Although the chance of pregnancy after the age of 40 is reduced compared with the peak reproductive years, a small number of women continue to be fertile even into their early 50s. Women over 40 have a higher risk than younger women of having fetal abnormalities as well as pregnancy-related complications. At least one in four pregnancies in women older than 40 ends in abortion. Anecdotally, women may underestimate their fertility and subsequent risk of pregnancy in their later reproductive years. Women in their 40s and early 50s require evidence-based information about contraception to reduce the risk of an unintended pregnancy.

Contraceptive options for women over 40

The principles of contraceptive choice are the same regardless of age. Medical contraindications to the use of a particular method are considered with social, cultural and economic factors, as well as a woman’s experiences with past methods. As increasing age itself is an independent risk factor for conditions such as venous and arterial vascular disease, osteoporosis and gynaecological problems, it is essential to take a thorough history of women over 40 to determine eligibility for a particular contraceptive method.

The medical eligibility criteria (MEC) system for contraceptive use provides an internationally recognised framework for matching a woman’s medical and personal history with her chosen method of contraception. Although upper age limits are not specified in MEC guidance, oestrogen-containing methods and depot medroxyprogesterone acetate (DMPA) injections are not advised in women over 50 because the risks of these methods outweigh the benefits for women in this age group. Women can be advised to switch to an alternative progesterone-only or non-hormonal method at age 50 until contraception is no longer required or desired (Table).

At what age should women stop contraception?

Contraception is advised for sexually active women until there is no longer a chance of ovulation. The probability of menstruation and possible ovulation after 12 months of amenorrhoea in women over 45 is estimated at between 2% and 10%.

Women over 50 who are using a non-hormonal method such as condoms or a copper-bearing intrauterine device (IUD) and those not currently using any contraceptive method can be advised that contraception is no longer required after 12 months of amenorrhoea. Women below the age of 50 are advised to wait for two years of amenorrhoea in

Key points

- Women over 40 require evidence-based information about their need and options for contraception, to reduce the risk of an unintended pregnancy.
- Oestrogen-containing contraceptives and depot medroxyprogesterone acetate injections can be used by women up to the age of 50; after this, women should switch to an alternative progesterone-only or non-hormonal method until contraception is no longer required.
- Women over 50 who are using a non-hormonal contraceptive can be advised that contraception is no longer required after 12 months of amenorrhoea; those younger than 50 should wait for two years of amenorrhoea.
- Women over 50 who are amenorrhoeic while using progesterone-only contraception can be advised to continue using the method for only another 12 months if they have two follicular stimulating hormone levels of 30IU/L or above taken six weeks apart.
because of the possibility that ovulation and menstruation will resume. It is not uncommon for a perimenopausal woman’s menses to cease for several months, only to resume again in a regular pattern.

Advice on ceasing contraception is more challenging for women using a hormonal method. Hormonal methods may mask the signs and symptoms of menopause, which makes it difficult, if not impossible, to determine when contraception is no longer required. Progestogen-only methods may result in amenorrhoea due to the hormonal effect on the endometrium, and oestrogen-containing methods will generally result in a regular withdrawal bleed for as long as the method is used. Oestrogen-containing methods will also control vasomotor symptoms.12

Practical, method-specific guidance is therefore required (Table). Follicle-stimulating hormone (FSH) levels are not diagnostic of infertility and cannot generally be used to guide advice on whether to stop contraception. They may be useful, however, to plan the future timing of stopping contraception in women over 50 who are amenorrhoeic while using a progestogen-only pill (POP), or a levonorgestrel intrauterine device (LNG-IUD). If two FSH levels taken six weeks apart are both over 30 IU/L, the woman can be advised that she needs only continue the method for another 12 months.8 It should also be remembered that the hormone doses in hormone replacement therapy (HRT) regimens are not contraceptive.

Women switching from DMPA to non-hormonal methods need to wait for two years of amenorrhoea if over 50, or three years if younger than that, before stopping contraception.

Although it is essential to provide evidence-based information to support women making an informed choice about when to stop contraception, it is also important to acknowledge that it is a personal and individual choice. Some women will be prepared to accept the small risk of an unintended pregnancy at the perimenopause, whereas others prefer to continue contraception until there is no chance of pregnancy. The natural loss of fertility can be assumed for most women at the age of 55 and they can be advised that contraception is no longer required after this age.
Case studies: Contraceptive advice for older women

Case 1 – Sara
Sara, aged 53, had a levonorgestrel intrauterine device (LNG-IUD) inserted when she was 48 for heavy menstrual bleeding and contraception. After an initial four months of persistent, unscheduled bleeding, she developed a pattern of light, regular menstruation. About three years ago, menstruation became less frequent and she has been amenorrhoeic for the past 18 months. She presents for removal of her IUD. Sara described some mild symptoms of menopause, including occasional hot flushes and some vaginal dryness.

Discussion
Because Sara is using hormonal contraception, the usual criteria to determine menopause in women 50 or older with 12 months of amenorrhoea do not apply. Although she was initially menstruating, it is common for women using an LNG-IUD to become amenorrhoeic as a result of the progestogen effect on the endometrium. Removal of the LNG-IUD may result in the return of her previously heavy menses. Sara can be given the option of retaining the IUD until she is 55. At this age the loss of natural fertility can be assumed for most women and the chance of menses returning is extremely low. Alternatively, since she is over 50 and amenorrhoeic, she could have her follicle-stimulating hormone (FSH) levels checked on two occasions six weeks apart and if both are over 30 IU/L she can be advised to have the IUD removed after a further 12 months.

Case 2 – Heidi
Heidi is a 46-year-old mother of two who presents you with a letter from the local abortion clinic requesting a post-abortion check. She had not been using contraception as she believed she was too old to fall pregnant and she and her husband have sex infrequently. She asks for contraceptive advice as she is determined not to get pregnant again.

Heidi's medical history is unremarkable except for a history of a postpartum deep vein thrombosis (DVT) after her second child. She is a non-smoker, has a BMI of 22kg/m² and is normotensive. She has a regular menstrual cycle and is up to date with Pap testing.

Discussion
As Heidi has a personal history of a DVT, any oestrogen-containing contraception is contraindicated (MEC 4 – she has a condition that represents an unacceptable risk if the contraceptive method is used). Heidi’s options include progestogen-only methods, non-hormonal methods and sterilisation (either herself or her partner). Suitable progestogen-only methods include the contraceptive implant, the LNG-IUD and the progestogen-only pill. The DMPA injection is not considered as a first-line option for women over 45 because of its effect on bone density.

Heidi is keen to use a method that she need not remember daily and decides to have an implant inserted. Since she has not yet had intercourse since the abortion she can have an implant inserted at any time, but will have to wait for seven days after insertion for it to become effective if it is inserted at any time other than the first five days of a menstruation.

Combined hormonal contraceptive methods
Combined oral contraceptive pills (COCPs) and vaginal rings can be used by women up to the age of 50 who have no contraindications to oestrogen (risk factors for or history of venous or arterial disease, breast cancer or liver disease). They can be helpful in regard to reducing menstrual bleeding and dysmenorrhoea, maintenance of bone density and reducing menopausal symptoms at the time of the perimenopause.

Factors influencing the choice of COCP for women between 40 and 50 are the same as for younger women. Monophasic pills containing levonorgestrel or norethisterone combined with 30µg or 35µg of ethinyloestradiol (EE) are generally a good first choice. Other pills can be used when there is a specific potential benefit for the woman or there are side effects with the first-line pills. Theoretically, COCPs with 20µg EE are a good choice for older women with a higher baseline venous thromboembolism (VTE) risk as a result of age. However, it is unknown whether lower dose pills with 20µg EE offer a safety benefit over pills with 30µg or 35µg EE. COCPs with 20µg EE may also be associated with a higher chance of unscheduled bleeding, which may lead to early discontinuation.

Recent developments in COCPs have substituted EE with oestradiol valerate and oestradiol. These oestrogens are structurally identical to those produced by the ovary and have a lesser impact on clotting factors than EE. It is not yet known whether these COCPs will demonstrate any real safety benefit in relation to VTE risk, compared with the EE-containing COCPs, and the contraindications to their use are no different from those of other COCPs.

It is important to provide information about VTE risk in a way that patients understand. The VTE risk for women not using a hormonal method of contraception appears to be about two per 10 000 women years. This increases approximately twofold to fourfold in women using a combined hormonal method of contraception. The absolute risk of a VTE for users of combined hormonal contraceptives is far lower than the risk of VTE associated with pregnancy and the postpartum period, which is between 21.5 and 84-fold over baseline. As age is an independent risk factor for VTE, the background risk for women in their 40s is higher than that for younger women. Beyond the age of 50, the risk profile outweighs the benefits and switching to a non-oestrogen based method is advised.

COCPs and vaginal rings can also be used in the management of appropriately investigated heavy menstrual bleeding. Heavy menstrual bleeding, defined as blood loss of more than 80mL per cycle, is more common among women in their 40s than in younger women. Since older women are also at increased risk of endometrial pathology, it is essential to rule out serious causes of bleeding,
including endometrial cancer, before initiating treatment. The quadrifasiche oestradiol valerate/dienogest pill has been shown to be very effective at reducing blood loss compared with placebo and has an indication for the management of idiopathic heavy menstrual bleeding in women requiring contraception. However, it is not known whether this COCP is superior to others in this regard.

Women can also reduce or eliminate withdrawal bleeding in the pill-free or ring-free break by running monophasic active pill packs together or by replacing their vaginal rings every three to four weeks without a break. Eliminating the pill-free or ring-free break has traditionally been advised for three months at a time, followed by a withdrawal bleed, but there are now good safety data to support the continuous use of combined pills or vaginal rings for up to 12 months.

Women may experience heightened premenstrual symptoms in the perimenopause as a result of fluctuating hormonal levels. All contraceptive methods that inhibit ovulation may potentially benefit women with the symptoms of premenstrual syndrome (PMS), although the aetiology of this condition remains elusive. A 20μg EE / 3g drospirenone pill has been shown to be more effective that placebo in the treatment of the more severe premenstrual dysphoric disorder (PMDD) over three months, but it is unknown whether this effect is similar in women with the milder symptoms of PMS.

**Progestogen-only pills**

POPs offer an oral alternative to the COCP without oestrogen, where the primary mechanism of action is to thicken the cervical mucus so it is impenetrable to sperm, and may have a variable and inconsistent effect on preventing ovulation. Although POs need to be taken within a narrow three-hour time frame each day, they have a relatively low failure rate in woman over 40 (quoted as 0.3%) as a result of reduced fertility in this age group.

The POP produces minimal, if any, metabolic effects and is not associated with increased VTE risk; however, unscheduled bleeding can be a troublesome side effect. It is important to exclude pathological causes of bleeding in women in their 40s and early 50s. POs can be continued, if required and desired, until the age of 55 (Table).

**Depot medroxyprogesterone acetate injections**

DMPA injections given as an intramuscular injection every 12 weeks (plus or minus two weeks) provide effective contraception by inhibiting ovulation and thickening the cervical mucus. In women without cardiovascular risk factors, DMPA is MEC 2 (ie the advantages outweigh the theoretical or proven risks) from the age of 45 but it is not recommended beyond 50 due to concern about the effects on lipids and increased cardiovascular risk resulting from its hypo-oestrogenic impact.

The hypo-oestrogenic effect of DMPA has been shown to reduce high-density lipoprotein (HDL) cholesterol levels, and the risks of this method outweigh the benefits (MEC 3) for women with multiple risk factors for cardiovascular disease, including a family history of cardiovascular disease, smoking, hypertension and diabetes.

DMPA users experience mean reduction in bone density of 5.8% and 5.7% in the hip and spine respectively, compared with a mean reduction of 0.9% in both sites for non-users over a two-year period. However, it appears that DMPA users regain bone density after discontinuing the method. In women over 45 there is a theoretical but unproven concern that there may be insufficient time to regain any losses before onset of the hypo-oestrogenic effects of menopause. There is no recommendation to perform bone densitometry routinely before or during DMPA use, but a detailed assessment of risk factors for osteoporosis should occur every two years in any user.

Women in their early 40s who desire another child need to be aware that DMPA is not immediately reversible. The median time for the return to the woman’s own level of fertility is about 10 months.

**Intrauterine devices**

IUDs offer highly effective contraception for women aged 40 and older, either in the form of the levonorgestrel-releasing device (LNG-IUD) or the copper-bearing devices.

**LNG-IUD**

The LNG-IUD has a potential added benefit for women aged 40 and over due to its effect on reducing menstrual blood loss. Perimenopausal women may experience heavy menstrual bleeding, often associated with anovulatory cycles. As mentioned above, it is essential to exclude pathological causes of heavy menstrual bleeding in women of this age because they are at greater risk of endometrial pathology, including endometrial cancer, than are younger women. Women presenting with new heavy menstrual bleeding should be investigated appropriately before LNG-IUD insertion. Investigations may include measurements of haemoglobin levels, iron status and thyroid-stimulating hormone levels; a transvaginal ultrasound; and possible hysteroscopy. The LNG-IUD is relatively contraindicated in women who have significant intrauterine abnormalities, such as submucosal fibroids, which may prevent appropriate placement of the device.

The LNG-IUD may be associated with irregular vaginal bleeding for the first three to five months but after this the pattern of bleeding is likely to be either light bleeding reflecting the woman’s own menstrual cycle or absent bleeding. Amenorrhoea may result either from the progestogen hormone’s effect on the endometrium or from the menopause itself. Guidance on stopping the LNG-IUD at the menopause is provided in the Table.

The LNG-IUD should be replaced after five years’ use in women younger than 45. For women of 45 and older at the time of insertion, the device can be left in place seven years at most if they are still menstruating (off-label use). In amenorrhoic women 50 or older, FSH measurements can be used to determine the timing of the removal (Table) or the device can be retained until 55 years when a loss of natural fertility can be assumed for most women (see case study).

The LNG-IUD can also be used to protect the endometrium as part of an
HRT regimen for women who are using oestrogen to control menopausal symptoms. It is recommended the device be used for a maximum of five years in this context (see the box).

**Copper-IUDs**

Copper IUDs are a suitable choice for many women older than 40 who require or desire an effective hormone-free contraception method. The copper IUD is not, however, a first-line choice for women with heavy menstrual bleeding or severe dysmenorrhoea because it can be associated, in some women, with an increase in blood loss and worsening pelvic pain. The method is relatively contraindicated in women who have significant uterine abnormalities due to the risk of incorrect placement of the device.

Copper IUDs are licensed for up to 10 years or five years use, depending on the brand. However, either type can be considered for extended use (off-label) and retained until the menopause if inserted in women older than 40 (Table).4,8

In such cases, the woman should be informed that, although the device may be slightly less effective beyond its product licence date, any loss of efficacy should be offset by the decline in her own fertility at this age.

**Male and female sterilisation**

Sterilisation must be regarded as a permanent method of contraception. It has been a relatively common method in women over 40, but this is likely to change with the increasing awareness and use of long-acting reversible contraceptives.

**Barrier methods**

Barrier methods of contraception, including male and female condoms and the diaphragm, have relatively low efficacies when used ‘typically’. For example, although the male condom is 98% effective with ‘perfect use’, it is only 82% effective with ‘typical use’.43 This disadvantage may be offset by the reduction in fertility and increasing user-experience in older women, and, therefore, barrier methods may be an appropriate contraceptive method for some women in this age group.

**Emergency contraception**

Women aged 40 and over, like women of any reproductive age who wish to avoid an unintended pregnancy, need to be aware of the availability of the S2 emergency contraceptive pill (ECP). The most common form of ECP is a single 1.5mg dose of LNG, which is suitable for use in women up to 55. It has no contraindications except for known allergy. The LNG-ECP can be used up to 120 hours after unprotected intercourse or in the case of contraceptive failure. It may be more effective the earlier it is taken45 and has limited efficacy from 96 to 120 hours.46

The copper IUD is also an extremely effective method of emergency contraception,46 and can be retained for on-going use.

**Conclusion**

Contraception for women from the age of 40 who are at risk of an unintended pregnancy is an important but often neglected area, with most research and health promotion activity focusing on younger women. Older women need to be given evidence-based advice to guide an informed choice about using contraception and which method to choose. Since a woman’s preferred contraception method at the time of menopause may be very different from the method she chooses in her early 40s, it is also important to review the range of contraceptive options regularly and switch methods if appropriate. Using the MEC system for medical eligibility provides a useful framework for advice.

References are available on request.