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Pharmacist's Letter
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Presenting Contraceptive Options to Patients

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Accreditation, Goals and Objectives

Course Accreditation Information, Goals and Objectives

Introduction

> Mandy is a 20-year-old female picking up a prescription for a birth control pill. She has never been on the pill before. She tells you she has heard that she might get nauseous and gain weight. She is wondering if this is true and if there are any other side effects she needs to look out for. She also wants to know if this is the best option for her or if there's another type of contraception that may be better?
>
> How would you counsel this patient? What information would you give her on side effects associated with the prescription she is picking up today? What would you tell her about other contraceptive options?

Unintended pregnancy accounts for close to half of all pregnancies in the U.S., and costs billions of dollars each year.[1] While many unintended pregnancies occur in women not using contraception, almost half of unintended pregnancies happen in women who say they are using some sort of contraception.[2] In most cases, this is due to incorrect use of the contraceptive method. In fact, the overall risk of pregnancy drops to 5% in women who consistently and correctly use their contraceptive of choice.[2] While there are many reversible options available to prevent pregnancies, most women use "the pill," condoms, or anintrauterine device (IUD).[2,3] Pharmacists can be instrumental in determining the most appropriate contraceptive choice based on patient-specific wishes and other factors.

Hormonal Contraception

> Which contraceptive options do patients ask about the most? What advice do you give to patients who ask for guidance on selecting a contraceptive? What information do you need to know about the patient before making a recommendation? What additional information do you want to know about available forms of contraception?

Using hormones to prevent pregnancy is a commonly used contraceptive method. There are a wide variety of hormone-based formulations and delivery systems available. These either contain a combination of estrogen and progestin, or only progestin. Examples of hormonal contraceptives include the combined hormonal contraceptive pill, patch, and vaginal ring; and the progestin-only pill, injection, implant, and IUD.

> Appropriately trained pharmacists are able to prescribe some hormonal contraceptive products in several states.[4] To learn more about selecting and prescribing hormonal contraception, take our CE, *Hormonal Contraceptive Selection*.

Combined Hormonal Contraception (CHC)

Agents in this class of hormonal contraception contain a combination of estrogen and progestin. Historically, this has included what most people think of as birth control pills (or, "the pill"), but combination products are also available as a transdermal patch and vaginal ring. Both hormones help prevent ovulation, while the progestin component also thickens cervical mucus. Consider all agents in this class equally efficacious, preventing over 99% of pregnancies with perfect use.[5,6] Combined hormonal contraception was initially developed to closely mimic a woman's menstrual cycle and provide predictable monthly bleeding. However, this is at the expense of estrogen-related side effects such as nausea, breast tenderness, and bloating. The progestin component can also cause bothersome side effects that are dependent on the type of progestin used and its effect on estrogen, progestin, and androgen receptors. Keep in mind that since progestins can work on multiple receptors, it's not just the dose of the hormones used, but how they interact together.

Side Effects Associated with CHCs		
Hormone	**Too Much**	**Too Little**
Estrogen	Nausea, breast tenderness, headache, bloating	Spotting, breakthrough bleeding early/mid-cycle

Progestin	Breast tenderness, headache, fatigue, mood changes	Breakthrough bleeding late cycle
Androgen	Weight gain, acne, hirsutism,LDL,¯HDL	

Combined hormonal agents may also cause breakthrough bleeding, especially in the first few months after starting. Reassure women that this will get better and their bleeding will become much more predictable.[7] Make sure they are adherent, since inconsistent use can increase the risk of spotting and bleeding.

While symptomatic adverse effects can be managed by changing products, there are also safety concerns with estrogen and progestin combinations. When combined hormone therapy first was introduced, there was an increased risk of heart attack and stroke that was determined to be the result of giving higher doses of estrogen, usually more than 50 mcg.[8] Now that most products contain lower estrogen doses, this risk is much less, and is estimated to be around two in 10,000 women a year.[8] However, non-estrogen contraceptives may be safer in women at high risk of cardiovascular disease, such as those over 35 years old who also smoke.

Counsel women that combined hormonal contraception can slightly increase their risk of developing clots. While there are certain groups of women who are at even higher risk for thromboembolism with CHC use (e.g., smoker, older age, obese), the risk of venous thromboembolism (VTE) in most women is usually less than that incurred by pregnancy.[9]

Number of new cases of VTE per 10,000 women per year:[10,11,12,13]

- General population: 1 to 5
- CHC users: 3 to 12
- Pregnancy: 5 to 20
- Post pregnancy: 40 to 65

The small increase in the risk of VTE in users of CHCs should be considered in the context of the risk of VTE in women who are pregnant or have recently given birth. To minimize the risk, it's important to use the lowest effective and tolerated dose of ethinyl estradiol. Generally, a patient shouldn't need a product with more than 35 mcg of ethinyl estradiol. While we don't know for sure, the risk of deep vein thrombosis (DVT) and pulmonary embolism (PE) seems higher in products containing the progestin drospirenone, in women using the patch, and possibly with vaginal ring use.[14,15] Recommend non-estrogen-containing contraceptive agents in women at higher risk for DVT/PE such as those over age 35, smokers, or with a history of clots. Make sure to educate all women taking combined hormonal products to report any leg pain or swelling, severe chest pain, or shortness of breath.[16]

Oral CHCs

Although in the best case scenario, combined oral contraceptives (COCs) are very effective, let women know that with normal use these agents have a 9% per year failure rate.[3] There is a dizzying array of COCs available, which can make choosing a product confusing. For a detailed chart that includes the various estrogens and progestins and their accompanying doses, along with brand names and manufacturers, refer to our chart, *Comparison of Oral Contraceptives and Non-Oral Alternatives*.

There are two types of estrogen available in COCs. Most COCs contain the estrogen ethinyl estradiol with doses ranging from 10 to 50 mcg. Consider it your "go to" estrogen since it has the most data behind its use. The other estrogen available in COC form is estradiol valerate (*Natazia*). Estradiol valerate is converted to the naturally occurring estrogen, estradiol. It was hoped that using a natural estrogen in a COC would decrease the incidence of metabolic adverse effects, but tell women this hasn't been proven.[17]

For women who want to use a pill, recommend that most start with a COC that contains 20 to 35 mcg of ethinyl estradiol. There has been some concern that COCs are not as effective in obese women. Reassure women that any increased pregnancy risk is very small, and is not a reason to avoid COCs. Keep in mind that women taking CYP450 enzyme inducers may need higher estrogen doses, so avoid pills with less than 30 mcg of ethinyl estradiol in these patients or consider other contraceptive options. Consider a lower-dose estrogen product for women who have estrogen-related side effects, but let them know their risk of breakthrough bleeding may be higher.[18] Regardless of which COC is used, prescriptions should ideally be for a one-year supply so women have easy access to refills.[5]

COCs can be grouped in different ways. Monophasic pills are the most common. This is where the dose of estrogen and progestin stay the same throughout the pill pack. Some COCs are available as cyclic products where the amount of daily estrogen and/or progestin changes throughout the month. These were developed to mimic the levels of estrogen and progesterone during a menstrual cycle and are grouped as bi-, tri-, or quadriphasic pills based on the number of dose changes. Let women know that taking a cyclic COC doesn't necessarily decrease side effects.[19,20]

COCs can also be grouped by their progestin component.[18] The first generation progestins were the first ones developed and these bind to estrogen, progesterone, and androgen receptors. Given the low progestin doses used, many women experience breakthrough bleeding and spotting. Second generation progestins seem to be better tolerated than first generation agents since they are more potent.[18,21] However, they have more androgenic effects that can lead to acne, abnormal hair growth, decreases in HDL, and issues with glucose metabolism.[22] Third-generation progestins were developed to have fewer androgenic effects.[8] Finally, the newest progestins, drospirenone and dienogest, are considered antiandrogens. Consider the different activities when assessing side effects a woman may be having and realize that it may not just be related to the dose of estrogen or progestin. Changing progestins may attenuate some of these symptoms. For instance, if a woman is on a levonorgestrel-containing COC and is having significant androgen-related side effects, switching to a progestin with lower androgenic activity may be beneficial.

Progestins Available in Combined Oral Contraceptives[6,18]					
Progestin Class	**Name**	**Estrogen Activity**	**Progestin Activity**	**Androgen Activity**	**Comments**

First Generation	Norethindrone Norethindrone acetate Ethynodiol diacetate	++ ++ ++	++ +++ +++	++ ++ +	
Second Generation	Norgestrel Levonorgestrel	- -	+++ ++++	+++ ++++	More potent than 1st generation
Third Generation	Norgestimate Desogestrel	- +/-	++ ++++	++ ++	Fewer androgenic and metabolic effects versus 2nd generation
Other	Drospirenone Dienogest	- -	+/- +/-	- -	Antiandrogen effects

There are some COCs that contain a form of folate (*Beyaz*, *Safyral*) in an effort to help women get the recommended 0.4 mg folic acid daily. Don't recommend these. It's much cheaper for women to take another COC and add folate supplementation, if needed.

Women who have menstrual-related difficulties, or those who prefer not to have monthly withdrawal bleeding, can take extended- or continuous-cycle COCs. Some extended-cycle regimens are monthly in nature, but have fewer placebo days than traditional COCs, with only two or four hormone-free days. Others are available as three-month cycles with either a pill-free week (*Jolessa*, etc) or a week of low-dose estrogen (*Seasonique*, etc) at the end of the three-month cycle. Extended-cycle regimens can reduce symptoms of hormone withdrawal so your patients with severe premenstrual symptoms may prefer these.[14] There is also a continuous-cycle oral contraceptive (*Amethyst*) available that is a daily pill containing 20 mcg of ethinyl estradiol and 90 mcg levonorgestrel. With this product, there is no “cycling,” so let women know they will typically stop having monthly bleeding within the first year. Keep in mind that women can also use any monophasic "traditional" COC as an extended-cycle or continuous regimen by just skipping some or all of the hormone-free days; however, the prescription should specify continuous use for insurance coverage purposes. Use of extended- or continuous-cycle oral contraception containing levonorgestrel does not have a significantly different risk of venous thromboembolism compared to traditional cyclic use.[23,24] Plus, extended- or continuous-cycle regimens are more convenient for patients due to less menstrual bleeding, and may improve efficacy and other conditions, such as dysmenorrhea, menstrual migraine, endometriosis, etc.[25,26,27] Review our chart, *Continuous- or Extended-Cycle Contraception Regimens*, for more details about pros and cons, info on the use of the patch and vaginal ring for continuous-cycle regimens, and tips to minimize billing issues.

Women may choose to use COCs for other reasons besides solely for contraception. Many females use COCs for acne treatment.[17,22] Although there are specific COCs approved for treating acne, let your patients know that all COCs are effective, especially those that contain progestins with low androgen activity. Steer women toward COCs if they desire decreased blood loss during their period or if they experience significant dysmenorrhea. Women with menstrual migraines without aura and premenstrual syndrome can also benefit. COCs have also been associated with protection against ectopic pregnancies and various cancers including endometrial, ovarian, and colon.[28,29] You can learn more about the noncontraceptive benefits of hormonal contraception by reviewing our CE, *Pharmacology of Hormonal Contraceptives*.

> Mandy comes back to your pharmacy a couple of months later complaining that she finds it difficult to rememberto take her pill every day. She’s wondering if there are any other options, but she doesn’t want to get an injection or have any procedures done. What options can you share with her?

Transdermal CHC Patch

The transdermal patch available in the U.S. (*Xulane*) and Canada (*Evra*) releases 35 mcg of ethinyl estradiol and 150 mcg (U.S.) or 200 mcg (Canada) of norelgestromin daily for three weeks followed by a patch-free week.[12,30] Norelgestromin is the active form of the progestin, norgestimate. Some women like the patch because they only need to remember to change it weekly as opposed to taking a daily pill, which can lead to a higher compliance rate in some users.[31] While around one in ten women use the patch, almost half stop using it, primarily because they are not satisfied with it or due to side effects.[3] This may be because it has thehighest estrogen exposure over time of the combined hormonal agents.[14] Make sure women know of potential side effects before starting. Counsel women to place the patch on their upper arm, stomach, back, or buttock where it won't be rubbed by tight clothing.[12] They should consider rotating the application site with each patch change to reduce the risk of skin irritation.[6] Recommend the use of a calendar to help remember when to change their patch and when to restart the four-week cycle. Let them know that their patch-free week is when they can expect to experience withdrawal bleeding. Keep in mind that the patch may not work as well in women who weigh over 198 pounds (90 kg).[12] It is also contraindicated in patients over the age of 35 who smoke.[12]

As of the release of this course, there is a new FDA-approved patch that is anticipated to be available in pharmacies by the end of 2020, called *Twirla*.[32] This patch is designed to deliver 30 mcg of ethinyl estradiol and 120 mcg of levonorgestrel over 24 hours. It’s important to note that due to the risk of VTE, *Twirla* is contraindicated in patients with a BMI of 30 kg/m^2 or greater, patients who have migraine with aura, and patients older than age 35 with any type of migraine.[32] And like *Xulane*, it is also contraindicated in patients over the age of 35 who smoke.[33]

Vaginal CHC Ring

There are two different types of vaginal rings available. You are probably most familiar with the ethinyl estradiol/etonogestrel (*NuvaRing*, *EluRyng*) product, since this has been on the market for a while. It releases 15 mcg of ethinyl estradiol and 120 mcg of etonogestrel a day.[34] This ring is inserted for three weeks and then disposed of. A new ring is inserted one week later.

In contrast, the newer ethinyl estradiol/segesterone (*Annovera*) vaginal ring is reusable for up to one year (or 13 cycles). It releases 13 mcg of ethinyl estradiol and 150 mcg of segesterone acetate, a novel progestin. Similar to the ethinyl estradiol/etonogestrel vaginal ring, there is an off week, but patients reinsert the same *Annovera* ring to start the next cycle.[35] Instruct patients to store their *Annovera* ring in the black compact case that comes with it during the off week. And emphasize the importance of keeping this case away from children and pets. Patients should also be educated to wash *Annovera* with mild soap and warm water, then pat it dry with a clean towel. This should be done each time before use

also be educated to wash *Annovera* with mild soap and warm water, then pat it dry with a clean towel. This should be done each time before use and after removing the ring, prior to storing.[35]

Around one in five women have tried the vaginal ring.[3] Let women know that the ring has the lowest estrogen exposure of the available combined hormonal products so they may experience fewer estrogen-related side effects. However, it does lead to more localized issues. Counsel women who are switching from the pill that the ring can cause more vaginal irritation and discharge.[31] Some women may be concerned that the ring may be uncomfortable or fall out. Reassure them that this happens in less than 5% of patients.[36]

Progestin-Only Hormonal Contraception

> What hormonal contraceptive options are available for women who cannot or do not want to take estrogen? Which of these options are most common among your patients? What are the advantages and disadvantages of these options?

Progestin-only contraception is an attractive option for women who can't take estrogen, or with some formulations, for those who prefer longer-acting reversible contraception. Let patients know that progestin-only options include pills, an injection, and an implant. An intrauterine progestin device is also available, but will be discussed in the IUD section. Progestin-only products generally result in less bleeding during menstruation, but more breakthrough bleeding compared to combined hormonal contraception.[14] The long-acting injection and implant commonly result in amenorrhea. Due to less overall bleeding, progestin-only agents are associated with a reduced risk of iron deficiency anemia.[14]

Like CHCs, unscheduled bleeding is the most common adverse effect. Educate women in advance that this can occur, as this is the most common reason that women stop using progestin-only products.[37] Since progestins can reduce HDL levels, there is a theoretical concern that progestin-only agents can increase the risk of cardiovascular events, but reassure women this hasn't been proven.[38]

Oral Progestin

There are two different types of progestin-only pill available. In the U.S. and Canada, there is an option that supplies norethindrone 0.35 mg daily (*Camila*, *Micronor*, *Nor-QD*, etc). This is much less progestin than what is contained in COCs. While it is dispensed in four-week packs like most COCs, educate women that there are no "free" weeks and each pill contains active medication. Because of the short half-life of this progestin-only pill, it's important to let women know to take the pill at the same time each day. Counsel your patients that taking it more than three hours late can increase the risk of pregnancy, and backup contraception should be used for at least 48 hours afterward.

In the U.S., there's another progestin-only option available. This option contains drospirenone 4 mg (*Slynd*), which is slightly more than what's contained in COCs, which is 3 mg.[39] Unlike norethindrone which is taken continuously, it is taken on an extended cycle for 24 days, followed by four days of placebo.[39] While it's also recommended to take this progestin-only pill at the same time each day, backup contraception isn't required when one dose is missed, but is required for seven days if more than one active pill is missed.[39] This is because while norethindrone works primarily by thickening the cervical mucus, drospirenone works by inhibiting ovulation.[39] For more information on dosing, administration, safety, and place in therapy, check out our chart, *New Formulation: Slynd (Drospirenone)*.

Injectable Progestin

Some women may prefer a longer-acting contraceptive such as medroxyprogesterone acetate, a progestin-only injectable product. Let women know that it comes as either a subcutaneous (*Depo-SubQ Provera 104*) or intramuscular (*Depo-Provera*) injection that is administered every three months.[14] Tell women the subcutaneous shot causes less injection pain compared to the intramuscular shot, but that the progestin-related adverse effects are similar. Also, the subcutaneous injection may be easier to self-administer at home than the intramuscular injection. However, insurance may not cover the subcutaneous product since it's only available as a brand.

Around one in four women have used medroxyprogesterone. Unfortunately, almost half stop using it, mainly due to side effects and changes in the menstrual cycle.[3] Like other progestin-only products, women can experience spotting and breakthrough bleeding initially, but after one year almost half of women stop having periods. While this can be a concern for some women, others may see it as a benefit.[7] Most women worry about weight gain with medroxyprogesterone. Let them know that after five years, they can expect about a five-pound weight gain if they use injectable medroxyprogesterone instead of a non-hormonal contraception option.[40]

Warn women ahead of time that it will take longer to get pregnant after stopping the injectable product compared to other contraception options.[14] Injectable medroxyprogesterone can also decrease bone mineral density, so it may not be the best choice in women at risk for osteoporosis.[40] Most of the bone loss occurs during the first two years of therapy. Make sure all women receiving medroxyprogesterone get enough calcium and vitamin D.

Progestin Implant

The only available progestin implant in the U.S. is etonogestrel (*Nexplanon*) which is a single four-centimeter rod that provides contraception for three years.[41] While it requires insertion from a trained professional, progestin implants are the contraceptive method most likely to be continued. Over eight in ten women still have the implant after one year of therapy.[14]

While implants have many of the same side effects as injectable medroxyprogesterone, fertility resumes within one week after removal. Consider recommending progesterone implants in women who would like the option of long-term contraception, but would like to become pregnant soon after stopping therapy.

Missed Doses

Not taking hormonal contraceptives as prescribed can lead to an increased risk of pregnancy and lots of confusion about what to do. What to do when patients miss doses is a common question.

In general, if a patient misses one dose of a COC or the drospirenone progestin-only pill, let them know it's okay to take the missed pill as soon as possible and additional contraception is not needed.[5] If two or more doses are missed, recommend backup contraception for seven days. For COCs, tell patients to discard the placebo week and start a new pack immediately after the last active dose, if the missed doses are during the second or third week of their current pack.[5,42] Give patients similar information if they have vomiting or diarrhea.

The transdermal patch and vaginal ring have similar recommendations. If the patch comes off for less than 48 hours, or the ring becomes

The transdermal patch and vaginal ring have similar recommendations. If the patch comes off for less than 48 hours, or the ring becomes displaced for less than three hours (prescribing information) or less than 48 hours (CDC), reassure women they can reapply or reinsert without the need for backup contraception.[5,12,33,34] After any of these times, they may need to consider backup contraception and eliminate the hormone-free week depending on when they were without hormone. Removal day for the patch and the ring should stay the same and not be adjusted based on when the new patch or ring was started.

As mentioned previously, missing doses of the norethindrone progestin-only pills is more concerning. If a pill is missed or if the patient takes it more than three hours late, instruct them to use another form of contraception for 48 hours.[5,42] The same is true if the patient has vomiting or diarrhea within three hours of taking the pill. Consider emergency contraception if the patient has had unprotected intercourse in the last five days.

Patients who are more than two weeks late in getting their medroxyprogesterone injection should get a pregnancy test before receiving their next shot and should use additional contraception for one week.

For more important counseling points to provide to patients getting hormonal contraception, including detailed information on missed doses, take our CE, *Hormonal Contraceptive Counseling*. To help explain the importance of adherence and how to manage missed doses to your patients, print out ourpatient education handout, *What I Need to Know About Missed Birth Control Doses* (also available in Spanish and French).

Intrauterine Devices (IUDs)

How often do you recommend IUDs to patients? What are the advantages of IUDs over other contraceptive options? In what circumstances would you recommend an IUD?

IUDs, also referred to as intrauterine systems, are extremely effective contraceptive agents with a failure rate of less than 1% a year.[3,5] They are also preferred by many women since they require minimal upkeep and reverse rapidly on removal. Their use in the United States has lagged behind other countries; however, IUDs have become more popular in recent years, with about 12% of women who use contraception reporting IUD use.[2,43] IUDs are the third most used reversible contraceptive method in the U.S., with oral contraceptive pills being the most utilized, followed by male condoms.[3] Let patients know that IUDs are available as copper- (*ParaGard*) or levonorgestrel-containing (*Mirena*, *Skyla*, etc). The copper IUD works by creating a hostile environment for sperm through an immune response as well as reducing the formation of mature eggs.[44] The copper IUD can also be used as emergency contraception, which will be discussed in more detail later. Similar to other progestin products, the levonorgestrel IUD thickens cervical mucus. In the past, there was a concern that IUDs could lead to infertility or increase the risk of sexually transmitted infections (STIs), so their use was limited to those women who had been pregnant and were in a monogamous relationship. Reassure women that these restrictions are no longer supported, and women of all ages can have an IUD inserted. However, all women should undergo a pelvic exam before insertion, including a visual inspection of the cervix.[5]

Once a copper IUD is inserted, you can let patients know that they don't need to use backup contraception.[5] For levonorgestrel IUDs, women should use other protection for seven days if it has been more than a week since they had their period. Once in place, a copper IUD can remain in for at least ten years.[14] Levonorgestrel IUD length depends on the product. For example, for women who want longer contraception, they may want to consider a product that is effective for up to five years, such as *Mirena* or *Kyleena*, or six years, such as *Liletta*.[45] For shorter contraception, a product like *Skyla* is effective for up to three years.You can review a detailed summary of IUDs, including information on other available products, with our commentary, *Intrauterine Contraceptives: IUDs*.

Educate women that bleeding and spotting is common during the first six months after IUD insertion.[5] Some women will experience heavy bleeding after insertion of a copper IUD. Let them know that NSAIDs can help reduce blood loss.[5] Make sure that women who have a levonorgestrel IUD know that amenorrhea occurs in about half of women within two years. Expulsion of the IUD can also occur, especially in the first year of use in women who have not previously given birth. Tell women to check the strings regularly to make sure the IUD is still in place.

Some women may be concerned about the up-front cost of an IUD, which can exceed $800. This is often covered by insurance. Also, discuss with them that after three to five years of use, IUDs, along with implants, are the most cost-effective forms of contraception.[45]

In recent years, there has been a push to remove some of the stigma associated with long-acting reversible contraceptives (implants, IUDs), especially in younger women.[46] In general, most women prefer long-acting agents when educated appropriately, remain on them longer, and have lower rates of unintended pregnancies compared to other forms of contraception.[47] While it is a shift in thinking, some experts now recommend long-acting agents be considered first-line contraceptives in most women. For example, the American Academy of Pediatrics recommends long-acting reversible contraceptives be considered as first-line options in adolescents.[48]

Barrier Methods

What are the different barrier methods used for contraception? Which of these do your patients ask you about most often? How do these options compare in terms of efficacy?

Condoms

Condoms are less effective than hormonal contraception with about a 17% failure rate.[3,49] However, use has increased markedly in the last 30 years, most likely due to their ability to prevent transmission of STIs.[3]Since condoms are the only contraceptive available that can decrease STI transmission risk, recommend their use in patients at risk for acquiring STIs, such as individuals with multiple sex partners. Condoms are usually made of latex, synthetic agents, or lambskin. Recommend latex condoms first-line.[49] They have the best evidence for reducing STI transmission. For patients with a latex allergy, let them know that synthetic condoms are better than lambskin, or natural condoms. However, tell them that synthetic condoms have a higher rate of breaking compared to latex.[50] Tell patients not to use spermicide-coated condoms because they aren't more effective and may increase the risk of urinary tract infections and HIV transmission, particularly in women.[49] This may be due to the fact that nonoxynol-9, the main ingredient used in spermicides, disrupts the epithelium of the vagina, which can possibly facilitate the invasion of an infective organism, such as HIV.

Unfortunately, around 10% of patients stop using condoms, mostly due to decreased male pleasure and sensation.[3] Educate patients on this upfront so it can be expected. Make sure patients realize that if they are relying solely on condoms to prevent pregnancy, they need to use them consistently.

Female condoms are more expensive and have a higher pregnancy rate than male condoms.[51] However, they have the advantage of being able to be inserted up to eight hours before intercourse. Consider recommending these in patients who are already using another form of contraception but want protection against STIs as well. Since they are not made of latex, they are also safe in patients with latex allergies. Let patients know that female condoms shouldn't be used in concert with a male condom and that a lubricant should be used to facilitate passage into the vagina and to minimize noise during intercourse.[51]

Diaphragms

Diaphragms are not a commonly used form of contraception in U.S. women, with less than 5% reported use.[3] This may be due to a higher pregnancy rate of 12% within first year of use, or because it must be measured by a trained professional.[5] Diaphragms work by blocking the entrance to the cervix and may need to be refitted after pregnancy, local surgery, or a 20% weight change.[52] For women who want to use a diaphragm, let them know that it must be used with spermicide and left in at least six hours after intercourse, but not more than 24 hours.[14]Educate women to apply spermicide onto the diaphragm as instructed in the packaging of the diaphragm, usually into the diaphragm cup and around the rim.[52] Women with HIV infection probably shouldn't use a diaphragm due to the increased risk of transmission with recurrent spermicide use.[38] Cervical caps are also available, but are even less effective than diaphragms, so don't routinely recommend them.

Sponge

Tell patients that although a birth control sponge (*Today Sponge*) is easy to obtain, it is not as effective as hormonal contraception, especially in women who have already given birth.[53] With actual use, failure rates range from 12% in women who have never given birth to 24% in those that have. The sponge prevents pregnancy by covering the cervix as well as by releasing spermicide. Although a sponge can remain intact for 24 hours without the addition of more spermicide, more women get pregnant when using a sponge compared to a diaphragm.[54] Sponges are generally free from adverse effects, but can increase the risk of toxic shock syndrome. Educate women to not leave the sponge in for more than 30 hours or use it during their period.

Spermicides

Spermicides are readily available and come in a wide variety of vehicles. Spermicides don't actually kill sperm, but do stop sperm from moving and help block the cervix.[55] When used alone, they are not very effective, leading to a 29% failure rate. The active ingredient in most preparations is nonoxynol-9.[56] Don't recommend products without nonoxynol-9 because they are less effective. Educate women that regular use of spermicides may increase their risk of urinary tract infections and HIV infection and transmission. This is because repeated use of nonoxynol-9 can cause genital lesions and disrupt the mucosa of the cervix, possibly facilitating the invasion of infective organisms.[57]

Choosing a Contraceptive Method

When helping patients choose the most appropriate contraceptive agent, you need to take several things into consideration including effectiveness, safety, availability, and acceptability. Long-acting reversible contraception, such as IUDs and implants, are probably the most effective because they aren't user-dependent.[5] However, since these options need to be placed by a healthcare provider, they may not be as accessible as other options. Barrier methods are the least effective at preventing pregnancy. Given that the efficacy is dependent on the user, make sure that women who want to use pills, patches, rings, condoms, or other shorter-acting agents understand the importance of adherence to the prescribed regimen. It is also important to consider the risk for HIV and STI transmission. Counsel all patients about the use of latex condoms to minimize this.[5]

Risk of Pregnancy with Contraception	
Pregnancies per 100 Women per Year[5]	**Contraceptive Method**
More than 18	• Spermicide • Condoms (male and female) • Withdrawal • Sponge
6-12	• Hormonal contraception (injection, pill, patch, ring) • Diaphragm
Less than 1	• Implant • IUD • Sterilization (male and female)

Before recommending contraceptive options, review other medications the patient is taking. Some medications, such as phenytoin, carbamazepine, rifampin, and barbiturates, shouldn't be combined with CHCs or the progestin-only pill.[58] Other meds like lamotrigine and fosamprenavir shouldn't be used with CHCs, but can be used with the progestin-only pill. This information is outlined in the Centers for Disease Control and Prevention's (CDC) U.S. Medical Eligibility Criteria for Contraceptive Use (U.S. MEC), along with information on conditions in which certain contraceptive options should be avoided. So, you will also want to know what conditions a patient has before making a recommendation. For example, patients with hypertension shouldn't use CHCs and patients with systemic lupus (positive or unknown for antiphospholipid

antibodies) shouldn't use CHCs or progestin-only contraceptives. For more information on patient-specific factors impacting the selection of contraception, refer to the U.S. MEC; our CE, *Hormonal Contraceptive Selection*; and our chart, *Contraception for Women with Chronic Medical Conditions*.

> You may have seen warnings about using common antibiotics, such as penicillins, cephalosporins, macrolides, or tetracyclines, with hormonal contraceptives. Intestinal bacteria are responsible for enterohepatic recirculation of hormone metabolites, which is thought to contribute to oral contraceptive efficacy. Antibiotics may interfere with this by disrupting the amount of intestinal bacteria. However, the clinical significance of this potential interaction has not been proven. If this interaction does exist, it is rare, and at a population level, this potential increased risk is still consistent with the acceptable failure rate of oral contraceptives seen with typical use. For more details on managing antibiotic and hormonal contraceptive interactions, check out our chart, *Managing Antibiotic and Hormonal Contraceptive Interactions*.

Since adherence with non-long-acting contraception is a problem, make sure to follow up with patients once they start a new method. Ask the patient if they are having any problems related to the chosen method and see how satisfied they are with it.[5] Recommend other options if appropriate.

Emergency Contraception

> What options are available for emergency contraception? Which option is most effective? How do you counsel women getting an OTC or Rx emergency contraceptive?

Emergency contraception is used by around one in ten women.[3] The first available method was called the Yuzpe regimen. This consisted of taking 100 mcg ethinyl estradiol plus 1 mg norgestrel or 0.5 mg levonorgestrel, repeated 12 hours later.[59] To illustrate, this would be the equivalent of two pills containing ethinyl estradiol 50 mcg/norgestrel 0.5 mg or five pills containing ethinyl estradiol 20 mcg/levonorgestrel 0.1 mg. Because of the high dose of estrogen, the Yuzpe regimen has more side effects, such as vomiting, and seems less effective than other regimens. Consider only recommending this for women who already have these pills available, or for those who don't want the stigma associated with taking a "morning after" pill.[59]

Levonorgestrel is the only emergency contraceptive available without a prescription. It works by inhibiting ovulation, so it is most effective when taken before the luteinizing hormone surge.[60] This usually occurs about 24 to 36 hours before ovulation. Recognize that levonorgestrel won't work if the woman has already ovulated. Keep in mind that the sooner levonorgestrel is taken, the more effective it is. Expect that levonorgestrel will prevent about 95% of pregnancies if taken within the first 24 hours. This drops to 50% of pregnancies when used within 72 hours of unprotected intercourse.[59,61]

Recommend levonorgestrel for women who present up to three days after intercourse. You may see some prescribers recommending these products be used for up to five days after unprotected sex, but let the patients know they lose their effectiveness as time goes on. Patients will take a single dose of 1.5 mg of levonorgestrel (*Plan B One-Step*, *My Way*, etc).

Educate women that they may experience some nausea and vomiting with levonorgestrel products and may also have some irregular bleeding. Consider having women repeat the dose if they vomit within three hours of taking a levonorgestrel product.[5,59] If they are concerned about throwing up again, you can recommend meclizine.[59] Since progestins are metabolized via the CYP3A4 pathway, inducers, such as efavirenz and rifampin, may decrease their effectiveness.[62] Counsel women taking these medications that a copper IUD, if available, may be a better choice for them.[59]

Ulipristal (*ella*) is a selective progesterone receptor modulator with agonist and antagonist properties. Unlike levonorgestrel, ulipristal can delay follicle rupture at the time of the luteinizing hormone surge, which may provide an extra couple of days of coverage.[60] However, patients can only obtain ulipristal with a prescription, and often pharmacies do not have this medication in stock at the time a prescription is presented. Ulipristal is given as one 30 mg tablet, which can be taken up to five days after unprotected sex.[63] It may work better than levonorgestrel, and patients can expect similar side effects and drug interactions.[63,64] Like levonorgestrel, instruct women to repeat the dose if they throw up within three hours of taking it. Consider asking prescribers to authorize one refill in case this occurs.[59] Be aware that with ulipristal, there is a theoretical concern, which is backed up by at least one pharmacodynamic study, that hormonal contraceptives can interfere with the ability of ulipristal to delay ovulation.[65] The interaction is thought to be due to the agonist/antagonist properties of ulipristal. This issue doesn't exist with levonorgestrel emergency contraception, since levonorgestrel is a progesterone receptor agonist.[66] The clinical significance of the interaction with ulipristal and regular hormonal contraception hasn't been proven, but experts and CDC recommend waiting at least five days after taking ulipristal before initiating short-acting hormonal contraceptives (pill, patch, ring).[5] Let patients know that they will have to use another form of contraception during this five-day period, and for seven days after the short-acting hormonal contraceptive is initiated.

One of the potential disadvantages of orally available emergency contraception is that they may be less effective in obese women.[67] Ulipristal seems to be less effective in women who weigh over 187 pounds, and levonorgestrel seems to be less effective in women who weigh over 154 pounds.[68] However, this doesn't mean that overweight women shouldn't use these products, especially if they are the only options available.

If a patient is looking for the most effective regimen, tell her insertion of a copper IUD can prevent 95% of pregnancies.[59] However, it may be difficult to get one placed within five days of unprotected intercourse since it requires insertion from a trained professional. Keep in mind an IUD can increase the risk of pelvic inflammatory disease in women with active gonorrhea or chlamydia. Consider recommending an IUD for emergency contraception in women who desire long-term contraception or in obese patients.

The Bottom Line

There is a wide variety of contraceptive choices available. For many patients in the U.S., a COC is a safe and effective choice. Condoms are also commonly used, but may not provide sufficient contraceptive protection for some individuals. Take into account patient preference, current medications, past medical history, and adherence when helping patients choose a contraceptive regimen. Consider reversible long-acting

contraceptives, such as IUDs or implants, for patients who want sustained contraception and don't want the hassle of adhering to a regimen. Recommend latex condoms, either alone or in concert with other contraceptive options, to reduce the risk of sexually transmitted infections, including HIV.

Quiz Questions

Question #1

Which side effect is most likely to be caused by too much progestin?

- a. Nausea
- b. Depression
- c. Breakthrough bleeding
- d. Acne

Question #2

What could you share with a colleague about the risk of VTE with CHC use?

- a. The risk seems lowest in patients using the vaginal ring.
- b. The risk is greater than the risk of VTE during pregnancy.
- c. Doses of ethinyl estradiol 35 mcg or less may limit the risk.
- d. Only patients who smoke or are obese need to be educated about the risk.

Question #3

For which patient would you feel most comfortable recommending a CHC patch?

- a. A patient with a BMI of 32 kg/m2.
- b. A patient who weighs 200 pounds.
- c. A patient who smokes and is 36 years old.
- d. A patient who uses marijuana and is 28 years old.

Question #4

Which counseling point should you provide to a patient who is picking up a new prescription for the vaginal CHC ring?

- a. You will likely experience the ring falling out.
- b. It can cause vaginal irritation and discharge.
- c. It has the highest hormone exposure of all the CHC products.
- d. The ring should be inserted for two weeks and then removed for two weeks.

Question #5

What is a feature of the drospirenone-containing progestin-only pill?

- a. When backup contraception is required, it should be taken for at least seven days.
- b. When a dose is taken more than three hours late, backup contraception is needed.
- c. It should be taken continuously since each pill contains active medication.
- d. It contains less drospirenone than combined oral contraception.

Question #6

Which contraceptive method is most likely to be continued by patients?

- a. Implant
- b. COC pill
- c. Progestin-only pill
- d. Medroxyprogesterone injection

Question #7

What would be considered an advantage of a levonorgestrel IUD?

- a. Lasts up to a maximum of ten years
- b. Has a low failure rate between 1% and 5%
- c. Allows for rapid resumption of fertility upon removal
- d. Doesn't require backup contraception after insertion

Question #8

What could you tell a patient about IUDs?

- a. Expulsion of the IUD is not a concern.
- b. IUDs are one of the most cost-effective forms of contraception.
- c. They should only be used in women who have given birth in the past.
- d. Some women experience heavy bleeding after insertion of levonorgestrel IUDs.

Question #9

Which barrier method has the best evidence for preventing transmission of sexually transmitted infections (STIs)?

- a. Diaphragm alone
- b. Diaphragm with spermicide
- c. Lambskin condoms
- d. Latex condoms

Question #10

Which emergency contraceptive option is considered the most effective regimen?

- a. Copper IUD
- b. Levonorgestrel
- c. Ulipristal
- d. Yuzpe

Submit your answers

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Presenting Contraceptive Options to Patients
(20-217)

Needs: Unintended pregnancies account for about half of all pregnancies in the U.S and cost an estimated 11.1 billion dollars each year. With the wide variety of contraceptives available, pharmacists need to be able to help women understand options available to them.

Target Learners: This activity is intended for pharmacists in any practice setting. There are no prerequisites.

Goals and Objectives: The goal of this activity is to help pharmacists in all settings develop a better knowledge base from which they can educate patients on contraceptive options.

Upon completion of this course, the learner will be able to:

1. Name four types of hormonal contraceptives.
2. Identify counseling points to provide patients regarding various types of hormonal contraception.
3. Explain the benefits and downsides of intrauterine devices.
4. List three barrier methods available for contraception.
5. Describe the available options for emergency contraception.

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Statement of Participation/Course Completion

Credit will be awarded to participants who answer at least 70% of the quiz questions correctly and have provided an accurate NABP e-Profile ID and DOB. Participants that have successfully completed this course AND have provided accurate NABP e-Profile information, including month and day of birth, will have their CE credit submitted to CPE Monitor on a weekly basis.

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