MUCU ADOLESCENT HEALTH NEWSLETTER SUPPLEMENT #1

CONTRACEPTION UPDATE

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1. NON-HORMONAL METHODS OF CONTRACEPTION

METHODS:

--MALE AND FEMALE CONDOMS
--WITHDRAWAL
--CYCLE BEADS

MALE AND FEMALE CONDOMS

Condoms are considered a barrier method that prevents the passage of semen and infectious pathogens by forming a barrier between the male genital area including penile glans and shaft, and the vagina. Its protective value extends to anal or oral intercourse by preventing contact with lesions, vaginal or anal discharges. They are available for both male and female use in different sizes, shapes, colors thickness and texture with or without lubricant. The great variety of choices and options can be appealing to the adolescent population. Only water-based or silicone-based lubricants should be used with latex condoms. Non- onoxynol-9, a spermicide, has been shown to increase the risk of HIV infection, so lubricated condoms with spermicide should not be recommended. Condoms are made of latex rubber, synthetic material such as

polyurethane, or natural skin, often called lambskin condoms. These "natural" condoms are effective for pregnancy prevention only. They do not provide protection against STIs because the pores in the condom are large and permit transmission of some bacteria or viruses. By serving as a physical barrier between partners, latex and polyurethane condoms reduce the risk of pregnancy, and most sexually transmitted infections (STIs), including HIV if used consistently and appropriately.[1-5] Efficacy against pregnancy depends on the skill of the user. In the United States, 18%percent of women experience unintended pregnancies within the first year of typical use of male condoms; and 21% do so with female condoms.[6] With perfect use during the first year, 2% of women using male condoms experience unintended pregnancies compared to 5% of women using female condoms.[6] Eighty-five percent of sexually active women who are not using any method of contraception will experience a pregnancy within a year.[6]

Advantages

The main advantage of condom use is that they protect against STIs and pregnancy. Condoms are also accessible and do not require a medical visit or follow up. Users rarely report medical problems or side effects, aside from latex sensitivity. If latex sensitivity is present, use of a synthetic condom is recommended. Condoms have been reported to prolong sexual activity and even prevent premature ejaculation. Users can get condoms from pharmacies, grocery stores and vending machines, and can order them online at a low cost. Additionally they can be carried and thus are easily accessible.

Disadvantages

Despite being a method that is easily available and inexpensive, inconsistent use among adolescents increases their risk of pregnancy. Some reasons that adolescents don't like to use condoms include interruption of foreplay and possible lack of knowledge about how to use a condom correctly. Adolescents may also be embarrassed to ask their partner to use a condom. Latex allergy is another disadvantage and the alternative, synthetic polyurethane condoms, can be costly and less accessible. Decreased sensation and pleasure have also been reported.[7,8]

Counseling

Providers can teach proper condom use, and if available, provide a pamphlet with instructions. They should not assume that the adolescent knows how to use a condom. It is helpful for providers to demonstrate condom use with the aid of a model penis or a banana. Also, to prevent slippage or breakage, it is useful to make sure that the adolescent is using the correct size.[9]

Other important parts of counseling include: explaining that a new condom needs to be used during each new sexual act, discussing the importance of checking the expiration date, and discouraging use if the package seems damaged, discolored, or expired.

Providers can educate the adolescent about the proper storage of condoms. Condoms must be maintained at room temperature, kept away from exposure to direct sunlight, and not stored in a wallet, pocket, or car glove box for more than a few days.

Many adolescents feel embarrassed about discussing condom use and fear partner rejection. Use of role-play with specific scenarios targeting negotiation skills can be helpful for the patient to develop ways to react to the partner.

Follow-Up

Due to minimal side effects, a follow visit is not necessary. However, the adolescent should be encouraged to return for periodic preventive and reproductive health care services.

WITHDRAWAL

Coitus Interruptus, also known as the "withdrawal" method, involves removal of the penis from the vagina prior to ejaculation. This method relies on the male's ability to identify the sensation before ejaculation. With typical use, 22% of women will become pregnant within the first year.[6]

Advantages/Disadvantages

The only advantage of Coitus Interruptus is that there is no cost or need for a physical exam, a prescription, or follow up. This method is not recommended for teens or those who are sexually inexperienced. Its main disadvantage is the lack of protection against STIs. To help decrease the risk of an undesired pregnancy, medical providers should advise the person to have emergency contraception available.

Follow-Up

The main reason for follow up is to assess readiness to use a more effective method.

CYCLE BEADS

One unconventional method of contraception is counting the "safe days" which can be aided by use of cycle beads also known as "moon beads." Effective use of "safe days" requires maturity, organization, partner involvement and a regular menstrual cycle occurring every 26-32 days. Cycle Beads are a color-coded string of beads used to estimate fertility based on the days since menstruation. One study done in Bolivia, Peru, and the Philippines in females aged 18–39 years found that Cycle Beads were more than 95% effective at preventing pregnancy with correct use, and approximately 88% effective with typical use among the women who had cycle lengths of 26–32 days.[10]

2. HORMONAL METHODS OF CONTRACEPTION

Hormonal methods of contraception include combined hormonal contraception containing exogenous estrogen and progesterone (oral pills, transdermal patch, vaginal ring) and progesterone-only formulations (injection, oral pills, implants, and intra-uterine devices). Efficacy of pregnancy prevention is dependent on both the pharmacological properties and consistent, proper use. The variety of formulations offers the patient daily, weekly, monthly, quarterly, and 3-10 year protection against pregnancy.

What Providers Need to Know Before Initiating Any Hormonal Method

Providers can refer to the World Health Organization (WHO) Medical Eligibility Criteria for Contraception Use, 2009. It is a detailed document that gives the most up-to-date information on the safety of providing contraception to individuals with a variety of health problems. For each health condition, the risk/benefit of each method of contraception is assigned to one of four categories:

Category 1: no restriction
Category 2: the advantages outweigh the theoretical or proven risks
Category 3: the theoretical or proven risks outweigh the advantages
Category 4: an unacceptable health risk.[11]

While many contraindications to hormonal contraception are described throughout this document, it is important to remember that adolescents are usually a healthy population and will have no contraindications to contraceptive use. However, it is still important to take a thorough medical history before initiating a hormonal method.

Ruling out Pregnancy

Before starting any method of contraception the provider needs to be reasonably sure a client is not pregnant. If it is not feasible to do a urine pregnancy test, there is a WHO endorsed algorithm to help rule out pregnancy that includes the following questions:

1. Did you have a baby less than 6 months ago, are you fully or nearly fully breast-feeding, and have you had no menstrual period since then?
2. Have you abstained from sexual intercourse since your past menstrual period?
3. Have you had a baby in the past four weeks?
4. Did your last period start within the past seven days (or within the past 12 days if you are planning to use an IUD)?
5. Have you had a miscarriage or an abortion in the past 7 days?
6. Have you been using a reliable method of contraception consistently and correctly?

If the client answers yes to at least one of these questions and is free of signs of pregnancy, the provider can start the client on a method of contraception. If the client answers no to all of these questions, pregnancy can't be ruled out. The female should wait for her next period or have a pregnancy test before initiating contraception.[12]

When to Start

Quickstart, or immediate same day initiation of the hormonal contraceptive method, is recommended if pregnancy is reasonably ruled out.[13-16] Immediate initiation improves compliance and continuation rates in adolescent contraceptive use.[14,17]

Screenings

Laboratory intervention, breast and pelvic exams are not necessary when starting a hormonal contraceptive method due to low prevalence of disease in asymptomatic patients.[18,19] Blood pressure is recommended since women with severe hypertension or inadequately controlled hypertension should not use combined hormonal contraception.[20] Once hormonal contraception is initiated, blood pressure should be

periodically rechecked. Weight measurement is not required, but useful, for further monitoring and counseling.

It is important to assess the patients past medical history in order to ascertain the eligibility for use.[20]

Counseling for the Initiation of a Hormonal Method

To promote correct and consistent use, it is imperative to take ample time to counsel the adolescent about contraception. The pros and cons of all methods should be discussed. Visual aids should be used if available. Involving the adolescent in the decision-making process provides autonomy and empowerment and may increase adherence.

It is helpful to dispel myths about contraceptive use, describe the main side effects and assist the adolescent in choosing a method. To help assure adherence, the provider can help the adolescent anticipate potential problems and then, together, develop an action plan. Dispensing written or web-based resources can also be helpful.

It is important to emphasize the need to use condoms to prevent STIs and, for combined hormonal contraception and progestin only pills, if the method was started >5 days from onset of menses, condoms need to be used for one week to prevent pregnancy. If available, provision of Emergency Contraception is advisable in case the adolescent has trouble using the prescribed hormonal method correctly and hence is placed at increased risk of pregnancy.

Follow-Up

All users of hormonal contraception should be encouraged to return if any side effects are experienced. Otherwise, a 4-6 week follow up is suitable for an adolescent. If a hormonal method was Quickstarted, earlier follow up at 3-4 weeks is recommended to assess for pregnancy. At all follow up visits, the provider should evaluate the patient for minor and major side effects, method satisfaction, and changes in health status. Blood pressure should also be obtained. If the evaluation is adequate, the adolescent can be given a prescription for a six-month supply of self-administered methods, if available. Evidence suggests that providing a greater number of pill packs is associated with improved continuation rates.[21,22]

STI and HIV counseling should be done at every visit, and screening should be done if indicated.

METHODS:

A. COMBINED HORMONAL
B. PROGESTIN-ONLY

A. COMBINED HORMONAL CONTRACEPTION:
--COMBINED ORAL CONTRACEPTIVE PILLS
--ORTHO EVRA and NUVARING

Combined hormonal contraceptives are reversible methods that contain both progestin and estrogen. Within the first year of use, statistics from the United States suggest that combined oral contraceptives have a failure rate of 0.3% with perfect use

and 9% with typical use.[6] Protection against STIs is not achieved with hormonal contraception and thus concurrent latex or synthetic condom use must be encouraged.

In addition to pregnancy prevention, health benefits include: treatment of menstrual cycle disorders, hyperandrogenism, pelvic pain due to endrometriosis, improvement of anemia due to menorrhagia, and possibly protective against ovarian and endometrial cancer.[23] Studies also show that oral contraceptive methods can be used for treatment of acne.[23-25]

WHO Eligibility Criteria

Absolute contraindications that can affect initiation of a combined method include: multiple risk factors for arterial cardiovascular disease (smoking, diabetes, and hypertension), hypertension (systolic ≥160 mmHg or diastolic ≥100 mmHg), venous thromboembolism, known thrombogenic mutations, known ischemic heart disease, history of stroke, complicated valvular heart disease, systemic lupus erythematosus, migraine with aura at any age, breast cancer, cirrhosis, hepatocellular adenoma or malignant hepatoma.[20] Use during the early post partum period and during the first 6 months of breast-feeding is not suggested.[20]

Mechanism of Action

Combined hormonal contraception effectively prevents pregnancy by suppression of gonadotropin release, inhibition of follicular development and suppression of ovulation. Progestins also prevent sperm passage into the upper genital tract by increasing the viscosity of the cervical mucus, decreasing the activity of cilia in fallopian tube, and altering the endometrium such that implantation is prevented.[26]

Side Effects

The intake of exogenous hormones may have side effects that vary depending on route, dose, and type of hormone involved. Breast tenderness, headache, nausea, and vomiting are among the main minor side effects reported.[27] Providers can reassure patients that these minor symptoms will likely resolve within three to five months.[28] Additionally, irregular bleeding can occur and low dose estrogen formulations have higher rates of bleeding disruption.[29] Consistent and proper use improves this breakthrough bleeding between menses.[30] Despite adolescent concerns about weight gain, studies have shown no significant changes in weight.[31] The major side effects are extremely rare and include hypertension, stroke and venous thromboembolic events (VTE). VTEs can occur at any time during use, but for those on oral contraceptive pills, the risk is maximal during the first 12 months of use, particularly during the first 3 months.[32]. The OrthoEvra patch is associated with significantly higher risk for VTE at >12 months of use.[33] The relative risk of VTE for users on OrthoEvra compared to users of OCP's is unclear but early data suggest that the NuvaRing system may confer less thrombotic risk than oral formulations, but definitive data have not yet been reported.[32] The warning signs spell out the word **ACHES**:

Abdominal Pain: blood clots in the pelvis or liver, benign liver tumor or gallbladder disease, and pregnancy ectopic pregnancy.

Chest Pain: blood clots in the lung, heart attack, angina, or breast disease

Headaches: stroke, migraine, high blood pressure

Eye Problems: stroke, blurred vision or double vision, migraine headaches, blood clot in eyes.

Severe Leg Pain: deep vein thrombosis

The risk of a venous thromboembolic event (VTE) increases with increased estrogen dose and the type of progestin used in the method.[32] The risk of VTE in non-users who are not pregnant and not taking hormones is 1–5/10,000 woman-years. In oral contraception (OCP) users the risk is 3–9/10,000 woman-years and some data that has suggested that the use of drospirenone-containing OCP's is associated with a higher risk (10.22/10,000) than the use of other progestin-containing methods. However this overall risk is still very low and is much lower than the risk of a VTE during pregnancy (approximately 5–20/10,000 woman-years) and the postpartum period (40–65/10,000 woman-years).[34]

Drug Interactions

Drugs that can reduce the efficacy of combined hormonal contraception include Rifampin, St Johns wort, phenytoin, carbamazepine, barbiturates, primidone, and topiramate.[35,36]

COMBINED ORAL CONTRACEPTIVE PILLS

Low dose combined oral contraceptive pills with an estrogen component of less than or equal to 35mcg (a low dose pill) are preferred to minimize side effects. Any low dose oral contraceptive pill is acceptable for use.

Missed Pills

Daily use can be challenging for an adolescent and missed pills may decrease efficacy. It is imperative to discuss what to do if pills are missed. A dose is considered late if the pill is missed after 24 hours. The recommendations do not include placebo pills since no intervention is needed during that time. When a pill is missed anywhere in the packet, it must be taken immediately, even if it means taking two at the same time. Missing one day and doubling up the next day still protects against pregnancy. If two or more pills are missed consecutively, a condom should be used for 7 consecutive days to protect against pregnancy.

Extra Pills

If more than one pill is taken accidentally, there is no need for further intervention. The adolescent can continue with the next day's dose.

Advantages/Disadvantages

Oral contraception is an easily reversible method that is accessible, over-the-counter in some countries and of reasonable cost when compared to other forms of contraception. The pills have to be taken daily and this can be challenging for an adolescent. The side effects listed above can also pose a barrier for adolescent use.

ORTHO EVRA

The Ortho Evra transdermal contraceptive patch is a combined hormonal contraceptive method with the same risks, benefits, side effects and contraindications as

other combined hormonal methods.[37] The efficacy of the Ortho Evra patch is comparable to that of oral contraceptive methods.[38,39] The patient should be advised to apply one patch per week for 3 weeks then remove it during the fourth week for withdrawal bleeding. Application sites include the outer upper arm, lower abdomen, upper outer thigh, and upper buttock.

Advantages/Disadvantages

The main advantage is its weekly regimen. It also works well for those who don't like to swallow pills or place an object in their vagina. There are no constraints on activities because the patch adheres well and can withstand, heat, humidity and exercise.[40,41] Unfortunately, the possibility of adverse skin reactions and visibility may be seen as negative factor. Half of patch users experience transient skin reactions at the site of application such as irritation, rash, or redness. These reactions have led to discontinuation in less than 3% of the time.[37]

Ortho Evra is not labeled for women weighing greater than 198 pounds (90kg), based on studies that have reported decreased efficacy in pregnancy prevention However, this evidence is limited, and weight should not be a contraindication to use in women over 198 pounds (90kg).[42] Per the manufacturer, Janssen Pharmaceuticals, the patch exposes a female to about 60% more estrogen than a typical birth control pill containing 35 micrograms of estrogen; the clinical significance of this difference is unclear. [32]

NUVARING

The NuvaRing is a combined hormonal vaginal contraceptive ring that, of all combined methods, releases the lowest dose of estrogen per day. It has the same risks, benefits, side effects and contraindications as other combined hormonal methods.

Advantages/Disadvantages

The ring is easy to insert, remove, and comfortable to wear.[43] The ring is placed in the vagina for 3 consecutive weeks and then removed for one week for a withdrawal bleed. Inhibition of ovulation is maintained for at least 35 days, which provides contraceptive effects if the patient forgets to remove after 3 weeks, and offers the opportunity to remove the ring on the same day each month as an easy reminder.[44]

Other advantages include: safety in women with latex allergies, no weight gain, and no effect on bone density.[43,45,46]

Studies have demonstrated a reduced incidence of breakthrough bleeding as compared to oral contraception.[47] Compared to other combined hormonal methods some studies suggest that compliance is higher.[43]

The main disadvantages include: the possibility of expulsion in 4-20% of users, and local adverse effects such as leukorrhea and vaginitis.[43]

B. PROGESTIN-ONLY CONTRACEPTIVE METHODS:
--DEPO-PROVERA (MEDROXYPROGESTERONE)
--PROGESTIN-ONLY PILLS

WHO Eligibility Criteria

Progestin-only contraception offers an option for those who have a contraindication to the estrogen component of combined hormonal contraception. Progestins can generally be used by any woman, including those who are lactating, postpartum, smokers greater than 35 years of age, and women who suffer from migraines with aura. Due to lack of evidence on the effect on breast cancer, progestins are contraindicated in women with current diagnoses per WHO medical eligibility criteria.[20]

Side Effects

Menstrual pattern disturbance include spotting, breakthrough bleeding, and missed periods which have been reported in approximately half of adolescent users.[48] Headache, nausea, breast tenderness, depression, and decreased libido have been reported as side effects as well.

DEPO-PROVERA (MEDROXYPROGESTERONE)

Depo-Provera is a highly effective progestin-only injectable contraception. This long-acting, reversible contraception is administered by a medical provider every three months and therefore, due to the infrequent administration, is an efficient method for adolescents.[49,50] A repeat injection may be given early. Quickstarting is advisable as long as there is reasonable certainty that the patient is not pregnant at the time of the visit.[51] To protect against pregnancy, condoms should be used for the first 2 weeks after administration.

In 2004 the US Food and Drug Administration issued a warning indicating that Depo-Provera may cause decreased bone density. Since then, studies have shown that bone density is recovered after discontinuation.[52]

Efficacy

It is estimated that in the United States, 6% women will become pregnant in the first year of typical use and 0.2% will do so with perfect use.[6]

Advantages/Disadvantages

Depo-Provera can be used in women who are not able to use an estrogen-based contraception. This method is reversible, although it may take up to 18 months for cyclic menses to resume. The method is administered only four times per year and causes amenorrhea, which may be desired. It is also forgiving, with a grace period of four weeks, which can be helpful in low resource settings with limited ability to perform pregnancy tests.[53]

Menstrual cycles disturbances, weight gain, delayed in fertility, and inability to immediately discontinue are several disadvantages of this method.[54,55] Other adverse effects include headache, nervousness, dizziness, and pain at site of insertion.[56]

PROGESTIN-ONLY PILLS

Progestin-only pills are a good option for adolescents with conditions in which estrogen is contraindicated and who refuse long acting methods. The most common

formulations available are norethindrone and desogestrel. The main contraceptive effect of norethindrone is thickening of cervical mucus and of desogestrel is suppression of ovulation.[57,58] Diligence in same-time daily intake is necessary for maximum efficacy. It is imperative to know which the patient is using in order to understand the recommendations for missed pills and back up. For desogestrel, delayed doses do not affect contraceptive efficacy for up to 12 hours. For norethindrone, which has a rapid distribution and elimination time, a condom must be used for two days if the dose is delayed for more than three hours.[57,58]

Efficacy

Similar to combined contraceptive pills, in the United States, within the first year of use, there is a failure rate of 0.3% with perfect use and 9% with typical use. [6]

Advantages/Disadvantages

Progestin-only pills are also easily reversible and safe in most medical conditions, including those in which estrogen is contraindicated. Downsides include the need to take the pill diligently at the same time every day, and the common menstrual irregularities among users.

3. LONG ACTING REVERSIBLE CONTRCEPTION (LARC)

METHODS:
INTRAUTERINE DEVICE (IUD)
HORMONAL IMPLANT

WHO Eligibility Criteria

Who is eligible for placement of an IUD or a Sub-dermal contractive implant? The World Health Organization's (WHO) medical eligibility criteria for IUD use: category 2 (advantages outweigh risks) for adolescents from menarche to < 20 years, category 1 for females > 20 years (no restrictions). IUDs can be used in nulliparous females.[11] The WHO medical eligibility for the Sub-Dermal contractive implant: category 1 for all healthy females after menarche.

An individual with certain conditions including breast cancer, blood clots, serious liver disease, lupus, bleeding between periods, genital cancer, or presently breast feeding may not be a candidate for placement of an IUD or implant.[11] If the adolescent has a known medical condition, it is prudent to refer to the WHO medical eligibility use for contraception to assess the risk profile of the various available contraceptive methods.

Advantages/Disadvantages of LARC

The main advantage of a long acting reversible contraceptive (LARC) method is that they are the most effective method to prevent pregnancy with >99% efficacy. LARC methods are excellent options for adolescents and should be offered as a first line choice.[59]

Although the upfront cost of a LARC method may be more expensive compared with a short acting birth control method, over time they are more cost-effective.

There are two types of IUDs: the progesterone hormonal levonorgestrel IUD (LNG-IUD) and the copper IUD (Cu-IUD). The hormonal IUD effectively prevents pregnancy for up to five years. The mechanism of action includes prevention of fertilization, thickening of the cervical mucus, and endometrial changes that prevent implantation. In some females ovulation may be suppresed.[60] Positive effects include improvement of dysmenorrhea and menorrhagia (excessive vaginal bleeding).[61] In most women, menstrual bleeding is substantially reduced, and many will become amenorrheic one year after insertion. The Cu-IUD lasts up to ten years and has no hormones. The mechanisms of action include induction of an endometrial environment incapable of supporting a pregnancy, and toxicity to sperm.[62] Disadvantages of the Cu-IUD include possible heavier periods increasing the risk of anemia and dysmenorrhea.[60] IUDs may help prevent the acquisition of endometrial cancer and cervical cancer. It is thought that they protect against endometrial cancer by induction of an inflammatory response; hormonal IUDs also prevent endometrial proliferation. Cervical cancer may be prevented by the increased cellular immunity initiated by the IUD.[60]

Contraceptive implants contain the progesterone levonorgestrel (LNG) or etonogestrel (ETG). They are inserted under the skin in a client's upper arm and can be felt but not seen. Contraceptive implants steadily release progesterone which suppresses ovulation and also change the cervical mucus and alter the endometrial lining.[63] The implant is effective for 3- 5 years depending on the type used. Often there is improved dysmenorrhea but, because of a high systemic dose of progesterone, implant users may experience more side effects, including acne, headaches, weight gain, and irregular bleeding.[64] Some providers have suggested non-steroidal anti-inflammatory agents (NSAIDs) or low- dose oral contraceptives to control bleeding.[60]

Pre-IUD Insertion

Pre- LGN-IUD and Cu-IUD insertion the provider needs to reasonably rule out pregnancy and the possibility of a sexually transmitted disease (STD). Once this is done, the IUD can be inserted on the day of the visit.

Morrison, C. et al published an algorithm (Table 1) to assess the risk of having a sexually transmitted disease. Women categorized as low risk by the algorithm can be referred for IUD insertion, while women categorized at high risk should not receive an IUD without further testing or treatment.[65]

Another method published by USAID and Family Health International asks the following questions to assess for medical eligibility for IUD placement and, if answers to all the questions are no, a pelvic exam can then be performed. [66]

1. Do you have bleeding between menstrual periods that is unusual for you, or bleeding after intercourse (sex)?

2. Have you been told that you have any type of cancer in your genital organs, trophoblastic disease, or pelvic tuberculosis?

3. Have you ever been told that you have a rheumatic disease such as lupus?

4. Within the last 3 months:

-Have you had more than one sexual partner?

-Do you think your partner has had another sexual partner?

-Have you been told you have an STI?

-Has your partner been told that he has an STI, or do you know if he has had any symptoms – for example, penile discharge?

5. Are you HIV-positive and have you developed AIDS?

Questions to ask during the pelvic exam:

1. Is there any type of ulcer on the vulva, vagina, or cervix?

2. Does the client feel pain in her lower abdomen when you move the cervix?

3. Is there adnexa tenderness?

4. Is there purulent cervical discharge?

5. Does the cervix bleed easily when touched?

6. Is there an anatomical abnormality of the uterine cavity that will not allow appropriate IUD insertion?

If the answer to all the above questions are NO, then an IUD can safely be inserted.[66]

Post-IUD Insertion

After insertion of the hormonal IUD the client should be instructed to use a back-up method for one week after insertion unless the device is inserted within five days of onset of a period, after an abortion or childbirth, or if the client is already on birth control.[67] If there has been unprotected sex within the past five days, emergency contraception should be given, and a bridge method such as oral contraception should be prescribed. The Cu-IUD can be inserted because it can be used as used as emergency contraceptive.[68]

IUD follow- up is recommended for between three and six weeks after insertion to exclude infection, uterine perforation or IUD expulsion, although all are very uncommon.

Pre-Implant Insertion

The implant can be inserted on the same day of the visit as long as pregnancy can be reasonably ruled out. There is no need for a pelvic exam before initiating the Implant.

Post Implant Insertion

After insertion of the implant the client should be given the same instructions as outlined above for the hormonal IUD.

Post-insertion follow up for the contraceptive implant is not indicated unless the site is red or inflamed, suggesting signs of infection.

Possible Concerns Related to IUD Use

1. Pelvic Inflammatory Disease

Results from the World Health Organization's IUD clinical trial data (nearly 23,000 IUD insertions) showed that pelvic inflammatory disease (PID):

1. Occurred in 1.6 cases/1,000 women years

2. Was 6 times higher in the first 20 days post insertions but **STILL LOW** and after 20 days the risk and was comparable to the risk in females without an IUD

3. Was related to insertion process and background risk of acquiring a sexually transmitted disease (highest risk in Africa and lowest risk in China),

4. Was inversely related to age (highest in ages 15-24 years).[69]

Prophylactic antibiotics are generally not recommended before IUD insertion; there is a low risk of IUD associated infection, with or without antibiotic prophylaxis.[70] In settings of high prevalence of cervical gonococcal and chlamydial infections and limited STD screening, prophylaxis may be considered. It is useful to counsel clients, especially those with HIV/AIDS, to watch for symptoms of PID, especially during the first month.[71]

There is usually no need for removal of the IUD if the client has PID and wishes to continue its use; treat the PID using appropriate antibiotics. Among IUD users treated for PID, there was no difference in clinical course if the IUD was removed or left in place.[11]

2. Sexually Transmitted Diseases

Thirteen cross-sectional studies showed no significant association between IUD use and gonorrhea or chlamydia infection.[72] One study did show that in a high prevalence population (14.2%) in Costa Rica, current IUD users had a two-fold increase in chlamydia as compared to hormonal contraceptive or condom users.[73] A pooled analysis of 26 epidemiological studies concluded that the IUD does not affect HPV acquisition, and is protective against the likelihood of HPV progression to cervical cancer.[74]

3. Acquisition and transmission of HIV

No restrictions should be placed on the use of any hormonal contraceptive method for women living with HIV or at high risk of acquiring HIV.[75] The balance of evidence suggests that implants do not increase the risk of HIV acquisition, and there is no current evidence suggesting that the Cu-IUD increases the risk of HIV acquisition.[11] Both the LNG-IUD and the Cu-IUD were found to have no association with increased risk of transmission of HIV to sexual partners.[76-78]

Rapid Repeat Pregnancy (RRP)

Rapid Repeat Pregnancy (RRP) is defined as a pregnancy within two years of a previous pregnancy. In the US it occurs in approximately 35% of recently pregnant teens. Adolescents who do not initiate LARC have up to a 35-time increase risk of RRP compared to their peers using LARC methods. RRP in adolescents is associated with and increased maternal and child mortality as well as economic deprivation. These risks decrease when LARC methods are initiated early within the post-partum period (and after an abortion).[79] According to the 2011 UDHS, few adolescents are using LARCS, and among those aged 15-19 years, 0% had an IUD and 0.2% had an implant.

Adolescents Like LARCs

The Contraceptive CHOICE Project is a prospective cohort study of providing reversible contraception at no cost to 10,000 women aged 14–45 years in the St. Louis area in the United States in order to evaluate method satisfaction and continuation and to reduce unintended pregnancies in the region. The majority of 14-17 year olds (69%) and 18-20 year olds (61%) chose LARC methods.[80] For females 14-19 years, continuation rates at 12 months were 81% for those who chose LARC methods and 44% for those

who chose for non-LARC methods. At 12 months 75% were satisfied with LARC methods and 42% were satisfied with non-LARC methods.[81]

In 2008, a 14-month study in Zambia trained 18 midwives to provide LARC services on the day of service. This program led to an increased uptake of IUDs and implants. According to the Zambia Demographic Health Survey data in 2007 the use of LARCS for 15-24 year olds at the time of the survey was 0%. After implementation of the program, 3.8% and 8.1% of 15-19 year olds and 19.7% and 34.1% of 20-24 year olds chose IUDs and implants respectively.[82]

Global barriers to uptake can also be provider-dependent. Specifically, lack of provider training, maintenance of consistent supply, user knowledge, provider bias, cost, and poor access to reproductive health care clinics.[83]

Increasing Uptake

One study in Malawi, Tanzania, Ethiopia and Rwanda showed that by increasing access over a five to six year period, there was increased use of the implant in married women ages 15–49. This was the result of a strong national policy commitment, an increase in provider training, supply, and strong client demand as a result of increased knowledge via communication programs.[84]

4. EMERGENCY CONTRACEPTION

Emergency contraception (EC) can be used within five days (120 hours) after unprotected intercourse or incorrect use of a method. The most common available methods include, levonorgestrel in a one-dose formulation, the Yuzpe method (combined 200mcg of ethinyl estradiol with 1 gram of levonorgestrel) and the Cu-IUD.

Mechanism of Action

The primary mechanism of action of hormone-based emergency contraception is inhibition of ovulation.[85] The Cu-IUD works primarily by preventing fertilization.[86]

Efficacy

The Cu-IUD has been found to be the most effective method of EC and a successful method of contraception. The failure rate is estimated to be from 0.04-0.19 percent.[87] The failure rate for the antiprogestins is 1.4% and 2-3% for the one dose of levonorgestrel.[87,88]

Counseling

Providers need to let the patient know that EC is not intended as a primary method of contraception. Providing EC in advance if possible is helpful because it is most effective if taken immediately after unprotected sex. If resources do not allow for advance provision, it is helpful for the patient to know where she can get EC. If EC is uses it is advisable to Quickstart a chosen method. The patient must then use a condom for the first seven days if levonorgestrel, Yuzpe, or the Cu-IUD are used.

Follow-Up

After taking EC, the patient should return for a follow up visit in three weeks, and if she has not had a withdrawal bleed she should get a pregnancy test. If she has Quickstarted a method of contraception, satisfaction should be assessed.

5. BARRIERS TO CONTRACETIVE USE

Studies in Sub-Saharan Africa show that underdeveloped countries share similarities in limitations of adolescent contraceptive use. Barriers to use include lack of knowledge and access as well as concerns about side effects and infertility.[89] In order to achieve consistent proper use of contraception in adolescents these barriers must be addressed.

Improving Adolescent Use of Contraceptive Methods

Increasing accessibility to friendly adolescent reproductive health services is imperative and likely the most successful way of increasing initiation of contraception in adolescents. It is important to provide adolescents with confidential, age-specific, comprehensive care. In the United States, school-based health centers that provide confidential reproductive health care are well received and used by adolescents.[90] If there is no access to school based services, adolescent providers should have a list of available resources so appropriate referrals can be made.

Providers who care for adolescents can advocate for improved adolescent services. A study in Uganda demonstrated that providers believe factors affecting compliance include lack of good adolescent services and a lack of organization and training.[91] It is important for providers to know the laws of their community related to confidential care and minor's rights and then to disseminate this information.

Text messages have posed a good strategy to improve missed appointments for reproductive health care in areas where it is available.[92]

Male involvement

Deciding on a method of birth control can be an arduous and overwhelming task for any female adolescent. Male adolescents and men report wanting to be asked about female birth control methods if the conversation is initiated by the medical provider.[93] A study in Uganda reported that the overall limited awareness of males regarding their role in reproductive health deterred their involvement. [94] Creating community based reproductive health campaigns that target men could help address this problem.

As providers, it is important to let the adolescent female know that partners are always welcome and to recognize that partner involvement in contraception choice might lead to increased uptake and adherence.

6. FOLKLORE

Throughout history birth control methods have ranged from ritualistic and mythical to the newer practical and much more effective methods. There are hundreds of antifertility plants throughout the world that have historically been used as

contraception. The information on these plants can be traced to a number of sources. Books have been written on Indian, Chinese, and other medical systems that refer to plants used for contraception. In almost all countries folklore exists regarding the use of herbs in birth control. In some cases the practice is passed down through families for generations.[95]

In Ancient Greece, it was believed that the woman's uterus was a separate entity from her body. Thus, if a woman desired pregnancy, a product providing a sweet odor was placed in the vagina to attract the womb to the sperm. On the other hand, if the woman did not desire a child, a foul smelling odor was pushed into the vagina, causing the uterus to move away from the sperm.[96] This concept led to the idea of a 'wandering womb' that could wander far enough through the woman's body and enter her brain, causing hysteria.

In Ancient Rome, women wore amulets and necklaces that helped to control their fertility. There were also notions that spitting into a frog's mouth three times after intercourse would prevent pregnancy, or wearing a leather pouch filled with a cat's liver on the left foot also blocked a woman's ability to conceive.[97]

Soranus, a Greek gynecologist during 200 A.D. suggested that women should avoid intercourse during their menses because this was the time women were most fertile. Additionally, he recommended a woman hold her breath during intercourse, followed by sneezing, and jumping up and down to prevent the ejaculate from entering her womb.[97]

Some early writers, including Hippocrates and Dioscorides, described mysterious potions and crude spermicides to aid in temporary infertility. In some of these early writings, it was particularly important for the woman to make violent movements with her body after intercourse to prevent the male ejaculation from reaching her uterus.[96]

In the 10th century in Persia, women were told to jump backwards seven or nine times after intercourse to dislodge any procreation that resulted. It was believed that the numbers seven and nine held magical qualities and those particular numbers would either aid in preventing pregnancy or cause the termination of an early pregnancy.[96]

7. Conclusion

Abstinence is the safest way to prevent unwanted pregnancies and STIs. However, adolescents often choose to have sex and are at high risk of becoming pregnant and/or contracting an STI. Providers can help keep adolescents safe from unwanted pregnancy and STIs by helping adolescents choose a contraceptive method and learn to properly use a condom. Becoming familiar and comfortable with prescribing contraception is ideal, but if this is not possible, steering the adolescent toward available community resources for friendly reproductive health care services is essential. The ultimate goal is to keep all adolescents healthy and free of unwanted pregnancies, and to allow each and every one of them to maximize their potential, fulfill their dreams and grow into productive adults.

TABLE 1-ALGORITHM

YES/NO

1. Is the client less than 25 years old?	1	0
2. Is she currently living apart from her husband or partner?	1	0
3. During the last year, has she had bleeding between periods or bleeding or spotting within 24 hours after sex?	1	0
4. Is her school education less than secondary level?	1	0

5. How many different sexual partners has she had during the last 3 months?

#Partners	Frequency Condom Use	
None		0
One or more Partners	No condom use	1
	Some condom use	1
	Always condom use	0

Action is based on score. (Y=1, N=0)	SCORE
Low Cervical Infection Population (<10%)	0-2
High Cervical Infection Population (=10%)	0

Counsel/Refer for IUD Insertion without reservation

Low Cervical Infection Population (<10%)	3+
High Cervical Infection Population (=10%)	1+

Consider presumptive treatment for chlamydia/gonorrhea and counsel about using another contraceptive method.

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