Contraceptive Options for the Perimenopausal Woman

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Introduction

Despite an increasing number of available contraceptive options, about 49% of the annual U.S. pregnancies remain unintended.[1] Surprisingly, over a third of all pregnancies in women in their forties are unintended. Perhaps due to safety considerations and co-existing medical conditions, these patients may be directed toward less effective, compliance dependent methods. In addition to reliable contraception, perimenopausal women may need to stabilize hormonal fluctuations and minimize irregular heavy menstrual flow. The ideal contraceptive for the perimenopausal woman would be compliance independent and provide non-contraceptive benefits.

With the perimenopausal woman's needs in mind , we will discuss all contraceptive options currently available in the United States, review the risks and benefits of each and describe the transition from contraception to postmenopausal hormone therapy. We include a summary of the efficacy of various contraceptives in Table 1.

As women enter their perimenopausal years, they are often faced with contraceptive decisions along with the onset of new medical conditions. These conditions include cardiovascular risk factors such as hyperlipidemia, hypertension, diabetes and obesity. Cardiovascular disease increases dramatically with age and is the leading cause of death among adult women in the U.S. Cardiovascular risk factor management is therefore a critical component in the care of perimenopausal women. It is prudent to educate women seeking contraceptive counseling about the importance of a healthy diet, exercise and avoidance of smoking. It is known that coronary artery disease in women who undergo natural menopause occurs about 10 years later than men. However, women who undergo early natural menopause or bilateral oophorectomy develop coronary artery disease at a younger age. The decline in ovarian function is related to changes in the lipid profile and subsequent risk for developing coronary artery disease.[2]

Studies have not shown an increased risk of myocardial infarction or stroke in women who are current users of oral contraceptives containing less than 50 ug of EE.[3] However, women older than 35 years of age who smoke and have a history of hypertension are at increased risk for myocardial infarction and stroke.[4] Women with a history of diabetes but no other risk factors such as hypertension or vascular disease including nephropathy are candidates for combination oral contraceptives. Those who have diabetes in addition to multiple other cardiac risk factors should be offered progestin only or non-hormonal contraceptives.

In short, from the standpoint of medical eligibility, combination estrogen-progestin contraception is most appropriate for lean, healthy, non-smoking women without significant cardiovascular risk factors. Women with multiple cardiovascular risk factors are ineligible for combination estrogen-progestin contraceptives. These women need to be counseled regarding a healthy lifestyle and management of risk factors and ideally be offered progestin only or non-hormonal contraceptives.[5]

OCs Oral Contraceptives: Contraception Plus…

The most commonly used reversible method of contraception in the United States is the "Pill" or oral contraceptive (OC). Since the 1960's, OCs have been successfully used for contraception as well as for treatment of various hormonal disorders including polycystic ovarian syndrome, dysmenorrhea,

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Table 1. Failure rates of currently used contraceptive methods (Modified from 38,59).

Contraceptive method	% Age of women experiencing an unintended pregnancy
Levonorgestrel IUS/ Copper-T IUD	0.1% / 0.8%
Female sterilization	0.5%
Implant	<0.1%
Injection	3%
Oral contraceptive	8%
Vaginal ring	8%
Patch	8%
Condom	15%
Diaphragm	16%
Fertility awareness	25%
Spermicide	29%
No method of contraception	85%

premenstrual syndrome, endometriosis and others. Most OCs contain a combination of estrogen and progestin, the doses of which have progressively decreased over the years. This has diminished the side-effects of OCs without compromising contraceptive effectiveness.

In addition to being very effective if taken correctly, OCs can ameliorate vasomotor symptoms and menorrhagia, the two most common symptoms experienced by perimenopausal women. OCs containing 20 mcg of Ethinyl Estradiol (EE)/1 mg Norethindrone Acetate (NETA) have been shown to result in shorter bleeding intervals, decreased variability of menses and decreased number and severity of hot flushes.[6] They can also help prevent bone loss. In fact, oligomenorrheic perimenopausal women taking 20 mcg EE OCs have enjoyed significant increases in vertebral bone density when compared with those taking placebo.[7] Maximizing bone mass is especially vital prior to menopause. Despite the fact that OCs require daily compliance, they provide numerous additional non-contraceptive benefits applicable to perimenopausal women, including prevention of benign breast disease,[8] pelvic inflammatory disease (PID), ectopic pregnancy, as well as considerable reduction in ovarian[9] and endometrial cancer risk. In addition to the traditional cyclic, so-called 21/7 formulations, OCs are now available in extended cycle, continuous and shortened hormone-free interval (HFI), or 24/4, formulations.

Extended Cycle and Continuous OCs

Over the years, women have expressed a preference for less frequent menses and a widespread acceptability for OCs providing this benefit.[10,11] The FDA has approved several extended cycle and one continuous use OC. For the perimenopausal woman, these formulations have the advantage of minimizing breakthrough vasomotor symptoms during the pill free week. Extended cycle formulations contain 84 active pills (0.15 mg LNG + 30 mcg EE) followed by either a week of placebo or low dose estrogen (10 mcg EE). Four short scheduled menstrual intervals per year result. These formulations are associated with higher initial bleeding/spotting rates as compared with traditional cyclic OCs. Continuous OCs contain 0.09 mg LNG and 20 mcg EE daily. Again, this is beneficial for vasomotor symptom control. Breakthrough bleeding rates are higher with continuous as compared with 21/7 formulations initially, but become similar at 1 year of use.[12]

Shortened Hormone-Free Interval OCs

Another excellent choice for the perimenopause is the shortened hormone-free interval OC which delivers short but regular menstrual intervals while minimizing vasomotor symptoms and menorrhagia. Twenty-four active pills are followed by 4 placebo pills. During the shorter 4-day as compared to the standard 7-day placebo interval, it is less likely that the patient will experience breakthrough vasomotor symptoms. Two such formulations are available containing either NETA or drospirenone (DSP) as the progestin component. The latter has the additional benefits of anti-androgenic and anti-mineralocorticoid activity and is indicated for the treatment of premenstrual dysphoric disorder. Greater suppression of the pituitary/ovarian axis and consequent lower ovulation rate, is reported with the 24/4 formulations, as compared with 21/7 formulations. Aside from decreasing hormonal withdrawal symptoms, this has the potential for reducing risk of ovulation and symptomatic functional cysts.[13]

Risks of OCs

The risk of venous thromboembolism (VTE) is increased with estrogen-containing OCs. An extensive Food and Drug Administration (FDA)-mandated review of VTE risk in OC users found that 4 cases of non-fatal VTE/100,000 women/year occurred among non-users of OCs as compared to 10–15 cases/100,000 women/year among users of levonorgestrel (LNG) containing OCs and 20–30 cases/100,000 women/year among users of desogestrel (DSG) containing OCs.[14] A later comparison of various progestin components on the risk of non-fatal VTE indicated that OCs containing LNG and Norgestimate were similar, whereas OCs containing DSG posed a 2-fold increased risk.[15] This reported increase in VTE risk is significantly lower than that seen in pregnancy (60 cases/100,000 women/year). Nonetheless, any estrogen containing contraception should be used with caution and DSG-containing formulations avoided if possible in women with cardiovascular risk factors.

One of the most significant modifiable risk factor for cardiovascular disease is smoking. The relative risk (RR) for cardiovascular complications including VTE, myocardial infaction or stroke for a non-smoker over 35 years old taking OCs as compared to the same woman not taking OCs is 3.03. If the same woman smokes and takes OCs, her RR for the above complications is 19.4. Thus, perimenopausal women who continue to smoke are not candidates for combination OCs.[16]

The issue of association of OCs and breast cancer continues to raise controversy. A small increase in risk was shown to decrease to baseline after OCs were discontinued for 10 years in a large meta-analysis of 54 studies. OCs users had an increase in the diagnosis of breast cancer, perhaps due to more vigilant screening. They also tended to have more localized tumors and thus a better prognosis than non-users.[17,18] However, in a recent review, newer OCs formulations have not been shown to increase breast cancer risk even in those with a family history of breast cancer.[19]

Side-Effects of OCs

One of the most common side-effects following OC initiation is breakthrough bleeding. This is all the more concerning in the perimenopausal woman, in whom endometrial hyperplasia/malignancy should be excluded with endometrial sampling and/or ultrasound. The latter can also help in the diagnosis of uterine pathology including polyps and fibroids. Further, pregnancy, medication interaction and infection especially chlamydia trachomatis and Ureaplasma urealyticum should be ruled out in the setting of persistent breakthrough bleeding.

Reassuringly, no statistically significant differences in mastalgia, headache, weight gain and nausea rates were seen in a study comparing 20 mcg EE OC vs. placebo.[20] In addition, well controlled studies fail to show any association between weight gain and oral contraceptive use with formulations containing 50, 30 or 20 mcg EE.[21]

Hormonal Patch and Ring

More recently, patients have been offered hormonal contraception delivered via vaginal ring or transdermal patch. These options offer similar risks and benefits as OCs, but are dosed monthly or weekly, respectively. The vaginal ring releases 15 mcg EE/0.12 mg etonorgestrel (ENG) per day. Patients insert a 4 mm thick ethylene vinyl ring with a diameter of 5.4 cm intravaginally and remove it 3 weeks later for the scheduled menstrual interval. A new ring is inserted 1 week later. Transvaginal administration avoids the first pass through the liver thus decreasing many medication interactions. The ring contains a lower estrogen dose than any OC or the patch.[22] Irregular bleeding on OCs is very effectively treated with rapid onset, steady hormone levels in the ring.[23]

The contraceptive patch is placed to the abdomen, upper arm, thigh or buttocks at weekly intervals for 3 weeks and left off for the fourth week during the scheduled menstrual interval. It releases 20 mcg EE/0.15 mg norelgestromin, a progestin which metabolizes to norgestimate, the progestin component of several OCs. Compliance is generally higher with the patch than with OCs (88% vs. 78%). Unfortunately, efficacy is somewhat lower in women weighing over 90 kg.[24] Side-effect profile is comparable to most low dose OCs with the exception of higher rates of breast pain noted with the patch.[25] Irregular bleeding on OCs is usually not significantly improved with the use of the patch. In 2005, the FDA changed patch labeling to reflect 60% higher peak hormone levels in comparison to similar OCs. Despite this, the VTE incidence rates have been low, reported as 52 vs. 42/100,000 women years [26] and certainly lower than those associated with pregnancy.

Nonetheless, the OR for the risk of developing a VTE for patch users as compared with OC users has been reported as 2.4 (95% CI 1.3–3.8), and the OR of MI as 1.8 (95% CI 0.5–6.8). No CVAs were reported in this study. [27] FDA labeling changed again in early 2008: "it is not known whether there are changes in the risk of serious adverse events based on the differences in pharmacokinetic profiles of EE in women using [the patch] as compared with women using oral contraceptives containing 35 mcg of EE." Thus recommendations against the use the patch in perimenopausal women with cardiac risk factors and avoiding extended cycle administration appear prudent.

Intrauterine Contraception

Intrauterine contraception has enjoyed a tremendous resurgence in popularity and acceptability over the last decade due to very high, compliance-independent efficacy and proven safety. Two types of intrauterine contraceptives are currently available in the U.S. The T380A copper IUD is entirely hormone-free. Its mechanism of action is primarily due to the copper coil, which interferes with sperm transport, and to the sterile inflammatory endometrial response, which helps prevent implantation.[28] Its effects are rapidly reversible, and thus it is ideal for perimenopausal women in whom all hormones are contraindicated. It is indicated for contraception for up to 10 years and can be used for emergency contraception (EC). The Food and Drug Administration (FDA) has changed the labeling for the copper intrauterine device (IUD) to include patients previously not considered candidates for this method (Table 2).

The second available intrauterine contraceptive is the levonorgestrel intrauterine system (LNG IUS). It releases LNG into circulation for up to 5 years with systemic levels that are much lower than those associated with OCs and thus very well tolerated. Multiple mechanisms of action including endometrial thinning, cervical mucus thickening, inhibition of sperm function and intermittent ovulation suppression account for the LNG IUS high efficacy rate. Irregular menses can be expected for the first 3–6 months of use, with 20% reported amenorrhea rates at 1 year of use. In the unlikely event that a pregnancy should occur, patients need to be promptly evaluated for ectopic pregnancy, as up to 50% of pregnancies which occur with the LNG IUS in place are ectopic. Baseline fertility returns shortly after removal and over 80% of women are expected to conceive within 12 months of removal. Its non-contraceptive benefit for the perimenopausal woman is the dramatic reduction of menstrual blood loss, reported to be up to 90% and comparable to oral progestin therapy. By comparison, OCs reduce blood loss by 50% and non-steroidal anti-inflammatory agents reduce it by 25%.[29] This contraceptive has been used as a cost effective non-invasive alternative to hysterectomy and endometrial ablation.[30,31] As women transition to hormone therapy (HT), the LNG IUS can be used to prevent endometrial hyperplasia in women receiving estrogen.[32]

Intrauterine Contraception and the Risk of Infection

The issue of IUD-related pelvic infection has been extensively studied. Pelvic inflammatory disease (PID) only increases for about 20 days following insertion to 9.7/1,000 copper IUD users. Thereafter, the rate of infection decreases to 1.4/1,000 users, similar to the general population rate.[33] In comparing the two types of intrauterine contraceptives, the PID rate has been reported to be 4-fold lower in the LNG IUS group than the copper IUD group, in both parous and nulliparous women. The mechanism of this reduction is thought to be progestin-mediated cervical mucus thickening and consequent inhibition of ascending infection.[34] Other than this PID risk reduction, IUDs do not protect against sexually transmitted infections.

Table 2. Current recommendations for the use of intrauterine contraception. (summarized from 28).

May be used in	Contraindicated in patients with
Patients with prior h/o PID, STI, ectopic pregnancy	Acute PID
Nulliparous patients, adolescents	Current "high risk behavior"
Patients in non-monogamous relationships	Postpartum endometritis <3 months
Patients with asymptomatic HIV, actinomyces	Mucopurulent cervicitis
Patients with h/o abnormal pap, vaginitis	

Prior to intrauterine contraceptive device insertion, pregnancy must be excluded and current cervical cytology confirmed. Sexually transmitted infection screen should be performed. No prophylactic antibiotics are indicated.[35] If a positive culture for GC or Chlamydia occurs, the infection can be treated in most cases without the removal of the IUD.

Subdermal Implant

A recent addition to the contraceptive armamentarium in the US is the subdermal implant. This has been used worldwide since 1998 and extensively studied. It is a single 40 × 2 mm rod, containing 68 mg etonogestrel (ENG) with a rate controlling ethylene vinyl acetate membrane. The implant provides effective contraception for up to 3 years. No pregnancies were documented in over 6100 cycles. However, women weighing over 130% ideal body weight were excluded from the study.[36] This method is rapidly reversible, with undetectable ENG levels at within 10 days post removal. The leading cause of discontinuation of this method (11%) is the "unpredictable and irregular bleeding". This makes the method less suitable for perimenopausal patients in whom irregular bleeding often prompts evaluation for endometrial pathology. On average, 10 days of spotting and 7 days of bleeding were reported over 90 days. Other causes for discontinuation included weight gain, emotional lability, acne, headache, depression (1%–2% each).[36] The mechanism of action is ovulation suppression, with no ovulations documented in the first 30 months of use, along with increased cervical mucus viscosity. Pertinent for the perimenopausal patient, this method does not result in a hypoestrogenic state or negatively affect bone mineral density.[37] Similarly to other progestin-only containing contraception, known or suspected pregnancy, current or past history of thrombotic disease, hepatic tumors, active liver disease, undiagnosed abnormal genital bleeding, know, suspected or history of breast cancer and hypersensitivity to any components of the implant are contraindications to this device, if only for the lack of longterm evidence about its use in such populations.[38] Of note, Implanon's predecessor, Norplant, was taken off the U.S. market in 2001 due to concerns over removal.

Injectable Contraception

The medroxyprogesterone acetate (DMPA) contraceptive injection has been the mainstay of highly effective compliance independent contraception worldwide for decades. A large body of evidence supports its safety in populations where estrogen-containing contraceptives are contraindicated. These populations include women with cardiac risk factors such as poorly controlled hypertension and history of VTE as well as smokers over age 35 years.[39,40] In women with sickle cell disease, DMPA has been shown to reduce the number of sickle cell crises.[40] In women with a seizure disorder, DMPA has been shown to reduce seizure frequency.[39] Controlled surveillance found no overall increased risk of ovarian, liver or cervical cancer, and found a prolonged protective effect against endometrial cancer.[41] However, increased risk of breast cancer was noted in recent users, perhaps due to increased tumor detection.[41] Two formulations, sub-cutaneous patient administered and intramuscular provider administered, are dosed every 12–14 weeks. Both have comparable effectiveness.[42] DMPA can cause irregularity in the menstrual pattern triggering evaluation for endometrial hyperplasia/malignancy in the perimenopausal woman. However, the more compelling concern for the use of DMPA in perimenopausal women is its effect on bone mineral density. After achieving peak bone mass in the early 30s, women lose about 2% of bone mass per year. The greatest bone loss occurs during the first 5–10 years after menopause.[43] In a prospective study, an annual bone loss of about 1% has been reported in DMPA users as compared to non-users. The bone loss is reversible by 30 months following DMPA discontinuation.[44] In another study, at 12 months following initiation, a 2.74% bone loss was seen with DMPA, in contrast to 0.37% loss in the control group and 2.33% gain in OC users.[45] In late 2004, the FDA revised DMPA labeling directing clinicians to "use DMPA for more than 2 years only if other methods are inadequate". In the perimenopausal population, it is unclear whether DMPA related bone loss could be reversed prior to menopause, and thus this method should be used with caution, calcium/vitamin D supplementation, and perhaps bone density monitoring.Of note, the combination injectable, Lunelle, has not been available in the U.S. since 2002 due to concerns about dosing consistency.

Emergency Contraception

Given the large percentage of unintended pregnancies during perimenopause, emergency

contraception (EC) should be available to these women. LNG EC consists of 2 pills containing 0.75 mg LNG which can be taken either together or 12 hours apart as soon as feasible following unprotected coitus.[46] Its mechanism of action is pre-ovulatory inhibition/ delay in the Luteinizing Hormone peak, follicle rupture. It does not affect corpus luteum function, implantation. It is ineffective post-ovulation, thus poses no risk to an established pregnancy/embryo.[47] The pregnancy rate with mid-cycle coitus is 8%. If EC is taken within12 hours post coitus, the pregnancy rate is 0.5%. Pregnancy rate increases to 4% if EC is administered within 72 hours post coitus.[48] In a World Health organization multicenter randomized trial, EC prevented 79%–84% of pregnancies if taken 1–3 days post coitus and 60%–63% of pregnancies if taken 4–5 days post coitus. [49] LNG EC is just as effective and much better tolerated than the Yuzpe regimen of combined estrogen and progestin. Nausea, vomiting rates of about 23 and 5% respectively and 8% incidence of BTB have been reported with LNG EC.[50] The second cycle post EC is generally normal length.[51] The World Health Organization has determined that there are no medical conditions wherein risks of EC outweigh benefits.[52] Unfortunately, no statistically significant effects on pregnancy, abortion or STI rates have been seen on a public health scale, even with facilitated access to EC.[53,54]

Another very effective EC option is the insertion of a copper IUD which may remain thereafter for primary contraception. In over 8400 postcoital insertions, it has been shown to be 99.9% effective if inserted within 72 hours post coitus, but the copper IUD can be inserted for EC up to 5 days post-coitus. Its mechanism of action is the prevention of implantation of a fertilized egg, and alteration of sperm motility and integrity.[55] In 2006, the FDA approved dispensing of LNG emergency contraception for patients over 18 years without a prescription. Younger women may still obtain LNG emergency contraception from their clinician. Prior to prescribing EC, pre-existing pregnancy should be ruled out by asking the patient whether unprotected coitus occurred within the prior 5 days and whether she has had a normal menstrual flow within the prior 4 weeks.

Initiation of Contraception

Patients have traditionally been counseled to start contraception within 7 days of the onset of menses. This so-called Sunday start has the advantage of excluding preexisting pregnancy. However, for many women, this inconvenient delay of effective contraception may impact compliance. The quick-start/same day start method of initiation allows patients to start contraception immediately if pregnancy can be ruled out by history and/or pregnancy test. A pregnancy test should be performed about 2–3 weeks following the first DMPA injection as DMPA amenorrhea may be confused with pregnancy related amenorrhea. If the patient has had unprotected coitus within 5 days, she may receive EC, then started on primary contraception immediately after. If a copper IUD is chosen for EC, additional primary contraception is unnecessary. For hormonal contraception, a backup method should be used if primary contraception is not initiated within days 1–5 of the menstrual cycle. Backup contraception should be used for 7 days when initiating OCs, ring, injections, implant, and 9 days when initiating the patch.[38,56]

Barrier Contraception and Sterilization

Several barrier methods are available for patients for whom other methods are either contraindicated or not acceptable, or in conjunction with other methods for prevention of STIs. Unfortunately, all carry rather high failure rates ranging from 15% and 21% for the male and female condom and 16% for the diaphragm. Failures around 16% and 32% for the cervical cap in nulliparous and parous women respectively and 29% for spermicides have also been reported.[57] Given these failure rates, the need for strict compliance with these methods and lack of non-contraceptive benefits to perimenopausal women, these methods will likely continue to be used by a few selected patients only.

Though significantly more effective and compliance independent, female sterilization via bilateral tubal ligation or micro-insert non-incisional hysteroscopy does not provide non-contraceptive benefits to perimenopausal women, carries surgical risks and is costly. In the latter procedure, metal coils are placed trans-cervically into both tubal ostia which subsequently scar and occlude the tubes. Additional contraception is required for 12 weeks to allow complete tubal occlusion. A hysterosalpingogram is used for documentation of tubal occlusion.[58] Sterilization

can be combined with common procedures such as dilatation and curettage or global endometrial ablation to minimize hospital stay and/or anesthetic risks.

How to Choose the Right Contraceptive Method Based on Presenting Issues?

As previously mentioned, perimenopausal women have a set of additional needs which can be readily addressed with various contraceptive methods. Given the choices discussed in this article, we present our recommendations summarized in Table 3 to facilitate patient counseling and decision-making. The individual clinician and patient will be best suited to making the most appropriate informed decision.

The Transition from Contraception to Hormone Therapy

Menopause is defined clinically as 12 months of amenorrhea. It occurs at the average age of 50.7 (95% range 44–56). By the age of 55, 95.9% of women will be postmenopausal and may be advised to stop contraception.[60] However, when patients use estrogen-containing contraception, it may not be clinically obvious when they reach menopause. To determine when contraception is no longer needed, the patient should be off all hormones for 6 weeks or more, and have a follicular stimulating hormone (FSH) level drawn on two separate occasions 1–2 months apart. Repeat measurements are necessary because of the significant FSH fluctuations during the perimenopausal transition.[60] An FSH greater than 30 mIU/cc indicates ovarian failure and the patient may be safely transitioned to

Table 3. Contraceptive management of patients with various presenting issues.

Primary presenting issue	Most appropriate contraceptive option	Alternative contraceptive options	Options not recommended
Menorrhagia	LNG IUS	OCs esp. non-traditional formulations, ring, patch injection	Copper IUD
Vasomotor instability	OCs esp. non-traditional formulations, ring	Patch, injection	LNG IUS, copper IUD, implant
Both above	OCs esp. non-traditional formulations, ring	LNG IUS + transdermal estradiol for HT, patch, injection	copper IUD, implant
At risk for osteoporosis	OCs esp. non-traditional formulations	ring, patch	Injection, implant, LNG IUS, copper IUD
Preference for compliance independent method	Sterilization, LNG IUS, copper IUD, implant	Injection, patch, ring	OCs, barrier
Continued smoking	Sterilization, LNG IUS, copper IUD, implant	Injection, barrier	OCs, patch, ring
History of breast cancer	Sterilization, copper IUD	Barrier	OCs, patch, ring, LNG IUS, injection, implant
Obesity (BMI $>$ 35)	OCs, LNG IUS, ring, sterilization	Injection, copper IUD, barrier	Implant, patch (?less effective with high BMI)

BMI = Body mass index.

postmenopausal hormone therapy.[60] Alternatively, she may remain off hormones if she so desires. Vasomotor symptoms alone are not sufficient for the diagnosis of menopause in this setting.

If a woman uses a contraceptive implant or progestin-only pill, these may be discontinued at age 55 years or when menopause is confirmed with FSH levels as described above. The LNG IUS has been shown to be effective for contraception for up to 7 years. However, those using LNG IUS to prevent endometrial hyperplasia when using estrogen HT should have it replaced every 5 years. In the setting of estrogen HT, a progestin only pill can provide both endometrial protection and contraception.[60]

Summary

Perimenopausal women represent a special population with respect to contraceptive needs and symptom management. Further, they may wish to minimize the number of menstrual intervals and to eliminate daily contraceptive dosing. Women with pre-existing medical conditions may make estrogen containing contraceptives inadvisable. These women should be counseled to choose estrogen-free options including the IUDs, implant, injection or consider sterilization. However, for healthy women in this age group, combined hormonal contraception provides a smooth transition to menopause. Moreover, the clinician can comfortably offer EC to any perimenopausal woman at risk of unintended pregnancy.

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