This issue begins a two-part series that will enhance the pediatrician’s knowledge and skill in providing oral contraception to adolescent patients. Part 1 will focus on the basics of prescribing oral contraceptives (formulations, risks, benefits, contraindications, drug interactions, and use of pills in certain medical conditions), and will also review emergency contraception. Part 2 will address the practical aspects of providing oral contraceptives to adolescents (patient selection, choosing and initiating pill use, confidentiality, and counseling) and will briefly address the newer long-acting alternatives to oral contraceptives.

While discussion of barrier contraceptives is beyond the scope of this article, educating patients about protection against sexually transmitted diseases is well within the scope of the pediatrician’s responsibilities. Readers are referred to the October 2001 issue of Adolescent Health Update, which can be accessed on the members-only channel of the AAP Web site (www.aap.org.)

Overview

The combination oral contraceptive pill (OCP) is the most popular contraceptive among adolescents. The most recent data (1995) show that 44% of the 2.7 million teens using contraception rely on the pill. Thirty-seven percent use condoms, and 20% use either injectables or the contraceptive implant. Although condom use has increased and new methods have been introduced in recent years, for many teens, the words “birth control” still mean “the pill.”

Oral contraceptive pills are a safe and effective form of birth control. When taken properly, pregnancy rates are less than 1%. Noncompliance results in somewhat higher pregnancy rates among adolescent pill users; some studies suggest that less than 41% of adolescent pill users take their pill every day. Discontinuation rates among adolescent pill users are also high. This is attributed to concerns about minor side effects and the sporadic nature of adolescent sexual activity, which leads some teens to believe that they have only an intermittent need for protection against pregnancy.

Prescribing birth control pills is not as simple as writing a prescription and sending the adolescent on her way. The myriad of pills available can make pill choice confusing to the clinician and patient alike. Myths and misperceptions persist about the use and safety of oral contraceptives. Managing side effects can be time consuming. However, birth control pills are an important contraceptive method, and the more clinicians know about prescribing OCPs, the better their patients will use them.

Learning Objectives

After reading this issue, pediatricians will be better prepared to:

• Describe the various formulations of oral contraceptives
• Describe the noncontraceptive benefits of oral contraceptives
• List contraindications to oral contraceptive use
• Discuss considerations in prescribing oral contraceptives for adolescents with underlying medical conditions
• Describe important drug interactions with oral contraceptives
• Explain emergency contraception

Margaret Polaneczky, MD, FACOG is an associate professor of clinical obstetrics and gynecology, Weill Medical College of Cornell University, New York, NY
COMPOSITION AND MECHANISM OF ACTION

Oral contraceptives are either combination pills, containing estrogen and progestin, or progestin-only pills (POPs). (For the purposes of this review, “OCP” will refer to combination pills.) The majority of adolescents who take oral contraceptives use combination pills. OCPs may be classified as monophasic (ie, the hormone concentrations remain fixed throughout the cycle), biphasic, or triphasic (ie hormone concentrations vary in 2 or 3 phases throughout the cycle).

Oral contraceptives prevent pregnancy primarily by preventing ovulation (estrogen and progestin effect) and causing thickening of the cervical mucus (progestin effect). Secondary effects of oral contraceptives, such as thinning and decidualization of the endometrium and impairment of tubal motility, are likely to be less important in pregnancy prevention.

**Estrogen component**

All currently marketed combination pills contain either ethinyl estradiol (EE) or mestranol as the estrogen component, in doses ranging from 20-50 µg. “Low dose” pills refers to monophasic combination oral contraceptives containing 20-35 µg of EE and triphasic pills containing 30-40 µg EE. “High dose” pills contain 50 µg EE or 50 µg mestranol. High dose OCPs are reserved for treatment of dysfunctional or breakthrough bleeding, for use in emergency contraception, and for special populations needing higher estrogen doses due to interaction of OCPs with other medications.

**Progestin component**

Progestins can be classified by “generations” (the order in which they were introduced into the marketplace), by steroid backbone (gonane or estrane), or according to in-vitro binding affinity for androgen receptors (androgenicity). (See Table 1)

Progestin-only pills (POPs) differ somewhat from estrogen-containing oral contraceptives. The failure rate of POPs, when taken correctly, is about 0.5% (compared with 0.1% for combination pills). POPs are taken continuously, with no placebos or pill-free days. Breakthrough bleeding is more frequent with progestin-only pills than combination pills, although the majority of POP users still have regular menses. Because overall hormonal doses are lower, back-up contraception is recommended if even one pill is missed or taken late. Despite these disadvantages, POPs are a good alternative for pill users unable to

| **TABLE 1** Progestins Used in Selected Low-Dose Oral Contraceptives |
|-------------------|-----------------|-----------------|-------------------|
| **Progestin Grouping** | **Progestin** | **Relative Androgenicity** | **Proprietary Names†‡** |
| First generation (estrane) | norethindrone | ++ | Ortho-Novum 1/35, Ortho-Novum 7/7/7, Ovcon-35, Loestrin 1/20, Loestrin 1.5/30, Estrostep, Norinyl, Tri-Norinyl, Genora 0.5/35, Genora 1/35, Modicon, Jenest, Demulen 1/35 |
| | ethynodiol diacetate | ++ | Micronor (POP)† |
| Second generation (gonane) | levonorgestrel | +++ | Nordette, Levlen, Alesse, Triphasil, Tri-Levlen, Levora, Levlite |
| | norgestrel | +++ | Lo/Ovral, Ovrette (POP) |
| Third generation (gonane) | desogestrel | + | Desogen, Ortho-Cept, Cyclessa, Mircette |
| | norgestimate | + | Ortho-Cyclen, Ortho Tri-Cyclen |
| Other | drospirenone | –§ | Yasmin |

* Refers to the relative androgenicity of the progestin component alone and in-vitro, with + being less androgenic than ++. Androgenicity refers to the relative binding affinity of a progestin for testosterone receptors in in-vitro assays. It does not describe the overall androgenicity of pills containing that progestin, and does not take into account differences in progestin doses between pills.

† Here and elsewhere in the text, proprietary names illustrate products most often prescribed and with which pediatricians are likely to be familiar. This does not imply AAP endorsement. Equivalent products may be substituted. For a more complete listing, see Hatcher, RA, Trussell J, Stewart F., et al. Contraceptive Technology, 17th rev. ed. New York, NY: Ardent Media;1998:430-432

‡ POP: Progestin-only preparation

§ Drospirenone has additional anti-androgenic activity. See text.
use estrogen-containing OCPs. There are almost no contraindications to POP use.

**BENEFITS OF OCP USE**

For the healthy adolescent, the benefits of OCP use far outweigh associated risks. Younger post-menarchal adolescents can safely use oral contraception without adverse effects on growth or maturation of the hypothalamic-pituitary-ovarian axis. Unfortunately, the well-documented benefits of OCPs are not well known to the public. A 1996 survey by the Kaiser Family Foundation found that nearly two-thirds of women believe the pill is unsafe. Thirty percent think it causes cancer and heart disease, and most are unaware that OCPs benefit bone health. The time required to inform patients about the benefits of oral contraceptive use is a wise investment in compliance.

**Improvement of dysmenorrhea**

Dysmenorrhea is a common menstrual complaint among adolescents. In a survey of 70,000 adolescents, 60% reported dysmenorrhea and 14% had missed school due to cramps. OCP use decreases menstrual pain in most women by inhibiting ovulation and decreasing endometrial prostaglandin production. OCPs are also used to treat pelvic pain associated with endometriosis. For severe dysmenorrhea, monophasic pills can be taken continuously (without placebos) and menstrual bleeding avoided altogether.

**Shorter, lighter menstrual flow**

OCPs reduce menstrual flow, benefiting teens who have anovulatory cycles, menorrhagia, or anemia. Patients should understand that lighter flow may take 2-3 cycles to become evident.

**Improvement in acne and hirsutism**

All combination oral contraceptive pills have the potential to improve acne and decrease unwanted (eg, facial) hair growth by causing a decrease in testosterone levels. Testosterone in the female is derived in large part from ovarian testosterone secretion and from peripheral conversion of androstenedione produced in the ovaries and the adrenals. OCPs suppress ovarian testosterone and androstenedione production, leading to decreased total testosterone levels. In addition, the estrogen component of OCPs induces an increase in hepatic production of sex hormone-binding globulin, in turn reducing free testosterone. The end result is improvement in acne and hirsutism. It is unclear to what extent, if any, the inherent androgenicity (ie, androgen receptor binding affinity) of the progestin component of a given pill modulates that pill’s overall androgenic effect.

Although some manufacturers have submitted data to the FDA on the antiacne benefits of their pill and have permission to advertise this indication directly to patients, any combination OCP may be expected to achieve this benefit. In theory, third-generation pills with less androgenic progestins may be more beneficial to patients with acne and hirsutism, but few comparative studies have been performed. Yasmin has an added theoretical benefit in that its progestin, drospirenone, has direct antiandrogenic activity similar to spironolactone, from which it is derived. Spironolactone, a potassium-sparing diuretic, inhibits 5α-reductase, which converts testosterone to its active metabolite, dihydrotestosterone, in the skin. Spironolactone also has a small and variable inhibitory effect on androgen production in the ovaries and adrenals. Yasmin’s drospirenone dose is equivalent to 25 mg spironolactone. Given that usual treatment doses of spironolactone for hirsutism are 200 mg, it is unclear if the lower equivalent dose in Yasmin has significant clinical impact.

**Prevention of functional ovarian cysts**

Oral contraceptives suppress ovulation, leading to a decrease in the incidence of functional cysts, especially symptomatic hemorrhagic corpus luteal cysts. Ovarian activity can occur during placebo weeks, however. For patients with particularly resistant ovarian cyst recurrences, changing to a pill with a higher estrogen dose (up to 50 µg) or using the pill continuously (omitting placebos) may be helpful. Oral contraceptive use will not resolve a preexisting functional cyst any faster than observation alone.

**Mittelschmerz**

By preventing ovulation, combination pills can prevent the pain some women experience at ovulation.

**Prevention of ovarian and endometrial cancer**

No other medication can claim such a well-documented benefit in cancer reduction. The risk reduction in ovarian cancer is 30% for 4 years of pill use, 60% for 5 to 11 years, and 80% after 12 or more years. For endometrial cancer, the risk reduction is 40% at 2 years and 60% with 4 years or more.

**Protection against osteoporosis**

Multiple retrospective and cross-sectional studies in adult (primarily menopausal) women have demonstrated a link between OCP use and higher bone mass, a benefit that increases with duration of OCP use. This is thought to result from estrogen’s prevention of age-related bone loss and possibly its therapeutic effects in individuals with estrogen-deficient states. A recent evidence-based review found 8 of 14 studies supporting a benefit to OCP use on bone mass. In a recent 8-year prospective study, oral contraceptive use during adolescence had no adverse effects on bone mass achieved by age 20. Low peak bone mass and osteoporosis at young ages may occur in adolescents who are hypoestrogenic due to athletics, eating disorders, or hypothalamic amenorrhea. Unfortunately, OCPs appear to be ineffective in preventing bone loss in anorexic patients unless weight is nor-
malized. Use of OCPs in normal-weight individuals and athletes with hypothalamic amenorrhea has not been as well studied. However, the absence of significant risk makes use of OCPs reasonable in these young women.

**RISKS AND CONTRAINDICATIONS**

**Hypercoagulability**

The only significant risk of combined oral contraceptives in the otherwise healthy, low-risk adolescent pill user is thromboembolic disease, primarily deep venous thrombosis (DVT). The risk in combination OCP users under age 35 is around 1.5 per 100,000. These risks are higher among smokers and carriers of inherited thrombophilic disorders, the most common being the factor V Leiden mutation. Presence of these disorders is an absolute contraindication to estrogen-containing oral contraceptives. Consider screening for hereditary thrombophilias prior to combination OCP prescription if screening for hereditary thrombophilias is not already performed.

Teens who carry the methylenetetrahydrofolate reductase (MTHFR) mutation may safely use estrogen-containing pills if they are assured adequate folic acid intake. This mutation leads to elevated homocysteine levels, a risk factor for both arterial and venous thrombosis. Treatment with folic acid supplementation stabilizes the mutated enzyme, resulting in a normal homocysteine level and eliminating the excess risk for thrombosis. The dosage of folic acid used varies from 1 to 5 mg daily.

Pill users should be advised to notify their physician immediately if they have chest pain, shortness of breath, new-onset headache, or leg pain associated with swelling, redness, or heat, which may indicate presence of a clot. Many pediatricians teach their patients the ACHES acronym to remember signs of clots (A=abdominal pain, C=chest pain, H=severe, crushing headache, E=eye or visual loss, S=severe leg pain or swelling).

It may be worthwhile to warn all pill users against prolonged immobilization on long plane flights, which increases thrombotic risk. Common-sense strategies for long flights include drinking adequate water, avoiding caffeine and alcohol (which cause dehydration), moving about the plane hourly, and deplaning during layovers.

Recent meta-analysis suggests that pills containing the third generation progestins desogestrel (eg, Desogen, Ortho-Cept, Mircette and Cyclessa) and gestodene (not available in the US) may be associated with DVT risk twice that of pills containing the second-generation progestins, norethindrone and levonorgestrel. Multiple reanalyses of the data have failed to result in a unifying expert opinion on the matter. Most US experts agree that if there is an increased risk, its magnitude is not large enough to justify any change in prescribing practices. Suffice it to say that adolescents known to be at increased risk for thrombosis should not take an estrogen-containing contraceptive, regardless of the progestin used.

No increased risk for thrombosis has been reported in users of progestin-only contraceptive pills or other progestin-only methods. Despite statements to the contrary on package labeling, contraceptive experts agree that progestin-only methods are safe in women with a risk for thrombosis.

**Breast Cancer**

Multiple studies, including several meta-analyses, have failed to show a consistent relationship between oral contraceptive use and breast cancer risk. Although there may be a small increase in breast cancer diagnoses among women under age 35 in the first 5 years of pill use, the lifetime risk of breast cancer is not elevated in pill users, even those with a family history.

**Cervical Cancer**

Multiple studies have raised concerns about increased risk of cervical cancer in OCP users. However, when confounding factors (eg, smoking, number of sexual partners, barrier use, and Pap smear frequency) are controlled, no consistent association is found, except for the very rare adenocarcinoma of the cervix. One recent study suggests an increased risk of cervical carcinoma in HPV-positive women who used the pill for longer than 5 years. How this information translates to adolescent pill users who may transiently acquire HPV is unclear.

---

**TABLE 2**

Contraindications to estrogen-containing oral contraceptives*

- History of active thromboembolic disease or hypercoagulable state†
- Cerebrovascular or coronary artery disease†
- Known or suspected carcinoma of the breast
- Carcinoma of the endometrium or other known or suspected estrogen-dependent neoplasia
- Undiagnosed abnormal genital bleeding
- Cholestatic jaundice of pregnancy or jaundice with prior pill use
- Hepatic adenomas or carcinomas; active liver disease
- Known or suspected pregnancy

* For additional information about medical eligibility for OCP use, refer to Hatcher, et al., Contraceptive Technology (see resource list), or visit the World Health Organization Web site for a downloadable copy of WHO Medical Eligibility Criteria 2000 (go to http://www.who.int/ and search on medical eligibility)

† May consider POPs
Consistent condom use, limiting numbers of sexual partners, and getting annual PAP smears are currently the most important recommendations for preventing cervical cancer.

Chlamydia and PID risks in OCP users
Research has shown lower rates of symptomatic pelvic inflammatory disease (PID) among oral contraceptive users. This may be due to thickening of cervical mucus and reduced menstrual flow. However, given the high rates of silent PID caused by chlamydia, rates of symptomatic PID may not be a reliable indicator of actual upper-tract infections in pill users. The risk of chlamydia cervicitis may actually be increased among users of OCPs, due to cervical ectopy. The importance of consistent condom use for STD prevention cannot be stressed enough.

Other risks
Other risks associated with OCP use are confined to certain population subgroups. For example, there is an increase in the incidence of myocardial infarction in OCP users over 35 who smoke or have cardiac risk factors such as hypertriglyceridemia. OCP-induced cholestasis may exacerbate or reveal underlying gallbladder disease. Benign liver tumors were associated with older high-dose OCPs, but not with currently used low-dose (35 µg or lower) pills. Preexisting benign liver tumors remain a contraindication to combined oral contraceptive use. Pseudotumor cerebri, common in reproductive-age women and in pregnancy, can occur in association with most hormonal contraceptives, including progestin-only methods. Oral contraceptives should be discontinued if pseudotumor cerebri is diagnosed.

Use of Oral Contraceptives in Adolescents with Special Medical Conditions

With careful evaluation and close monitoring, oral contraceptives are safe in most adolescents with chronic medical conditions. Specific considerations apply:

• **Diabetes:** OCP use is safe for patients whose diabetes is well controlled, who have no evidence of end organ or vascular involvement, or who have had diabetes for less than 20 years.

• **Post partum:** Avoid estrogen-containing pills in first 2-3 weeks post partum, since this period is associated with increased risk of thrombosis. Consider POPs.

• **Breast-feeding:** Consider progestin-only pills, which are lactogenic. After breast-feeding is well established, combination pills can be used.

• **Hypertension:** If hypertension is well controlled, OCPs are appropriate with careful monitoring. If hypertension occurs with pill use, consider POPs or other progestin-only methods.

• **Migraine headache:** Use a monophasic pill. Avoid OCP use if focal neurologic symptoms accompany migraines. For patients without neurologic symptoms, monitor headaches with pill use and discontinue if headaches increase in frequency or intensity. Headaches occurring in the pill-free interval may respond to continuous OCP use without placebo, since the migraine trigger may be estrogen withdrawal in these patients. Alternatively, a low dose estradiol patch can be prescribed for use in the pill-free interval.

• **Hyperlipidemia:** Consider a third-generation OCP (potentially less effect on lipids). Monitor closely.

• **Biliary tract disease:** Active disease contraindicates estrogen-containing OCPs. Prior cholecystectomy does not.

• **Hepatitis:** Active disease contraindicates OCP use. OCPs are safe in chronic hepatitis B or C carriers with normal liver enzymes.

• **Sickle cell anemia:** OCPs are safe in patients with sickle cell disease; any formulation can be used. Ischemia in sickle cell anemia is not related to abnormalities in the thrombotic cascade. Consider Depo-Provera because it has been shown to stabilize the red cell membrane and lead to decreased frequency of sickle crises. This effect has not been shown with other progestins.

• **Seizure disorders:** Adolescents with seizure disorders can safely use estrogen-containing OCPs. However, interaction between antiseizure medications and oral contraceptives must be considered (see drug interactions). Depo-Provera may be a better choice for these patients.

**Contraindications to combined oral contraceptives**
Most contraindications to oral contraceptives relate to the estrogen component of the pill, and are summarized in Table 2. Most relative contraindications relate to use of OCPs in individuals with underlying medical conditions. Recommendations for pill use in these adolescents are summarized in the box at left.

**Drug Interactions with Oral Contraceptives**
Drug interactions with OCPs fall into two categories: those drugs that affect oral contraceptive efficacy, and those drugs whose metabolism is affected by oral contraceptives. Most drugs that interact with OCPs induce hepatic cytochrome P450 enzymes, causing increased metabolism of the estrogen and/or progestin component of the pill, leading to lower hormonal blood levels and decreased efficacy. Other drugs alter gastrointestinal absorption or affect serum protein binding, changing free hormone levels.

**Anticonvulsants**
Phenobarbital, phenytoin, primidone, carbamazepine, topiramate, and ethosux-
imide induce liver enzymes and lower hormone levels. Consider prescribing a high-dose (50µg EE) oral contraceptive in adolescents taking these medications, reducing the pill-free interval to 3 or 4 days, or eliminating the placebo interval entirely. If breakthrough bleeding occurs on high-dose pills, efficacy is likely to be compromised and an alternative method should be used. Consider using Depo-Provera, as its metabolism is not affected should be used. Consider using Depo-Provera, as its metabolism is not affected if breakthrough bleeding occurs. A higher dose (50 µg) may be prescribed. If breakthrough bleeding occurs, a higher dose (50 µg) may be prescribed. If breakthrough bleeding occurs, a higher dose (50 µg) may be prescribed. If breakthrough bleeding or diarrhea occurs, barrier contraception can be used short term. Adolescents using antibiotics long term can preferentially use 30-35 µg pills; if breakthrough bleeding occurs, a higher dose (50 µg) pill may be prescribed.

St John’s Wort
Herbal and dietary supplement use, unregulated by the FDA, is widespread and increasing. St John’s Wort is a particularly popular herb, usually taken as a pill or capsule, but also added to juices, soups, and even potato chips. St John’s Wort has been shown to induce hepatic cytochrome P450. The FDA issued a warning to physicians and patients about potential interactions between St John’s Wort and medications utilizing this pathway, including oral contraceptives. Reports of pregnancies and irregular bleeding in OCP users taking St John’s Wort are beginning to surface. Until more data are available, oral contraceptive users should be advised against using St John’s Wort.

Vitamin C
Although the data are contradictory, several studies have shown that high doses of vitamin C (1 gm or more daily) may increase hormonal levels as much as 50% in OCP users by impairing hormonal metabolism. Although this would not impact efficacy, it could lead to heavier or erratic withdrawal bleeding. Vitamin C dosages should not exceed 500 mg daily.

Theophylline
Oral contraceptives reduce clearance of theophylline by as much as 50%. Theophylline doses should be lowered accordingly. The same effect is noted with caffeine.

Analgesics and corticosteroids
Oral contraceptive use appears to lower aspirin levels. Chronic acetylsalicylic acid use can lead to increased ethinyl estradiol levels in OCP users. Oral contraceptive use may lead to decreased clearance and prolonged elimination of certain corticosteroids, notably hydrocortisone, prednisone, and prednisolone.

Benzodiazepines
Oral contraceptives can decrease clearance of benzodiazepines such as diazepam, alprazolam, nitrazepam, and chlordiazepoxide.

Antiretrovirals
Most of the antiretrovirals used to treat HIV infection have interactions with medications metabolized by the cytochrome P450 system. Ritonavir decreases ethinyl estradiol levels by as much as 40%, and alternative contraception is recommended. Nevirapine and efavirenz are presumed to act similarly. Indinavir can raise ethinyl estradiol levels, which could increase side effects.

EMERGENCY CONTRACEPTIVE PILLS (ECPs)

Emergency contraceptive pills, or ECPs, are high doses of estrogen and/or progestin given within a short period of time after unprotected intercourse in an attempt to prevent pregnancy. It is estimated that emergency contraception could prevent up to half of the 3 million unintended pregnancies in the United States annually. Despite this, only 1%-2% of women in the United States have ever used emergency contraception. Only 24% of pediatricians have ever prescribed ECPs and only 17% routinely discuss the method with their patients.9-11

ECPs are theorized to work in several possible ways: preventing or delaying ovulation, impairing corpus luteum function, or causing endometrial changes unfavorable to implantation. The efficacy of ECPs ranges from 75% to 89%, reducing the risk of pregnancy from a single act of unprotected intercourse from an average of 8% to 1%-2%. The sooner ECPs are taken after unprotected intercourse, the more effective they are. Although a 72-hour limit has been customary, newer data suggest that this time limit can be safely extended to 4 to 5 days after unprotected intercourse. However, efficacy diminishes with time. ECPs will not interrupt an implanted pregnancy.

The only contraindications to ECPs are known or suspected pregnancy, hypersensitivity to the product’s components, or undiagnosed genital bleeding. Pregnancy conceived despite ECP use have no increase in congenital
Anomalies or adverse outcomes. There is growing consensus that ECPs are safe enough to be available over the counter. In Washington state and California, ECPs are available in pharmacies through collaborative agreements in which a physician delegates authority to prescribe ECPs to a pharmacist who has undergone extensive training for this purpose. A survey of adolescents who used this pharmacy service showed that if the service were unavailable, almost half would not have known what to do or would have done nothing, despite the fact that the majority had a private physician. Adolescents were satisfied with the pharmacy service; 94% said they would recommend it to a friend.

Adolescents requesting ECPs do not need a special examination; a health history will suffice, along with pregnancy testing if preexisting pregnancy is suspected. It is appropriate (and encouraged) to give prescriptions over the phone for established patients. Several ECP regimens are currently available. It is wise to become familiar with more than one regimen and to check pharmacy availability before prescribing a given regimen.

It is reasonable to provide all adolescents using barrier methods with an anticipatory prescription or packet of ECPs along with instructions for their use. Three large studies have shown that patients who have ECPs on hand at home are significantly more likely to use them than those given education alone, and do not abuse the method or use it repeatedly. However, young women who request or use emergency contraception are at high risk for pregnancy in the year following ECP use. They should be advised to call the office after ECP use to arrange for follow-up and contraceptive counseling.

Adolescents using ECPs should be advised that their next menses may be early (if ECP is taken in the follicular phase), or delayed (if taken in the luteal phase). Half will have a normally timed menses, and most will bleed normally. Almost all (98%) will menstruate within 21 days; if not, pregnancy is a concern.

**ECP regimens**

The Yuzpe regimen: The Yuzpe regimen is the oldest and most widely used method, and can be given using one of 7 different OCP formulations or a prepackaged product (Preven). (See Table 3.) The most common side effects are nausea (3%-50%) and vomiting (12%-22%). Consider prescribing an antiemetic along with the Yuzpe regimen. Other minor temporary side effects include breast tenderness, headache, cramping, fatique, and dizziness.

Progestin-only method: The advantage to using progestin alone for emergency contraception is twofold. It is more effective (89% reduction in pregnancy risk), and it has much lower rates of associated nausea (23%), vomiting (6%), dizziness, and fatigue than the Yuzpe regimen. Two progestin-only methods are available: one utilizes progestin-only pills; the other (Plan B) is prepackaged.

An excellent ECP resource for both patients and providers is the Emergency Contraception Hotline (1-888-not-2-late) and website (http://ec.princeton.edu).

**SUMMARY**

Oral contraceptives are a safe and effective contraceptive method with relatively few contraindications, and important noncontraceptive benefits. OCPs are suitable for any healthy, sexually active female desiring pregnancy prevention. In Part 2 of this two-part series we will address the more practical aspects of initiating OCPs and managing the adolescent oral contraceptive user, and briefly review the new long-acting hormonal alternatives to oral contraceptives.

---

**TABLE 3**

<table>
<thead>
<tr>
<th>Emergency Contraceptive Pill Regimens†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECP</strong></td>
</tr>
<tr>
<td><strong>Yuzpe Regimen</strong></td>
</tr>
<tr>
<td>Preven</td>
</tr>
<tr>
<td>Ovral, Ogestrel</td>
</tr>
<tr>
<td>Alesse, Levlite</td>
</tr>
<tr>
<td>Aviane</td>
</tr>
<tr>
<td>Nordette, Levlen</td>
</tr>
<tr>
<td>Levora, Lo/Ovral, Low-Ogestrel</td>
</tr>
<tr>
<td>Triphasil, Tri-Levlen</td>
</tr>
<tr>
<td>Trivora</td>
</tr>
<tr>
<td><strong>Progestin-only Method</strong></td>
</tr>
<tr>
<td>Ovrette</td>
</tr>
<tr>
<td>Plan B</td>
</tr>
</tbody>
</table>

* Here and elsewhere in the text, proprietary names illustrate products most often prescribed and with which pediatricians are likely to be familiar. This does not imply AAP endorsement. Equivalent products may be substituted. For more information, providers and patients might access the Emergency Contraception Hotline (1-888-not-2-late) and website (http://ec.princeton.edu).

† Examples in the table reflect packaging of products available in the US at this writing. Other prepackaged regimens and OCPs available for use outside the United States may vary somewhat from those above.

‡ Patient can crush pills and take in applesauce or yogurt.
ACKNOWLEDGMENT
The editors would like to acknowledge technical review by Melanie A. Gold, DO, FAAP, FACOP, for the AAP Section on Adolescent Health.

REFERENCES

Adolescent Health Update
The American Academy of Pediatrics, through its Section on Adolescent Health offers Adolescent Health Update to all AAP Fellows.
Comments and questions are welcome and should be directed to: Adolescent Health Update, American Academy of Pediatrics, P.O. Box 927, Elk Grove Village, IL 60009-0927, or send an e-mail to adohealth@aap.com.
© Copyright 2002, American Academy of Pediatrics. Requests for permission to reproduce any material in this newsletter, or to purchase back issues, should be directed to the AAP Department of Marketing and Publications. The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Editor
Daniel P. Krowchuk, MD, FAAP
Winston-Salem, NC

Editorial Board
Paula K. Braverman, MD, FAAP
Philadelphia, PA
Walter K. Imaj, MD, FAAP
Honolulu, Hawaii
David S. Rosen, MD, MPH, FAAP
Ann Arbor, MI
Walter D. Rosenfield, MD, FAAP
Morristown, NJ
Sheryl A. Ryan, MD, FAAP
Rochester, NY

Supported through an educational grant from Nestlé Nutrition Institute

Advisory Board
Barbara E. Cohen, MD
Philadelphia, PA
David T. Estroff, MD
Gig Harbor, WA
Vincent J. Menno, MD
Doyles, PA
David Y. Raine, MD, MPH
Winston-Salem, NC
Peter D. Rappo, MD, FAAP
North Easton, MA
Richard M. Thaller, MD, FAAP
Houston, TX

Managing Editor
Marianne M. Stephens

AAP Staff Liaisons
Joe M. Sanders, Jr, MD, FAAP
Office of Executive Director
Tammy Piazza Hurley
Division of Child and Adolescent Health
# Patient Education Sheet

## Birth Control Pills: Learn The Facts

<table>
<thead>
<tr>
<th>MYTH</th>
<th>FACT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What your friends may say...</strong></td>
<td><strong>What to say to your friends...</strong></td>
</tr>
<tr>
<td>“The pill doesn’t work very well.”</td>
<td>“If I take my pill correctly, my chance of getting pregnant is less than 1 in 100. Those are pretty good odds, wouldn’t you say?”</td>
</tr>
<tr>
<td>“Birth control pills make you fat.”</td>
<td>“What makes you gain weight is taking in more calories than you need and not exercising, whether you’re taking the pill or not. Want to join me for a run tomorrow?”</td>
</tr>
<tr>
<td>“Birth control pills make you sterile.”</td>
<td>“That’s an old one. Women who take pills have the same fertility as those who never took pills. Stopping my pill puts me at risk for having a child I’m not ready to have.”</td>
</tr>
<tr>
<td>“You need a break from the pill.”</td>
<td>“There is no medical benefit in taking a break from the pill. Stopping and starting means getting my body used to the pill all over again. Plus, if I stop, my period will be heavier and more painful, like it was before I started the pill. And if I take a break, I could end up pregnant.”</td>
</tr>
<tr>
<td>“Those pills will give you cancer.”</td>
<td>“Actually, it’s an anti-cancer pill. I’m lowering my risk for cancer of the ovary and uterus by taking birth control pills.”</td>
</tr>
<tr>
<td>“You only need to take your pill on the day you have sex.”</td>
<td>“Wrong! I need to take it every day. Otherwise, I could get pregnant.”</td>
</tr>
<tr>
<td>“The pill is dangerous.”</td>
<td>“Taking birth control pills is safer than driving a car, and definitely safer than being pregnant.”</td>
</tr>
<tr>
<td>“And by the way, did you know that taking the pill can lessen menstrual cramps, lighten menstrual blood flow, prevent ovarian cysts, and even treat acne?”</td>
<td>“Not true. In healthy young women, there is no increase in these risks while using pills. There is a very small risk of blood clots, about 1 in 15,000. The chances of developing a blood clot would be greater if I were to get pregnant.”</td>
</tr>
<tr>
<td>“The pill will give you a heart attack or a stroke.”</td>
<td>“Not true. In healthy women under 35 who smoke, the pill is safe. But smoking is not safe - I think I’m ready to quit. Shall we quit together?”</td>
</tr>
<tr>
<td>“You smoke - you can’t take the pill.”</td>
<td>“Not true. The children born to women who take the pill have no increase in abnormalities.”</td>
</tr>
<tr>
<td>“The pill causes birth defects.”</td>
<td>“Not true. The children born to women who take the pill have no increase in abnormalities.”</td>
</tr>
</tbody>
</table>

### Who started these myths?

- Most of these myths come from misunderstanding and fears. The media rely on scare stories to keep the public interested, and until recently, rarely said anything positive about oral contraceptives.
- Some concerns arose years ago, when oral contraceptives contained much higher hormone doses and were not as safe as they are today. Sadly, some groups don’t believe women should use birth control of any kind. They spread rumors and misinformation about birth control in order to discourage women from using it.

If you hear or read something that concerns you, ask your doctor before stopping your pills. Odds are it’s another rumor!

---

Pediatricians are encouraged to photocopy this page for distribution to patients and parents.

This patient education sheet is distributed in conjunction with the July 2002 issue of *Adolescent Health Update*, published by the American Academy of Pediatrics. The information in this publication should not be used as a substitute for the medical care and advice of your pediatrician.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®