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An update on contraception
Part 3: IUDs, barriers and natural family planning

Intrauterine devices provide highly effective and very long-acting contraception with minimal action required on the part of the user. Their effect is rapidly reversible once they are removed and they are relatively inexpensive because of their long duration of action.

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This article, the last in a series of three on contraception, gives an overview of intrauterine devices (IUDs), barriers and natural family planning methods of contraception, and briefly discusses what might lie ahead in the contraceptive field. All guidance is based on the handbook *Contraception: an Australian Clinical Practice Handbook*, which is produced by Sexual Health & Family Planning Australia (SH&FPA).[1] The handbook can be purchased by visiting your local state or territory Family Planning Association website or following the link from the SH&FPA website (www.shfpa.org.au).

Intrauterine devices

IUDs are small flexible devices made of metal and/or plastic. These devices may be inert or they may release copper or a hormone. After a long period of very low usage in Australia, it now appears that they are becoming more popular, although there are no recently published Australian population data on these changing patterns of contraceptive use.

Myths about IUDs as a cause of pelvic infection, subsequent infertility and the associated risks of their use in nulliparous women have been

IN SUMMARY

- **Both the copper and hormonal intrauterine devices (IUDs) prevent fertilisation by inhibiting sperm migration through the cervix and into the upper genital tract, inhibiting ovum transport and preventing implantation.**
- **IUDs are long-acting methods of contraception with minimal action required on the part of the user. They have an effect that is rapidly reversible once the device is removed and are relatively inexpensive because of their long duration of action.**
- **Barriers are totally patient controlled, can be used by anyone because they do not contain hormones and are not contraindicated in women or men with any medical condition, except perhaps in those with an allergy to latex.**
- **The use of natural family planning methods requires that couples be diligent and committed because these methods generally reduce spontaneity and may require long periods of abstinence. It can take six to 12 menstrual cycles to accurately identify fertile days of a woman's cycle. Women with irregular periods could also have difficulty in predicting their fertile days.**
- **There are constant changes and developments in the contraceptive field. One area of research currently being undertaken is on changing the use of the oral contraceptive pill to have fewer or no pill-free days. There are also smaller IUDs (both copper and hormonal) currently being marketed or trialled.**

challenged for at least a decade; however, women and doctors in Australia have remained reluctant to use or prescribe IUDs until recent years. It is now established that although there is a small procedure-related increase in the risk of pelvic infection in the first few weeks after insertion of IUDs, the risk thereafter relates to the risk of acquiring a cervical sexually transmitted infection (STI) with chlamydia or gonorrhoea. There is no evidence that women who have used IUDs have increased rates of infertility, and nulliparous and young women who are at low risk of STIs can safely use these devices.[2,3]

Available IUDs

There are two types of IUDs available in Australia – copper and hormonal. The only two copper IUDs marketed in Australia are the Multiload-Cu375 and the TT380 device, the latter replacing the Copper T380A in 2008. The TT380 is available in a standard and short version; the latter is suitable for women with uterine cavities of less than 6.5 cm in length. There is one hormonal IUD available in Australia, which is a T-shaped, plastic device that releases levonorgestrel (Mirena). All the above IUDs have an efficacy rate greater than 99%.[4] The TT380 Standard is approved for 10 years of use, whereas the Multiload-Cu375, Mirena and the TT380 Short devices are approved for five years of contraceptive use.

Mechanism of action

Both the copper and hormonal IUDs prevent fertilisation by inhibiting sperm migration through the cervix and into the upper genital tract, inhibiting ovum transport and preventing implantation. The levonorgestrel IUD additionally has progestogenic effects on cervical mucus, reducing sperm penetration and contributing to the contraceptive effect. However, in women who use levonorgestrel IUDs, the released progestogen has little effect on the hypothalamic–pituitary axis, serum oestradiol levels are not reduced and more than 75% of them continue to ovulate.[3] This differs from all other available hormonal methods (except progestogen-only pills) for which contraceptive effect relies on distribution of the exogenous hormone to the systemic circulation, with resulting disruption of the hypothalamic–pituitary axis and subsequent anovulation.

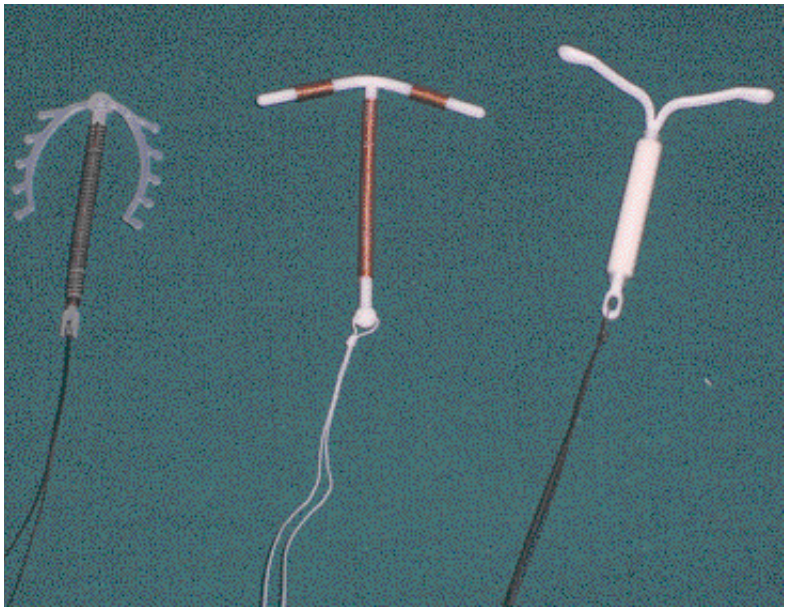

Figure. From left to right, Multiload-Cu375, TT380 and Mirena IUDs.

Advantages

IUDs provide highly effective and very long-acting contraception with minimal action required on the part of the user. They have an effect that is rapidly reversible once they are removed and are relatively inexpensive because of their long duration of action. They provide a very good alternative to sterilisation. The copper IUD is a good choice for women in whom use of hormonal methods are contraindicated or for women who desire a highly effective but nonhormonal method of contraception. The levonorgestrel IUD is particularly suited for women requiring management of menorrhagia in addition to contraception or for those who would find increased bleeding a problem with the copper IUDs.

Disadvantages

IUDs require a procedure for insertion that should be performed only by specially trained doctors. The insertion has specific risks (these are uncommon but include uterine perforation, pelvic infection and vasovagal reactions) and may prove to be moderately uncomfortable for some women. IUDs require medical intervention to discontinue their use, although removal is a simpler procedure than insertion and is well within the scope of all GPs. Some women dislike the idea of the insertion procedure or having a foreign body inside them, and IUDs provide no protection against STIs.

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Table 1. UK Medical Eligibility Criteria (UKMEC) Categories* for IUDs

Circumstances	UKMEC Category*	
	Copper IUD	Levonorgestrel IUD
Menarche to under 20 years of age	2	2
Aged over 20 years	1	1
Nulliparous	1	1
Postpartum (includes breastfeeding or not and post LSCS) more than four weeks after delivery	1	1
Postpartum (includes breastfeeding or not and post LSCS) – from 48 hours to less than four weeks after delivery	3	3
Past ectopic pregnancy	1	1
Unexplained vaginal bleeding	4	4
Distorted uterine cavity – by fibroids or other abnormality	4	4
Heavy or prolonged menses, severe dysmenorrhoea, iron deficiency anaemia, endometriosis	2	1
Current breast cancer	1	4
Past history of breast cancer not active for five years	1	3
Multiple risk factors for cardiovascular disease (e.g. age, smoking, diabetes and hypertension)	1	2
Past history of arterial disease	1	2
Develops arterial disease while using the method	1	3
Hypertension systolic ⩾160 mmHg or diastolic ⩾95 mmHg	1	3
Diabetes	1	2
Past history of migraine with aura	1	2
Develops migraine while using the method	1	3
Current VTE (on warfarin)	3	3
Past history of VTE or known thrombogenic mutation	1	2
Past PID with subsequent pregnancy	1	1
Past PID without subsequent pregnancy	2	2
Very high risk of STI (chlamydia and gonorrhoea) exposure	3	3
Increased but not very high risk of STI (chlamydia and gonorrhoea) exposure	2	2
Puerperal sepsis, current PID, chlamydia or gonorrhoea or purulent cervicitis – on insertion	4	4
Current PID, chlamydia or gonorrhoea or purulent cervicitis – for continuation	2	2
Severe cirrhosis or liver tumours	1	3
Mild cirrhosis	1	2
Hepatitis B or C carrier with no cirrhosis	1	1
Concurrent use of liver enzyme-inducing medications	1	1

ABBREVIATIONS: LSCS = lower segment Caesarean section; PID = pelvic inflammatory disease; STI = sexually transmitted infection; VTE = venous thromboembolism.
* **UKMEC Categories**
Category 1: A condition for which there is no restriction for the use of the contraceptive method.
Category 2: A condition in which the advantages of using the method generally outweigh the theoretical or proven risks.
Category 3: A condition in which the theoretical or proven risks usually outweigh the advantages of using the method.
Category 4: A condition that represents an unacceptable health risk if the contraceptive method is used.

Contraindications

As in the previous articles in this series, Categories 1 to 4 of the UK Medical Eligibility criteria for contraceptive use, 2005/2006,[2] are used to describe levels of contraindication to use of contraceptive methods. Table 1 summarises important and common medical eligibility criteria for the two types of IUDs. The levonorgestrel IUD is considered as both an IUD and a progestogen-only method of contraception. Contraindications to use of both these types of contraceptive methods need to be considered, although systemic absorption from the levonorgestrel IUD is low and very unlikely to be associated with increased risks of venous and arterial disease.

Cost

The levonorgestrel IUD is PBS listed and hence inexpensive for women with Medicare cards and particularly for those with healthcare cards. Copper IUDs need to be purchased from pharmacies or are stocked by family planning clinics and some other clinics where IUD insertions are performed regularly. Cost to women is about $80 to $110 for a copper device. As many doctors charge a gap fee that is not covered by Medicare, a woman will usually pay out-of-pocket costs for the insertion procedure for either type of device. The up-front costs may, therefore, be a potential barrier for intrauterine methods, despite the fact that over time they are very inexpensive and cost-effective.

Side effects and complications

Women who use copper IUDs are more likely to have increased menstrual loss and dysmenorrhoea, but they usually have a regular menstrual cycle. Persistent vaginal bleeding and/or spotting is common initially in women who use levonorgestrel IUDs. It is also possible for women to bleed small amounts daily in the first three to five months of use (women should be specifically warned about this possibility). Amenorrhoea or regular light bleeding is then the expected pattern for women who

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Excluding pregnancy

- Pregnancy can be excluded with a high degree of confidence if:
  - a woman has not had sex since the start of her last normal period; or
  - she is at day one to five of a normal menstrual cycle; or
  - a urinary pregnancy test is negative and she has not had unprotected sex for at least three weeks prior to the test.
- If pregnancy is not confidently excluded before initiating a method of contraception, a pregnancy test should be performed four weeks later.

use levonorgestrel IUDs.

Risk of pelvic inflammatory disease among women who use IUDs is most strongly related to the insertion procedure and their background risk of STIs. The overall risk of pelvic inflammatory disease is low, at 1.6 per 1000 woman years.[3] There is a sixfold increase in risk of pelvic infection in the first 20 days after insertion of IUDs but the risk thereafter is similar to that in the population of women who do not use IUDs, and remains low unless there is exposure to STIs.

Uterine perforation occurs in up to 2.3 per 1000 insertions and spontaneous expulsion of the device in about 5% of women who chose this method.[3] The absolute risk of pregnancy (intrauterine and extrauterine) in women who use IUDs is very low. However, pregnancy in women with an IUD *in situ* increases the risks of ectopic pregnancy, second trimester septic miscarriage and premature delivery. The absolute risk of ectopic pregnancies is low in women who use IUDs and is certainly lower than in those using no contraception. However, since IUDs are effective at preventing intrauterine pregnancies, when contraceptive failure does occur a greater proportion of these pregnancies are ectopic than that seen in the general population. A history of ectopic pregnancy is not a contraindication for use of IUDs. It is important to exclude ectopic pregnancy if a pregnancy occurs in a woman with an IUD *in situ*. It is not known if there is a risk of fetal exposure to local intrauterine progestogen in women who use the levonorgestrel-releasing IUD.

Counselling and insertion

Discussion with women considering the use of IUDs needs to include the pros and cons of the method compared with other contraceptive methods and details of the insertion procedure. An appropriate history needs to be taken and an examination performed to assess suitability of a woman for an intrauterine method. It is also important to discuss the acceptability and suitability of both the levonorgestrel IUD

Table 2. Initiation of intrauterine devices

Previous contraceptive method	Timing of insertion of IUDs (applies to both copper IUDs and the levonorgestrel IUD unless otherwise stated)	When the levonorgestrel IUD becomes effective (Note: copper IUDs are always immediately effective)
No contraception or barriers	On days one to seven of a cycle for the levonorgestrel IUD* On days one to 12 of a cycle for copper IUDs*	Immediately
	At any other time (exclude pregnancy)†	Seven days
Combined pill or vaginal ring	At any time if pills/vaginal ring have been taken/used correctly	Seven days (or continue combined oral contraceptive pill for seven additional days for immediate protection)
Progestogen-only pill	At any time if pills have been taken correctly; otherwise, exclude pregnancy†	Seven days
DMPA injection	At any time if within 14 weeks of last injection	Immediately
Etonogestrel implant	At any time if within three years of insertion	Seven days (or insert levonorgestrel IUD seven days before implant removal for immediate protection)
Postpartum	Less than 48 hours postdelivery or after four weeks postdelivery if pregnancy is excluded†	Seven days

ABBREVIATIONS: DMPA = depot medroxyprogesterone acetate;IUD = intrauterine device.
* Day one is the first day of bleeding in a normal menstrual cycle. Day five is four days later.
† See the box on this page for how to exclude pregnancy. If pregnancy is not excluded before initiating a method of contraception, a pregnancy test should be performed four weeks' later.

and copper IUDs as many women will not have considered copper devices, erroneously seeing them as associated with problems or as no longer being available. Written information can be helpful to women considering the different contraceptive methods and fact sheets on all contraceptive methods can be downloaded free of charge from your state or territory's Family Planning Association website.

Screening for STIs can be carried out by risk assessment, demographic or bacteriological methods. Although there is no Australian consensus on the place of routine screening, SH&FPA[1] and The Royal Australian and New Zealand College of Obstetricians and Gynaecologists[5] recommend that consideration be given to screening for bacterial vaginosis and chlamydia prior to insertion or change of an IUD. Routine antibiotics are not recommended to be taken prior to IUD insertion. There is no clear evidence on the use of oral analgesics or topical anaesthetics before or during IUD insertion, although a randomised controlled trial found that no reduction in pain was experienced by women taking oral ibuprofen before the procedure.[6]

IUDs can be inserted any time after pregnancy has been confidently excluded (see the box on page 42). In women using barriers or no contraception, levonorgestrel IUDs are generally inserted between days one to seven, and copper IUDs between days one to 12, of the menstrual cycle. Copper IUDs are always effective immediately but levonorgestrel IUDs require seven days to become effective if they are inserted at times other than day one to seven of a normal menstrual cycle (Table 2).

Doctors who insert IUDs are responsible for ensuring that they are appropriately trained and maintain their competence in the procedure. This should include the ability to manage vasovagal shock, which is an occasional complication of the procedure. Some medical indemnity providers require additional insurance cover for GPs who perform this procedure but most cover it under their 'non procedural' category.

Removal

Recommended removal time of IUDs is within the first seven days of a woman's cycle, although it can be performed at any time if the woman desires pregnancy, has not had intercourse during that cycle or is already covered by another method of contraception. Removal mid cycle carries a small risk of pregnancy if sperm have recently entered the uterus and the IUD is removed shortly thereafter.

Removal of an IUD is a fairly straightforward procedure: the cervix and IUD strings should be well visualised, the strings are then grasped firmly close to the external os with sponge forceps, and gentle firm traction should be applied in alignment with the uterus until the device is fully removed. It is important to maintain counter traction of the uterus by holding the speculum in place while doing this and to warn the woman that she may experience brief uterine cramping with the procedure. (See the case study on this page and the flowchart on page 45.)

Additional practice tips

Practice tips on IUDs are outlined below.

- After insertion of an IUD, the strings should be cut about 3 cm from the external os (cutting the strings too short can cause partner discomfort).
- Antibiotic cover for subacute bacterial endocarditis prophylaxis is no longer generally necessary for IUD insertion and removal. However discussion with the treating cardiologist is advisable for women with cardiac conditions associated with the highest risk of adverse outcomes from endocarditis (this includes women with a prosthetic valve or those who have had endocarditis or cardiac transplantation or who have some categories of congenital heart disease and rheumatic heart disease).[7]
- Before a change of IUD, seven days' abstinence is recommended in case of failed insertion of the new device.
- A copper IUD provides very effective postcoital emergency contraception for up to five days post intercourse but the levonorgestrel IUD cannot be used for this purpose.
- Any copper IUD inserted in women aged over 40 years, or levonorgestrel IUD inserted in women aged over 45 years, can be left *in situ* as effective contraception until after the menopause.[3] The decision on extended use, however, should always be discussed with the woman.[1]

Case study. A woman presenting for IUD removal but the strings are not visualised

Layla is a 34-year-old mother of two. She was divorced two years ago and has recently remarried. Her husband does not have children and she has attended the surgery to have her intrauterine device (IUD) removed because she would like to become pregnant again. She is not sure what type of IUD was inserted three years ago, but she thinks it was a hormonal device because her periods have been much lighter than previously.

Layla is keen to become pregnant as soon as possible, so there is no need to remove the device at any particular time of her cycle. You decide to remove the device immediately in the surgery, but on a speculum examination, you cannot see a string emerging from the cervical os. A pregnancy test is negative. An ultrasound is ordered and this shows the presence of an IUD in a good position. You are not confident to use a sound to explore the canal or the uterine cavity so you refer Layla to a gynaecologist for removal of the IUD (see the flowchart on page 45).

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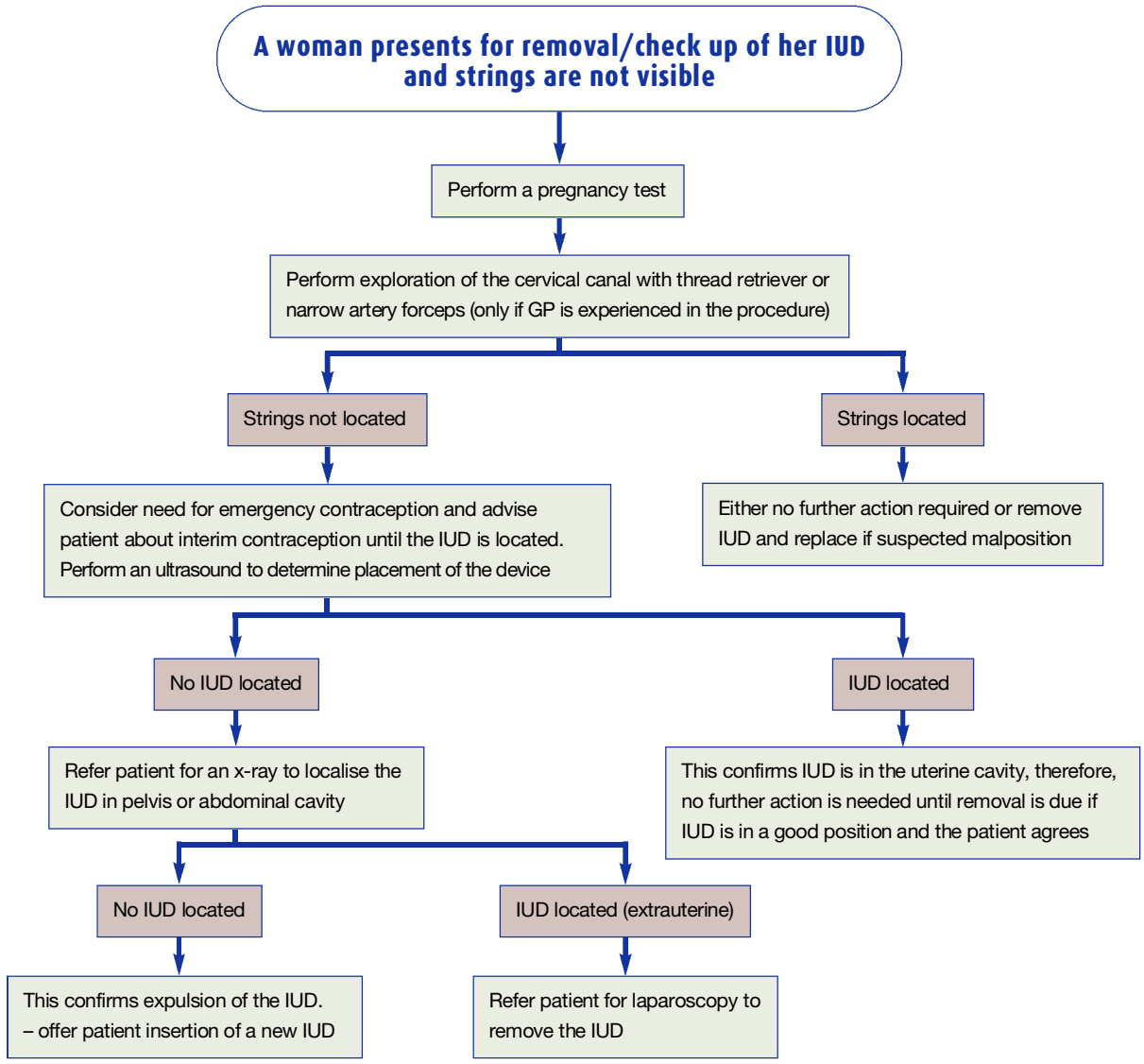
Management of a woman using an IUD with strings not visible



- If a woman develops pelvic inflammatory disease with an IUD *in situ*, the IUD can be left in place if she responds to treatment, is not at risk of repeat infection and wishes to continue with the method.
- If a woman has an IUD *in situ* and has uncomplicated cervical infection (chlamydia or gonorrhoea), this should be treated with a pelvic inflammatory disease regimen of antibiotics.

Barrier methods

Barriers are totally patient controlled, can be used by anyone because they do not contain hormones and their use is not contraindicated in women or men with any medical condition, except perhaps in those with an allergy to latex. The main disadvantage is the fact that they do rely on the user (many women who report unplanned pregnancies were using barrier methods for contraception but they or their partners forgot to use them at times). Women who use barriers and natural family planning methods should be specifically educated about the availability of emergency contraception in the event of misuse, nonuse, condom breakage or spillages.

Male condoms

Male condoms are the most common method of contraception used by couples

An example of a natural family planning method: the calendar or rhythm method[11]

The calendar or rhythm method calculates fertile days using the dates of a woman's previous months' cycles. This method, as described below, is best used after charting at least six cycle lengths.

- The first day of a menstrual period is counted as day one of a cycle.
- Cycle length is measured from the start of one period to the day before the start of the next.
- After reviewing six cycle lengths, the woman should select the shortest and longest cycles.
- She should then subtract 21 from the shortest cycle, and 10 from the longest cycle.
- For example, the calculations for a woman whose cycle varies between 26 to 30 days are: 26 – 21 = 5; and 30 – 10 = 20. Therefore, her fertile days are between days 5 and 20, and she should not have unprotected sex on these days if she wishes to avoid pregnancy.
- For women with regular 28-day cycles, their fertile days are days 7 to 18 (i.e. 28 – 21 = 7; and 28 – 10 = 18).

in Australia after the pill.[8] A clear advantage of this method is their ready availability. Use of condoms does not require a visit to a doctor and condoms can be purchased in pharmacies, supermarkets and even service stations. Another particular advantage is their protective capacity because they decrease the risk of transmission of most STIs. They can therefore be promoted for use with other contraceptive methods such as the pill (so called 'double Dutch').

Male condoms are usually made from latex, but there is an alternative polyurethane condom for men (and women) who are allergic to latex. These can be purchased from pharmacies or Family Planning Clinics.

Female condoms

Female condoms are made from polyurethane and are inserted into the vagina. They have not been very popular around the world, but they are an important option as a method that is female controlled. Some of the problems with female condoms are the noise, cost and unappealing look. A new, less expensive and more user-friendly female condom has recently been developed and approved by the Federal Drug Administration in the USA. However, it is not yet available in Australia.

Diaphragms

The diaphragm is a saucer-shaped device made of latex (or silicon) that is inserted into the vagina to cover the cervix. It prevents seminal fluid from reaching the cervix and ascending into the fallopian tubes to fertilise an ovum. The sperm die in the acidic vaginal environment. A diaphragm is sometimes used as an adjunct to natural family planning methods to increase their efficacy. The efficacy of diaphragms alone with typical use is 84%, which is lower than that of most other methods of contraception, making it a less suitable choice for women in whom an unplanned pregnancy would be unacceptable.

Diaphragms are available in a variety of sizes and are fitted by a doctor or nurse to ensure that the size is correct for the individual woman. Women are taught how to insert and remove the device to ensure that it is correctly placed prior to intercourse.

Spermicides may be used in conjunction with the diaphragm; however, there is no clear evidence for increased efficacy and some women find the use of spermicide aesthetically unappealing. Additionally, commercial availability of spermicide is now a problem in Australia. A recent Cochrane review comparing the effectiveness, safety and acceptability of the diaphragm with and without spermicide failed to find any studies suitable for inclusion and stated that further research is needed.[9] The authors of this study concluded that there is no evidence to change the commonly recommended practice of using the diaphragm with spermicide. The WHO makes the following statement: 'limited evidence suggests that the contraceptive effectiveness of the diaphragm and cervical cap may be moderately more effective when used with a spermicide than without'.[10]

Other barriers

Cervical caps are no longer available in Australia but are similar to diaphragms in the way they are used and their effectiveness. Vaginal sponges impregnated with spermicide are less effective than other barriers and are not available or recommended in Australia. Use of spermicide alone has a very high failure rate even with perfect use and is not recommended as a contraceptive method.

Natural family planning methods

The natural family planning (NFP) method uses the concept of fertility awareness to identify the days that a woman is potentially able to conceive. The goal is to avoid having intercourse on the days that conception could occur.

There are a number of NFP methods available and these generally involve either counting and calculating the unsafe days of the month or using physical signs of ovulation to decide when a woman is fertile and then avoiding intercourse on those days. The WHO defines the days of potential fertility for a couple during each woman's menstrual cycle as the time from the first act of intercourse that may lead to pregnancy to the demise of the ovum.

It is difficult to be specific about efficacy with the various NFP methods; however, it is about 94% with perfect use and 84% with typical use.[4] These NFP methods are generally more effective the longer they are

practiced and the stronger the motivation is to avoid further pregnancies.

The use of NFP methods requires that a couple be diligent and committed as they generally reduce spontaneity and may require long periods of abstinence. It can take six to 12 cycles to accurately identify fertile days of a woman's cycle. Women with irregular periods could have difficulty in predicting fertile times (see the box on page 46).[11]

Couples who wish to use fertility awareness methods should be encouraged to seek advice from an expert educator in this field who can not only explain the method but can also coach couples to develop competence and confidence in their interpretation of the important physical signs and symptoms of ovulation. Instructors at NFP organisations teach the method. For more information, contact the NFP Program (phone 1800 807 769 or www.nfpprog.com/contact_us.htm).

There are a number of websites providing access to computerised devices that can be used to predict a woman's fertility. One such fertility monitor claims that by entering data such as temperature and timing of the menstrual cycle into a small personal computer, a prediction can be made about a woman's potential fertility over the next 24 hours. Claims are made that an efficacy rating of 99% can be achieved. There is, however, no good evidence in the current literature of the numbers of pregnancies occurring with the use of these devices.

These NFP methods can also be readily used to determine when a woman can get pregnant because they pinpoint her fertile time each cycle.

Contraception – what's ahead?

There are constant changes and developments in the contraceptive field. One area of research is on changing the use of the oral contraceptive pill to have fewer or no pill-free days (research is being carried out into a new pill that has two pill-free days and contains a natural form of oestrogen). There is an existing 365-day pill already marketed in the USA. There are also smaller IUDs (both copper and hormonal) being marketed or trialled, which may suit some women who have a uterine cavity size too small for conventional IUDs. The progestogen-releasing IUDs are likely to be increasingly used to provide the progestogen component of combined hormone replacement therapy for postmenopausal women.

Research also continues on male hormonal methods. Although trials using combinations of long-acting testosterone and progestogens for men have shown successful suppression of spermatogenesis, contraceptive acceptability and efficacy, it is unlikely that a male hormonal product will be developed and marketed in the foreseeable future. MT

References

1. Sexual Health & Family Planning Australia: Contraception: an Australian clinical practice handbook. 2nd edition. Canberra: SH&FPA; 2008.
2. UK Medical Eligibility Criteria for contraceptive use. Faculty of Family Planning and Reproductive Health Care; 2006. Available online at: www.ffprhc.org.uk/ (accessed June 2009).
3. Faculty of Sexual & Reproductive Healthcare (FSRH). FRSH Clinical guidance: intrauterine contraception. London: FSRH Clinical Effectiveness Unit; 2007. Available online at: www.ffprhc.org.uk/admin/uploads/CEUGuidanceIntrauterineContraceptionNov07.pdf (accessed June 2009).
4. Trussell J. Contraceptive failure in the United States. Contraception 2004; 70: 89-96.
5. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG); College statement: intrauterine contraceptive devices and infection. Melbourne: RANZCOG, July 2007. Available online at: http://www.ranzcog.edu.au/publications/statements/C-gyn3.pdf (accessed June 2009).
6. Hubacher D, Reyes V, Lillo S, Zepeda A, Chen P, Croxatto H. Pain from copper intrauterine device insertion: randomized trial of prophylactic ibuprofen. Am J Obstet Gynecol 2006; 195: 1272-1277.
7. Therapeutic Guidelines: Antibiotics. 13th ed. Melbourne: Therapeutics Guidelines; 2006. Available online at: http://www.tg.com.au/etg_demo/tgc.htm#/ etg_demo/tgc/abg_ie/708.htm (accessed June 2009).
8. Richters J, Grulich AE, De Visser RO, Smith AMA, Rissel CE. Sex in Australia Contraceptive practices among a representative sample of women. Aust N Z J Public Health 2003; 27: 210-216.
9. Cook LAA, Nanda K, Grimes DA, Lopez LM. Diaphragm versus diaphragm with spermicides for contraception. Cochrane Database Syst Rev 2003: Issue 1. CD002031.
10. WHO Technical Consultation on Nonoxynol-9. W.C. Technical. Geneva: Switzerland; 2001. Available online at: http://www.aegis.com/files/who/N9_meeting_report.pdf (accessed June 2009).
11. Family Planning NSW. Natural family planning fact sheet. Available online at: http://www.fpnsw.Fiorg.au/sex-matters/factsheets/93.html (accessed June 2009).

COMPETING INTERESTS: Dr Harvey has provided expert opinion for Bayer and Schering Plough as part of her employment with Family Planning Queensland. She has received support for conference attendance from Schering Plough. Dr Read has provided expert opinion for Bayer, Schering Plough and Wyeth as part of her employment with Family Planning NSW. She has received support for conference attendance from Bayer and Schering Plough and is an investigator for a Schering Plough contraceptive study.