used until menopause. Nulliparity is not a contraindication, but IUD insertion may be more difficult through a nulliparous cervix. An Australian study in a family planning clinic setting found that although 20% of insertions in nulliparous women were rated as difficult, almost 90% of nulliparous women had a successful insertion in this primary care setting.⁴⁵ Although there is limited use of IUDs in adolescents in Australia, they are recognised as a first-line adolescent contraceptive method by the American College of Obstetrics and Gynecology.^{46,47}

The possibility of early conception or pregnancy must be excluded before insertion except when a copper IUD is used for emergency contraception.

The copper IUD is always immediately effective. The LNG IUD is immediately effective when inserted on day 1 to 7 of a normal menstrual cycle and in several other situations, as outlined in the box on this page. In most other situations, it will be effective after seven days.

Contraindications

There are few MEC 3 or 4 contraindications to the use of IUDs (Table 2). The most important to consider are risk factors for current or recent pelvic infections, undiagnosed abnormal vaginal bleeding, significant distortion of the uterine cavity and current or past history of breast cancer for women considering the LNG IUD.

Choosing between a copper and hormonal IUD

The differences between copper and hormonal IUDs that can assist women in choosing between the two types are outlined in Table 3.

Examination and investigations

A bimanual and speculum examination are performed before inserting an IUD, noting the position and size of the uterus, the presence of abnormal discharge and any abnormalities that might interfere with

IUD insertion or require investigation.

There are no recommendations for routine pre-IUD screening in asymptomatic women who have a normal examination. Screening for chlamydia and gonorrhoea can be considered for women at high risk of sexually transmissible infections. A Pap test should be performed if due, and also a clinical assessment for bacterial vaginosis. Routine vaginal swabs for culture are not necessary as treatment of vaginal commensals is not advised before IUD insertion.

Women who have an abnormal discharge will usually need investigation prior to insertion of an IUD. Bacterial vaginosis requires treatment before or at the time of IUD insertion.

Women with heavy menstrual bleeding require appropriate investigation, including a good quality ultrasound, before therapeutic insertion of a LNG IUD.

Benefits

Both the copper and LNG IUD have several advantages as contraceptive methods. They are both 'fit and forget' methods that provide cost-effective, highly efficacious and very long-acting contraception. Both are rapidly reversible on removal and do not affect lactation or infant development.⁴⁸

TIMING OF EFFECTIVENESS OF IUDS

- The copper IUD is always effective immediately
- The LNG IUD will be effective immediately in the following situations:
 - on day 1 to 7 of a normal menstrual cycle
 - on day 1 to 7 for women who menstruate regularly when using a copper IUD*
 - when replacing a LNG IUD, provided it is within its recommended time frame for removal*
 - when changing from a DMPA injection given within the previous 14 weeks
 - any time when changing from a combined contraceptive pill or vaginal ring that has been taken/used correctly
 - within seven days of an abortion or miscarriage

* Advise seven days abstinence or condom use prior to an IUD changeover to cover the possibility of a failed re-insertion and surviving sperm in the upper genital tract.

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate; IUD = intrauterine device; LNG = levonorgestrel.

Their efficacy is not decreased by liver enzyme-inducing medications or malabsorption conditions and they may be good alternatives for women unable to take oestrogen-containing contraception.¹⁴

The LNG IUD is associated with a significant decrease in heavy menstrual bleeding and a reduction in dysmenorrhoea.^{49,50} Amenorrhoea or light bleeding is common (up to 65%) after the first year of LNG IUD use.^{51,52}

The copper IUD is the only highly effective reversible nonhormonal method.

Side effects

Expulsion

There is an overall risk of expulsion of about 5% with IUDs, with the highest risk within the first year of use.⁵³ Women should be advised to check for the presence of the thread monthly, after menstruation if it occurs.

Bleeding patterns

Up to 65% of women using the LNG IUD will have amenorrhoea or light bleeding by 12 months of use.^{51,52} Unscheduled light bleeding is common for both methods during the first three to six months, particularly for users of the LNG IUD, where users may experience daily light bleeding for around three to four months, after which improvement can be expected.⁵⁴

Unacceptable menstrual bleeding patterns, including amenorrhoea in LNG IUD users and increased menstrual loss in copper IUD users, and pain are the most common reasons for discontinuation.⁵⁵

Pregnancy

Although the risk of pregnancy is extremely low in users of IUDs, the pregnancies that do occur are more likely, compared with nonusers, to be ectopic. This is due to the mechanisms of action, including prevention of implantation.

If pregnancy does occur, it is important to locate the pregnancy and remove the IUD as soon as possible, provided the woman is in the first trimester. The threads may be difficult to see as the pregnancy progresses and the threads are

TABLE 3. COMPARISON OF COPPER AND LEVONORGESTREL IUDS

Feature	Copper IUD	LNG IUD
Cost	Approx \$130 to \$180, not PBS subsidised	PBS subsidised (for contraception and heavy menstrual bleeding)
Menstrual effects	<ul style="list-style-type: none"> • 20 to 50% increase in menses • Dysmenorrhoea, and anaemia • MEC 2 if menorrhagia present or develops, and for endometriosis 	<ul style="list-style-type: none"> • Approx 80% reduction in menses • Increased spotting in first three to five months • Approx 5% persistent spotting • Amenorrhoea or light bleeding common by 12 months (up to 65%)
Hormonal side effects	Nil	<ul style="list-style-type: none"> • Acne, breast tenderness, headaches • Weight gain reported
Hormonal contraindications	Nil	<ul style="list-style-type: none"> • MEC 4 if breast cancer present • MEC 3 if IHD or stroke develops during use
Duration of use before replacement	<ul style="list-style-type: none"> • Up to 10 years (five years for Multiload) • If woman aged 40 years or older at insertion, can be left until menopause is confirmed 	<ul style="list-style-type: none"> • Up to five years • If woman aged 45 years or older at insertion, can be left for seven years
Menopause masked	No	Possibly
Used for emergency contraception	Yes	No
Used as progestogen component of HRT	No	Yes (within five years of insertion)

ABBREVIATIONS: HRT = hormone replacement therapy; IHD = ischaemic disease; IUD = intrauterine device; LNG = levonorgestrel; MEC = Medical Eligibility Criteria; PBS = Pharmaceutical Benefits Scheme.

drawn up. If an IUD is not removed then there is a high risk of second trimester miscarriage, including septic miscarriage or premature delivery.⁵⁶⁻⁵⁹

Pelvic infections

In the first 20 days after IUD insertion, there is a small increased risk of procedure-related

pelvic inflammatory disease (PID).⁶⁰ In most circumstances, the infection can be treated and the IUD left in place. Review for response after 48 hours of treatment is recommended.

Actinomyces infections are rare but almost exclusively occur in IUD users. An asymptomatic woman with *Actinomyces*-like

MANAGEMENT OF A WOMAN WITH MISSING IUD THREADS¹³

A woman presents for check up/removal of her IUD and threads are not visible

Perform urine pregnancy test to check for established pregnancy

If negative results, explore the lower cervical canal with thread retriever or narrow artery forceps (only if have appropriate expertise)

If positive result, manage pregnancy

IUD threads not located

IUD threads located

Arrange ultrasound to check for presence of IUD in uterine cavity
Consider need for emergency contraception (i.e. if unprotected sex in past five days)
Advise on interim contraception until IUD located

Either no further action or remove and replace if suspected malposition

No IUD located in uterine cavity

IUD located in uterine cavity

Refer woman for abdominal x-ray to locate IUD in pelvis or abdominal cavity (i.e. IUD has perforated uterus)

No further action needed until removal due if IUD is well positioned and the woman agrees

IUD located within abdominal/pelvic cavity

No IUD located in abdominal/pelvic cavity or in uterus

Refer woman for laparoscopy to remove IUD

Confirms expulsion of IUD – offer insertion of new IUD provided no uterine abnormality

When removal of IUD needed, either:

- if appropriate equipment and expertise, conduct gentle uterine sounding and/or exploration of the uterine cavity to locate and pull out IUD, or
- refer the woman to gynaecologist

Note: hysteroscopy often necessary if threads cannot be retrieved

ABBREVIATION: IUD = intrauterine device.

Adapted from: Guillebaud J. Contraception: your questions answered. London: Churchill Livingstone; 2004.

organisms (ALO) on her Pap test result can be informed that the risk of pelvic infection is extremely small and that there is no need to remove the IUD unless she develops any signs or symptoms of PID. In practice this will usually mean recalling the woman to discuss the Pap findings and ensuring that her pelvic examination is normal. Symptomatic women with suspected *Actinomyces* infection should be referred for specialist management.¹²

Hormonal side effects

Hormonal side effects, including weight gain, acne, headache and breast tenderness, are reported by some users of the LNG IUD.⁶¹ There is a higher systemic exposure to LNG during the first few months of use and most hormonal symptoms will settle over time.⁶²

Other effects

Some male partners experience dyspareunia because of IUD threads. This is best avoided by leaving the threads just long enough to sweep behind the cervix at the time of insertion (approximately 3 to 4 cm from the external os). In situations where the partner continues to complain of discomfort it may be necessary to cut the threads flush with the os, but it is important to understand that this will make it more difficult for the user to check for the presence of the device and may also increase the chance of difficult thread retrieval at the time of removal.

Some women with an IUD in place experience an increase in vaginal discharge.

Serious risks

Perforation

Perforations of the uterus occur in 2.3 per 1000 IUD insertions and this rate may be increased in women who are within the first six months' postpartum or breastfeeding, or who have had a previous caesarean section. Although perforation usually presents soon after insertion, it can be asymptomatic and it is therefore essential that it be considered in all cases of 'missing threads' (see Case study 3). Laparoscopic removal of the IUD

under general anaesthesia is required in cases of perforation.

Special situations and management of complications

Missing threads

The management of a woman in whom the threads of her IUD cannot be seen is

discussed in Case study 3 and summarised in the flowchart opposite.

Infections

The management of a woman wanting to use an IUD for contraception and who has tested positive for chlamydia is discussed in Case study 4.⁶³

CASE STUDY 3. MISSING IUD THREADS

Marita returns for a check-up after having a copper IUD inserted five weeks ago. She is at day 12 of a 28-day cycle and has experienced no side effects from her IUD. Her last period was normal. On examination the threads of the IUD cannot be seen. You attempt to bring the threads down without success by placing a cytobrush into her cervical canal and rotating it.

You work on the assumption that Marita's IUD is not in place in the uterus although there is a good chance her IUD will be correctly positioned and the threads are just drawn up. If Marita has had unprotected sex in the past five days, offer her emergency contraception (see the flowchart on page 50). As she had a normal period only 12 days ago, a pregnancy test is not required. You organise an ultrasound and ask that a pelvic x-ray be performed if the IUD cannot be seen on ultrasound – both copper and hormonal IUDs can be visualised by x-ray.

The ultrasound shows the IUD is correctly positioned in the uterus. You tell Marita that her IUD will continue to work and although she will be unable to check the threads, she is likely to see the IUD if it is expelled. Vigilance is particularly needed during menstruation, the time expulsion is most likely to occur.

ABBREVIATIONS: IUD = intrauterine device.

CASE STUDY 4. IUD AND CHLAMYDIA INFECTION

Jin is 24 years old and would like to have an LNG IUD inserted for contraception. She is in a monogamous relationship of seven months' duration and has had one termination. She forgets to take the pill and prefers an IUD to an implant or injection. Her age puts her in a higher risk group for STIs and she is screened for chlamydia. As she is asymptomatic and the vaginal discharge appears normal, vaginal swabs are not necessary. Her bimanual examination is unremarkable.

Jin's chlamydia test is positive. Both she and her partner are treated with azithromycin 1 g stat and abstain from sex for seven days. There are no clinical signs of pelvic inflammatory disease. As neither have had another sexual partner within the previous seven months, no further partner notification is required; however, safer sex is discussed and the benefits of condom use reinforced. A chlamydia test can remain falsely positive for up to six weeks after treatment but Jin is anxious to have her IUD inserted before then.⁶³ You explain there is a high chance that the treatment will be successful and you agree to insert her IUD in one week's time.

If Jin had been diagnosed with clinical pelvic inflammatory disease, this should have been treated with the standard antibiotic regimen and IUD insertion delayed until there was complete resolution of signs and symptoms.¹²

ABBREVIATIONS: IUD = intrauterine device; LNG = levonorgestrel.

CONCLUSION

Despite the low failure rate and few contraindications of the contraceptive implant, copper and hormonal IUDs and the contraceptive injection, Australia continues to have a low use of the 'fit and forget' LARCs. They offer several benefits over other contraceptive methods and can be considered as first-line methods of contraception in most situations. GPs are ideally placed to promote and provide information on all LARC methods and to initiate their use.

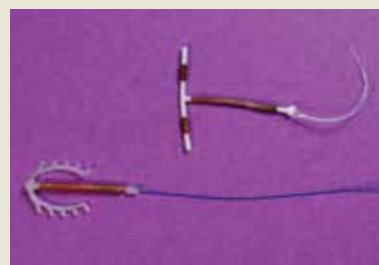
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A list of references is included in the website version (<http://www.medicinetoday.com.au>) and the iPad app version of this article.

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A practical guide to contraception. Part 2: Long-acting reversible methods

CAROLINE HARVEY MB BS(Hons), FRACGP, DRANZOG, MPM, MPH

KATHLEEN MCNAMEE MB BS, FRACGP, DipVen, GradDipEpiBio, MEpi

MARY STEWART MB BS, DFFP, MPH(Health Promotion), MA(Oxon), MSC(LSHTM)

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