

Hormonal Contraception

—The hormonal contraceptives comparison chart begins on page 3—
 (Chart updated September 2009)

Hormonal Contraceptive Options

Oral contraceptives are available as combined oral contraceptives (COCs) containing an estrogen and progestin or as progestin-only pills (POPs). For many years, IM medroxyprogesterone acetate (*Depo-Provera*) was the only non oral hormonal alternative to oral contraceptives. Over the past few years, the options have expanded to include a combined hormonal patch (*Ortho Evra*) and vaginal ring (*NuvaRing*), an intrauterine device (*Mirena*), and a subdermal rod (*Implanon*).

Newer pills allow for shorter periods, fewer periods, or no periods. *Seasonale* and *Seasonique* are extended-cycle oral contraceptives that allow women to reduce the number of menstrual periods to only four per year. *Loestrin-24 Fe* and *Yaz* are 24/4-day cycle pills. *Lybrel* is the first continuous cycle pill, allowing for no scheduled periods. This article discusses the rationale for picking one formulation over another in women with particular needs and concerns. It includes charts that compare various oral contraceptives and non oral hormonal contraceptives.

Combined Oral Contraceptives

The estrogen in most COCs is ethinyl estradiol. Mestranol, present in a few older products, is metabolized to ethinyl estradiol. Mestranol 50 mcg is equivalent to ethinyl estradiol 35 mcg.¹ The estrogen dose of COCs has decreased from as high as 100 mcg/day in earlier formulations to as low as 20 mcg/day in some newer products. Some of the major risks of COCs were identified in studies evaluating older formulations containing more than 50 mcg of ethinyl estradiol; these safety concerns may not apply to newer formulations that contain 35 mcg or less of ethinyl estradiol.²

Most women should be given a COC that contains no more than 35 mcg of ethinyl estradiol.⁶ A 50 mcg pill may be appropriate in

special circumstances such as drug interactions due to induction of cytochrome P450.¹

The progestins used in COCs vary according to progestin potency, as well as estrogenic, anti-estrogenic, and androgenic activity. In terms of progestin activity, desogestrel, levonorgestrel, and norgestrel are the most potent progestins in COCs. Norethindrone is the least potent progestin.¹⁸

Norgestrel is the most androgenic progestin, followed by norethindrone and ethynodiol which have intermediate activity. Levonorgestrel is the active isomer of norgestrel, a racemic mixture.¹⁸ Desogestrel and norgestimate have the least androgenic activity. Drospirenone, the progestin in *Yasmin* and *Yaz*, has progestogenic, anti-androgenic, and anti-mineralocorticoid activity.³

The absolute risk of venous thromboembolism with COCs is low, with an estimate of one case per 10,000 women using the pill for a year. The risk of thromboembolism with COCs is somewhat related to the estrogen dose. While pills containing 35 mcg of ethinyl estradiol have lower risk than pills containing 50 mcg, the evidence does not support the idea that 20 mcg pills have lower risk than pills containing 30 to 35 mcg ethinyl estradiol.² Controversial studies suggest that the relative risk of deep vein thrombosis is 2-fold higher with pills containing desogestrel, compared with other progestins.¹

Adverse estrogenic, progestogenic, and androgenic effects of COCs are listed in Table 1.

Table 1. Common pill complaints^{1,6}

Too much estrogen...	Nausea, breast tenderness, increased blood pressure, melasma, headache.
Too little estrogen...	Early or mid-cycle breakthrough bleeding, increased spotting, hypomenorrhea.
Too much progestin...	Breast tenderness, headache, fatigue, changes in mood.
Too little progestin...	Late breakthrough bleeding.
Too much androgen...	Increased appetite, weight gain, acne, oily skin, hirsutism, increased LDL cholesterol, decreased HDL cholesterol.

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Phasic Pills

Combined oral contraceptives were first developed as monophasic pills; biphasic and triphasic pills were later developed in order to reduce dose-dependent adverse effects of the progestin. They were designed to more closely mimic fluctuations in estrogen and progesterone levels during the menstrual cycle.⁴ A recent Cochrane review was unable to determine if there is a difference in efficacy between monophasic and biphasic pills. Based on the results of a single qualified study, the reviewers found no major difference in bleeding pattern between a monophasic pill (*Loestrin*) and a biphasic pill (*Ortho-Novum 10/11*).⁴ Another Cochrane review compared biphasic and triphasic pills. It found that cycle control was worse with a biphasic pill containing norethindrone (*Ortho-Novum 10/11*) than a triphasic pill containing levonorgestrel (*Triphasil*). The reviewers concluded that the choice of progestin is more important than the phasic formulation.⁵

Two triphasic formulations, *Ortho Tri-Cyclen* and *Eurostep*, and one monophasic extended-cycle pill, *Yaz*, are FDA-labeled for the treatment of acne. Although these are the only ones to officially carry this indication, the estrogen in other COCs can help. An estrogen-mediated increase in sex-hormone binding globulin levels may improve acne by decreasing free testosterone levels.⁶

Hormonal Contraceptive Effectiveness

The effectiveness of contraceptives is evaluated under two conditions, "typical use" and "perfect use." Perfect use refers to use by couples who use the method consistently and correctly. The percentage of women who experience an unintended pregnancy during the first year of perfect use is 0.1% for COCs, 0.3% for *Depo-Provera* (medroxyprogesterone acetate), and 0.5% for POPs.²³ Per the FDA consumer "Birth Control Guide," the number of pregnancies to expect per 100 women per one year of use is less than one for *Depo-Provera*; five for *Ortho Evra* (per clinical trials, the pregnancy rate was approximately one per 100 women per year⁹); five for *NuvaRing*; five for POPs; and five for COCs.⁸

Extended and Continuous Regimens

Seasonale and *Seasonique* provide active pills for 84 days followed by a 7-day pill-free interval, or 7-day low-dose estrogen, respectively. It is already common practice to eliminate the pill-free interval of a monophasic COC for two to three cycles to achieve an extended cycle (bi-cycling and tri-cycling). Four packets of a low-dose monophasic COC without the placebo pills will provide a regimen similar to *Seasonale*.¹ Menstruation-related problems that may improve with an extended cycle regimen include menorrhagia, anemia, dysmenorrhea, endometriosis, and menstrual headache.^{1,6,10} A continuous regimen without a pill-free interval has been reported to decrease endometriosis-related menstrual pain inadequately relieved by a COC.^{11,12} In May 2007, the FDA approved the first oral contraceptive for continuous use, *Lybrel* (Wyeth). *Lybrel* is taken daily with NO pill-free interval.²²

Loestrin-24 Fe was approved by the FDA in 2006. This formulation is also monophasic, but provides a very low dose estrogen/progestin combination in 24 active pills with four placebo days. Also approved in 2006 is *Yaz*, which is FDA-approved for treatment of premenstrual dysphoric disorder (PMDD) and moderate acne. *Yaz* follows the same 24/4 day cycle, but contains 20 mcg ethinyl estradiol and 3 mg drospirenone as its active components.

Breakthrough Bleeding

No pill is clearly better than the others for maintaining good cycle control. However, switching to a particular type of pill may improve certain patterns of breakthrough bleeding (BTB). Tricyclic pills with an increased progestin dose at the end of the cycle may help to prevent premenstrual BTB. When BTB occurs early in the cycle after menses, it may help to switch to *Mircette* or a triphasic pill with a higher estrogen:progestin ratio at the beginning of the cycle. When BTB occurs mid-cycle, a mid-cycle increase in both estrogen and progesterone may help.¹

More . . .

COMPARISON OF ORAL CONTRACEPTIVES
(Updated September 2009)

Products ^a	Manufacturer	Estrogen	Progestin	Comments
LOW-DOSE MONOPHASIC PILLS				
<i>Aviane-28</i> <i>Lessina</i> <i>Levlite</i> <i>Lutera</i> <i>Sronyx</i>	Teva Teva Bayer Watson Watson	EE 20 mcg	Levonorgestrel 0.1 mg	Low estrogen; low progestin; low androgen. ¹⁴ Low estrogen dose may cause more spotting and less margin of error for missed pills. Good choice to minimize risk of estrogen side effects like nausea, breast tenderness, etc. ⁶
<i>Junel 1/20</i> <i>Junel Fe 1/20</i> <i>Loestrin-21 1/20</i> <i>Loestrin Fe 1/20</i> <i>Microgestin 1/20</i> <i>Microgestin Fe 1/20</i>	Teva Teva Warner Chilcott Warner Chilcott Watson Watson	EE 20 mcg	Norethindrone 1 mg	Low estrogen; high progestin; medium androgen. ^{13, 14} Low estrogen dose may cause more spotting and less margin of error for missed pills. Good choice to minimize risk of estrogen side effects like nausea, breast tenderness, etc. ⁶
<i>Levora</i> <i>Nordette-28</i> <i>Portia-28</i>	Watson Teva Watson	EE 30 mcg	Levonorgestrel 0.15 mg	Low estrogen; medium progestin; medium/high androgen. ^{13, 14} Good choice to minimize estrogen side effects like nausea, breast tenderness, etc. Good choice to minimize spotting and/or breakthrough bleeding. ⁶
<i>Cryselle-21</i> <i>Cryselle-28</i> <i>Low-Ogestrel-21</i> <i>Low-Ogestrel-28</i> <i>Lo/Ovral-28</i>	Teva Teva Watson Watson Wyeth	EE 30 mcg	Norgestrel 0.3 mg	Low estrogen; medium progestin; medium/high androgen. ^{13, 14} Good choice to minimize estrogen side effects like nausea, breast tenderness, etc; and to minimize spotting and/or breakthrough bleeding. ⁶
<i>Junel 1.5/30</i> <i>Junel Fe 1.5/30</i> <i>Loestrin 1.5/30-21</i> <i>Loestrin Fe 1.5/30</i> <i>Microgestin 1.5/30</i> <i>Microgestin Fe 1.5/30</i>	Teva Teva Warner Chilcott Warner Chilcott Watson Watson	EE 30 mcg	Norethindrone acetate 1.5 mg	Low estrogen; high progestin; high androgen. ^{13, 14} Good choice to minimize estrogen side effects like nausea, breast tenderness, etc. ⁶
<i>Apri</i> <i>Desogen</i> <i>Ortho-Cept</i> <i>Reclipsen</i>	Teva Organon Ortho Watson	EE 30 mcg	Desogestrel 0.15 mg	Low estrogen; high progestin; low androgen. ^{13, 14} Increased risk of DVT with desogestrel over other progestins (controversial data). ¹ Good choice to minimize spotting and/or breakthrough bleeding; and to minimize androgenic effects. Has favorable lipid profile. ⁶

^a These products are grouped together by hormone content for the purpose of clinical equivalence. This grouping is not an indication of therapeutic equivalence for purposes of substitution as defined by the FDA's Orange Book. For therapeutic equivalence, consult the Orange Book.¹⁷

Products ^a	Manufacturer	Estrogen	Progestin	Comments
LOW-DOSE MONOPHASIC PILLS (cont.)				
<i>Yasmin</i> <i>Ocella</i>	Bayer Teva	EE 30 mcg	Drospirenone 3 mg	Low estrogen; progestin potency unclear; anti-androgenic and antiminerlocorticoid activity. ^{6,23} Does not appear to cause cyclic fluid retention. May be good choice for women with PMS, premenstrual dysphoric disorder, acne, hirsutism, or PCOS. ⁶ Can increase potassium: avoid in renal/hepatic dysfunction or renal insufficiency. Check potassium during first cycle if another potassium-sparing drug (NSAID, ACE inhibitor, angiotensin receptor blocker, potassium-sparing diuretic, aldosterone antagonist) is given. ³
<i>Kelnor 1/35</i> <i>Zovia 1/35</i>	Teva Watson	EE 35 mcg	Ethinodiol diacetate 1 mg	Medium estrogen; high progestin; low androgen. ^{13,14} Good choice to minimize androgenic effects. ⁶
<i>Ortho-Cyclen-28</i> <i>MonoNessa</i> <i>Sprintec</i>	Ortho Watson Teva	EE 35 mcg	Norgestimate 0.25 mg	Medium estrogen; low progestin; low androgen. ^{13,14} Good choice to minimize spotting and/or breakthrough bleeding and to minimize androgenic effects. Has favorable lipid profile. ⁶
<i>Necon 1/50</i>	Watson	Mestranol 50 mcg	Norethindrone 1 mg	Medium estrogen; medium progestin; medium androgen. ^{13,14}
<i>Ovcon-35</i> <i>Balziva</i> <i>Femcon Fe</i> chewable <i>Zenchant</i>	Warner Chilcott Teva Warner Chilcott Watson	EE 35 mcg	Norethindrone 0.4 mg; total of 8.4 mg/cycle. ⁶	Medium estrogen; low progestin; low androgen. ^{13,14} Good choice to minimize androgenic effects. Has favorable lipid profile. ⁶
<i>Brevicon-28</i> <i>Modicon-28</i> <i>Necon 0.5/35</i> <i>Nortrel 0.5/35</i>	Watson Ortho Watson Teva	EE 35 mcg	Norethindrone 0.5 mg; total of 10.5 mg/cycle.	Medium estrogen; low progestin; low androgen. ^{13,14} Good choice to minimize androgenic effects. Has favorable lipid profile. ⁶
<i>Necon 1/35-28</i> <i>Norinyl 1+35-28</i> <i>Nortrel 1/35-28</i> <i>Ortho-Novum 1/35-28</i>	Watson Watson Teva Ortho	EE 35 mcg	Norethindrone 1 mg; total of 21 mg/cycle. ⁶	Medium estrogen; medium/high progestin; medium androgen. ^{6,13}

Products ^a	Manufacturer	Estrogen	Progestin	Comments
HIGH-DOSE MONOPHASIC PILLS^b				
<i>Ovcon-50</i>	Warner Chilcott	EE 50 mcg	Norethindrone 1 mg	High estrogen; medium progestin; medium androgen. ^{13,14}
<i>Ogestrel 0.5/50-28</i>	Watson	EE 50 mcg	Norgestrel 0.5 mg	High estrogen; high progestin; high androgen. ^{13,14}
<i>Zovia 1/50-28</i>	Watson	EE 50 mcg	Ethinodiol diacetate 1 mg	High estrogen; high progestin; medium/high androgen. ^{13,14}
BIPHASIC PILLS				
<i>Mircette</i> <i>Kariva</i> Desogestrel/ethinyl estradiol	Duramed Teva Watson	EE 20 mcg x 21 days, placebo x 2 days, 10 mcg x 5 days	Desogestrel 0.15 mg x 21 days	Low estrogen; high progestin; low androgen. ^{13,14} Shorter hormone-free interval may help menstrual migraine, dysmenorrhea, PMS. Increased risk of DVT with desogestrel over other progestins. ¹
<i>Necon 10/11</i>	Watson	EE 35 mcg	Norethindrone 0.5 mg x 10 days, 1 mg x 11 days.	High estrogen; medium progestin; low/medium androgen. ^{13,14} Poor cycle control compared with levonorgestrel triphasic pill. ⁵
TRIPHASIC PILLS				
<i>Eurostep Fe</i> <i>Tilia Fe^f</i> <i>Tri-Legest Fe</i>	Warner Chilcott Watson Teva	EE 20 mcg x 5 days, 30 mcg x 7 days, 35 mcg x 9 days	Norethindrone 1 mg x 21 days	Low estrogen; high progestin; medium androgen. ^{13,14} FDA-labeled for acne. Good choice to minimize estrogen side effects like nausea, breast tenderness, etc; and to minimize spotting and/or breakthrough bleeding. ⁶
<i>Ortho Tri-Cyclen Lo</i> <i>Tri Lo Sprintec</i>	Ortho Watson	EE 25 mcg x 21 days	Norgestimate 0.18 mg x 7 days, 0.215 mg x 7 days, 0.25 mg x 7 days.	Low estrogen; low progestin; low androgen. ^{13,14} Good choice to minimize spotting, breakthrough bleeding, and androgenic effects. Has favorable lipid profile. ⁶
<i>Cyclessa</i> <i>Velivet</i> Desogestrel/ethinyl estradiol	Schering-Plough Teva Watson	EE 25 mcg x 21 days	Desogestrel 0.1 mg x 7 days, 0.125 mg x 7 days, 0.15 mg x 7 days.	Low estrogen; high progestin; low androgen. ²³ First triphasic pill with desogestrel. Increased risk of DVT with desogestrel over other progestins. Better cycle control and less weight gain than <i>Ortho-Novum 7/7/7</i> . ¹⁵
<i>Enpresse</i> <i>Trivora</i>	Teva Watson	EE 30 mcg x 6 days, 40 mcg x 5 days, 30 mcg x 10 days	Levonorgestrel 0.05 mg x 6 days, 0.075 mg x 5 days, 0.125 mg x 10 days. Total of 1.925 mg/cycle. ⁶	Medium estrogen; low progestin; low/medium androgen. ^{13,14} Better cycle control than with norethindrone biphasic pill (<i>Ortho-Novum 10/11</i>). ⁵

^b Avoid pills with more than 35 mcg of ethinyl estradiol in hypertensive women; lower doses of estrogen can be used in non-smoking women age 35 years or younger who have well-controlled hypertension, and no evidence of end-organ vascular disease [Level B]. Also avoid pills with more than 35 mcg of ethinyl estradiol in women with controlled hyperlipidemia; use alternative contraceptive if LDL cholesterol >160 mg/dL or multiple additional risk factors for coronary heart disease [Level C].⁷

^f *Tilia Fe* has same NDA as *Eurostep Fe*.

Products ^a	Manufacturer	Estrogen	Progestin	Comments
TRIPHASIC PILLS (cont.)				
<i>Ortho Tri-Cyclen</i> <i>TriNessa</i> <i>Tri-Sprintec</i>	Ortho Watson Teva	EE 35 mcg x 21 days	Norgestimate 0.18 mg x 7 days, 0.215 mg x 7 days, 0.25 mg x 7 days.	Medium estrogen; low progestin; low androgen. ^{13,14} FDA- labeled for treatment of acne.
<i>Aranelle</i> <i>Leena</i> <i>Tri-Norinyl</i>	Teva Watson Watson	EE 35 mcg x 21 days	Norethindrone 0.5 mg x 7 days, 1 mg x 9 days, 0.5 mg x 5 days. Total of 15 mg/cycle. ⁶	Medium estrogen; medium progestin; low/medium androgen. ^{6,13,14}
<i>Ortho-Novum 7/7/7</i> <i>Nortrel 7/7/7</i> <i>Necon 7/7/7</i>	Ortho Teva Watson	EE 35 mcg x 21 days	Norethindrone 0.5 mg x 7 days, 0.75 mg x 7 days, 1 mg x 7 days. Total of 15.75 mg/cycle. ⁶	Medium estrogen; medium progestin; low/medium androgen. ^{6,13,14}
EXTENDED-CYCLE PILLS				
<i>Loestrin-24 Fe</i>	Warner Chilcott	EE 20 mcg x 24 days	Norethindrone 1 mg x 24 days	Low estrogen; high progestin; medium androgen. ^{13,14} Low estrogen dose may cause more spotting and less margin of error for missed pills. Good choice to minimize risk of estrogen side effects like nausea, breast tenderness, etc. ⁶ 24/4-day cycle combination may be helpful for women wanting to stay on a 28- day cycle, but minimize duration of withdrawal bleeding and menstrual-related symptoms.
<i>LoSeasonique</i>	Duramed	EE 20 mcg x 84 days, 10 mcg x 7 days	Levonorgestrel 0.1 mg x 84 days	A low dose version of <i>Seasonique</i> . ²⁵
<i>Seasonale</i> <i>Jolessa</i> <i>Quasense</i>	Duramed Teva Watson	EE 30 mcg x 84 days	Levonorgestrel 0.15 mg x 84 days	84-day active pills then 7-day pill-free interval. More intermenstrual bleeding and/or spotting than with 28-day cycle; total days of bleeding and/or spotting similar. ⁹ May allow women to experience menstruation-related symptoms less frequently. ^{1,6}
<i>Seasonique</i>	Duramed	EE 30 mcg x 84 days, 10 mcg x 7 days	Levonorgestrel 0.15 mg x 84 days	84-day active pills then 7-day low-dose estrogen instead of placebo pills. Extended cycle and lack of hormone-free interval may help menorrhagia, dysmenorrhea, menstrual migraine, and PMS. ^{1,19}
<i>Yaz</i>	Bayer	EE 20 mcg x 24 days	Drospirenone 3 mg x 24 days	FDA-approved for premenstrual dysphoric disorder and moderate acne. Follows 24/4-day cycle and contains ingredients of <i>Yasmin</i> , but with lower estrogen dose (20 mcg EE compared to 30 mcg EE in <i>Yasmin</i>). Also see <i>Yasmin</i> comments.

Products ^a	Manufacturer	Estrogen	Progestin	Comments
CONTINUOUS-CYCLE PILLS				
<i>Lybrel</i>	Wyeth	EE 20 mcg	Levonorgestrel 90 mcg	Active pill taken every day (NO pill-free interval). ²² Breakthrough bleeding/spotting common initially and decreases with continued use. May allow women to experience menstruation-related symptoms less frequently. ^{1,6}
PROGESTIN-ONLY PILLS^c - "Mini-pill"				
<i>Camila</i> <i>Errin</i> <i>Jolivette</i> <i>Micronor</i> <i>Nor-QD</i> <i>Nora-BE</i>	Teva Teva Watson Ortho Watson Watson	Not applicable	Norethindrone 0.35 mg	Irregular menses, but overall blood loss reduced. Preferred over COCs in women who are breastfeeding. ¹
EMERGENCY CONTRACEPTION				
<i>Plan B</i> <i>Next Choice</i>	Duramed Watson	Not applicable	Levonorgestrel 0.75 mg tablets x 2	For prevention of pregnancy for women who present within 72 hours of unprotected intercourse or contraceptive failure. Traditional FDA-approved regimen consists of 2 tablets with the first tablet taken as soon as possible within 72 hours and the second tablet taken 12 hours later. ^{20,26} Alternatively taking both tablets at once is equally effective and is recommended by some experts. ¹ <i>Plan B</i> can be considered for a woman who presents within 5 days of unprotected or inadequately protected sexual intercourse; however, it's more effective the earlier it is taken. ¹ <i>Plan B</i> is about 89% effective if used within 3 days after sex. ²⁰
<i>Plan B One-Step</i>	Duramed	Not applicable	Levonorgestrel 1.5 mg tablet	One tablet for prevention of pregnancy for women who present within 72 hours of unprotected intercourse or contraceptive failure. Similar efficacy and adverse effects as <i>Plan B</i> . ¹⁰

Abbreviations: COC = combined oral contraceptives; DVT = deep vein thrombosis; EE = ethinyl estradiol; PCOS = polycystic ovary syndrome.

^c The American College of Obstetrics and Gynecology considers progestin-only contraceptives to be safer than combined oral contraceptives for women with: migraine headache [Level B]; smoker over 35 years old [Level A]; history of thromboembolic disease [Level A]; less than two weeks postpartum; hypertension with vascular disease or over 35 years of age; diabetes with vascular disease or over 35 years of age; systemic lupus erythematosus with vascular disease, nephritis, or antiphospholipid antibodies [Level B]; hypertriglyceridemia.⁷ Combined oral contraceptives are contraindicated in coronary artery disease, congestive heart failure, and cerebrovascular disease; a progestin-only contraceptive may be an appropriate alternative for women with these conditions [Level C]. Combined oral contraceptives may be considered for women with migraine who do not have focal neurologic signs, do not smoke, are otherwise healthy, and are younger than 35 years old [Level B]. Progestin-only contraceptives can be started immediately postpartum. They are the preferred form of hormonal contraception in women who are breast-feeding; combined oral contraceptives can be considered when milk flow is well-established [Level A].⁷

HORMONAL ALTERNATIVES TO ORAL CONTRACEPTION

Brand Name	Manufacturer	Estrogen	Progestin	Failure Rate^d	Comments
<i>Depo-Provera CI Medroxyprogesterone Acetate Injection</i>	Pfizer Sicor	None	Medroxyprogesterone acetate 150 mg	0.3%	IM injection once every 3 months. Long duration of action may be inappropriate for some women. Noncontraceptive benefits in women with sickle cell disease. May decrease risk of seizures in women with epilepsy. May decrease bone mineral density. ^{6,7}
<i>Depo-SubQ Provera 104</i>	Pfizer	None	Medroxyprogesterone acetate 104 mg	N/A	SC injection once every 3 months. FDA approved for use as a contraceptive in December 2004 and for management of pain associated with endometriosis in March 2005. Efficacy similar to <i>Depo-Provera</i> and medroxyprogesterone injections, but at lower doses. Long-term adverse effects similar to <i>Depo-Provera</i> .
<i>Implanon</i>	Schering-Plough	None	Etonogestrel (release rate varies over time)	N/A	Implantable (subdermal) rod. Provides contraception for up to 3 years. Failure rate=<1 pregnancy per 100 women using <i>Implanon</i> for 1 year. Effectiveness rate in very overweight women unknown. ²¹
<i>Mirena</i>	Bayer	None	Levonorgestrel 20 mcg/day for 5 years	0.1%	Intrauterine device (IUD). In October 2009, approved to treat heavy menstrual bleeding in women who use IUDs for contraception. ²⁴
<i>NuvaRing</i>	Schering-Plough	Ethinyl estradiol 15 mcg/day	Etonogestrel (active form of desogestrel) 0.12 mg/day	0.3%	Vaginal ring that is left in for 3 weeks and removed for 1 week. May have higher incidence of vaginal discharge than pills.
<i>Ortho Evra</i>	Ortho	Ethinyl estradiol 35 mcg/day (Release rate extrapolated from Canadian product monograph which shows identical pharmacokinetic data for <i>Evra</i> [Canada] and <i>Ortho Evra</i> [U.S.]	Norelgestromin (active form of norgestimate) 200 mcg/day (Release rate extrapolated from Canadian product monograph which shows identical pharmacokinetic data for <i>Evra</i> [Canada] and <i>Ortho Evra</i> [U.S.]	0.3%	Transdermal patch applied weekly (for 3 weeks, then week 4 is patch-free). ⁹ Application site reactions. Cycle control poor in 20% of women in first cycle. More breast discomfort in first 2 cycles than with combined oral contraceptive. Body weight >90 kg may increase risk of unintended pregnancy. Has been used continuously with 9 active patches in a row followed by 7-day patch-free interval. ¹ Compliance may improve compared with combined oral contraceptive. ¹⁶

^d Unintended pregnancy in first year of perfect use.¹

Users of this document are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and Internet links in this article were current as of the date of publication.

Levels of Evidence

In accordance with the trend towards Evidence-Based Medicine, we are citing the **LEVEL OF EVIDENCE** for the statements we publish.

Level	Definition
A	High-quality randomized controlled trial (RCT) High-quality meta-analysis (quantitative systematic review)
B	Nonrandomized clinical trial Nonquantitative systematic review Lower quality RCT Clinical cohort study Case-control study Historical control Epidemiologic study
C	Consensus Expert opinion
D	Anecdotal evidence In vitro or animal study

Adapted from Siweck J, et al. How to write an evidence-based clinical review article. *Am Fam Physician* 2002;65:251-8.

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References

- Zieman M, Hatcher RA, Cwiak C, et al. Managing Contraception for Your Pocket 2007-2009 edition. <http://www.managingcontraception.com/shopping/mcpocket.pdf>. (Accessed September 16, 2009).
- Seibert C, Barbouche E, Fagan J, et al. Prescribing oral contraceptives for women older than 35 years of age. *Ann Intern Med* 2003;138:54-64.
- Product information for *Yasmin*. Bayer Healthcare Pharmaceuticals, Inc. Wayne, NJ 07470. May 2003.
- Van Vliet HA, Grimes DA, Helmerhorst FM, Schulz KF. Biphasic versus monophasic oral contraceptives for contraception (Cochrane Review). In: The Cochrane Library, Issue 3, 2003. Oxford: Update Software.
- Van Vliet HA, Grimes DA, Helmerhorst FM, Schulz KF. Biphasic versus triphasic oral contraceptives for contraception (Cochrane Review). In: The Cochrane Library, Issue 3, 2003. Oxford: Update Software.
- Hatcher RA, Trussell J, Stewart F, et al. Contraceptive Technology: 18th Revised Edition. New York, NY: Ardent Media, Inc, 2004.
- American College of Obstetrics and Gynecology Committee on Practice Bulletins-Gynecology. ACOG Practice Bulletin. The use of hormonal contraception in women with coexisting medical conditions. Number 18, July 2000. *Int J Gynaecol Obstet* 2001;75:93-106.
- FDA. Birth control guide (2009). <http://www.fda.gov/downloads/ForConsumers/ByAudience/ForWomen/FreePublications/UCM164655.pdf>. (Accessed October 9, 2009).
- Product information for *Ortho Evra*. Ortho-McNeil. Raritan, NJ 08869. July 2009.
- Product information for *Plan B One-Step*. Duramed Pharmaceuticals, Inc. Pomona, NY 10970. July 2009.
- Cachrimanidou AC, Hellberg D, Nilsson S, et al. Long-interval treatment regimen with a desogestrel-containing oral contraceptive. *Contraception* 1993;48:205-16.
- Vercellini P, Frontino G, De Giorgi O et al. Continuous use of an oral contraceptive for endometriosis-associated recurrent dysmenorrhea that does not respond to a cyclic pill regimen. *Fertil Steril* 2003;80:560-3.
- Darney PD. OC Practice guidelines: Minimizing side effects. *Int J Fertil* 1997;42 (suppl 1):158-69.
- Facts and Comparisons, Inc. eFacts monograph on oral contraceptives. Available online at: <http://www.efactsweb.com>. (Accessed September 15, 2009).
- Kaunitz AM. Efficacy, cycle control, and safety of two triphasic oral contraceptives: *Cyclessa* (desogestrel/ethinyl estradiol) and *Ortho-Novum 7/7/7* (Norethindrone/ethinyl estradiol). *Contraception* 2000;61:295-302.
- Audet MC, Moreau M, Koltun WD, et al. Evaluation of contraceptive efficacy and cycle control of a transdermal contraceptive patch vs an oral contraceptive. *JAMA* 2001;18:2347-54.
- United States Food and Drug Administration. Approved Drug Products with Therapeutic Equivalence Evaluations (Orange Book Query). <http://www.fda.gov/cder/orange/default.htm>. (Accessed September 16, 2009).
- American Society of Health-system Pharmacists. AHFS Drug Information 2009. Bethesda, MD.
- Product information for *Seasonique*. Duramed Pharmaceuticals. Pomona, NY 10970. May 2006.
- Product information for *Plan B*. Duramed Pharmaceuticals. Pomona, NY 10970. July 2009.
- Product information for *Implanon*. Organon. Roseland, NJ 07068. February 2009.
- Product information for *Lybrel*. Wyeth. Philadelphia, PA 19101. September 2008.
- Hardman JL. Contraception. In: Koda-Kimble MA, Young LY, Kradjan WA, Guglielmo BJ. eds. Applied Therapeutics: the clinical use of drugs. 8th ed. Philadelphia: Lippincott Williams & Wilkins. 2005.
- Product information for *Mirena*. Bayer HealthCare. Wayne, NJ 07470. October 2009.
- Product information for *LoSeasonique*. Duramed. Pomona, NY 10970. October 2008.

More . . .

26. Product information for *Next Choice*. Watson Labs.
Corona, CA 92880. November 2009.

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