FROM RESEARCH TO PRACTICE

Providing LARCs to Young Women

Effectiveness, Acceptability, and Efforts to Increase Use

Long-acting reversible contraceptive (LARC) methods include intrauterine devices (IUDs) and contraceptive implants. These methods are safe, effective, and reversible, require little to no maintenance, are cost-effective over time, and have much better compliance rates than other hormonal methods. For these reasons, they are ideal for many women, especially young women who wish to delay or avoid pregnancy for at least three years. Yet fewer than nine percent of women in the United States who use contraception use an IUD and less than one percent use contraceptive implants. However, communities around the country are developing new strategies and creative initiatives to improve access to these methods. Youth-serving professionals, educators, and health care providers can play an important role in helping to dispel myths among youth people so that they can make informed decisions about contraception and choose the best option for them.

AVAILABLE LONG-ACTING REVERSIBLE CONTRACEPTIVE METHODS

There are two types of LARC methods available in the United States: intrauterine devices (IUDs) and contraceptive implants.

IUDS

IUDs are flexible plastic devices that are inserted into the uterus to prevent pregnancy. They are sometimes referred to as intrauterine contraception (IUC). All IUDs prevent pregnancy by interfering with the movement of sperm toward eggs keeping the two from meeting. They may also change the lining of the uterus preventing implantation of a fertilized egg (though this theory has not been proven).[1]

There are two types of IUDs available in the United States and they work slightly differently. One of the IUDs available, sold under the brand name Mirena, contains hormones. Mirena releases a low amount of the progestin levonorgestrel continuously over a five-year period. Mirena works like other IUDs, interfering with the movement of the sperm toward the eggs. In some women the progestin in Mirena may prevent ovulation and thicken cervical mucus to block sperm from entering the uterus. Mirena is effective for up to five years.

The other available IUD does not contain any hormones. ParaGard (also called the Copper T 380A) is made of flexible plastic and wrapped in copper. ParaGard releases a tiny amount of copper over a 10-year period. It is thought that the copper inhibits sperm movement and that it causes white blood cells to produce a substance that is toxic to sperm.[1] ParaGard is effective for up to ten years.

IUDs must be inserted and removed by a trained health care provider.

CONTRACEPTIVE IMPLANTS

Another LARC method is the contraceptive implant. Implants consist of a thin rod made from flexible plastic that is inserted just under the skin on a woman's upper arm. The implant releases a steady amount of the hormone etonogestrel in order to prevent pregnancy for up to three years. Similar to other hormonal methods, implants work by suppressing ovulation and thickening cervical mucus to prevent sperm from traveling toward the egg.[2]

Today, implants are sold under the brand names Implanon and Nexplanon. Implants must be inserted and removed by trained professionals.

LARCS ARE HIGHLY EFFECTIVE

LARC methods are highly effective at preventing pregnancy. Both IUDs and implants are over 99 percent effective meaning that out of 100 couples who rely on each of these methods, fewer than 1 will experience an unintended pregnancy within a year. Specifically, in clinical trials Mirena was found to have a failure rate of 0.1 percent while ParaGard had a failure rate ranging from between 0.6-1.0 percent.[3] Implanon had a failure rate of .05 percent.[3] One of the reasons that these methods are so effective is that there is little possibility of user error. As long the

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"LARCs are over 99 percent effective at preventing pregnancy and can be used by almost all women, including adolescents and those who have never had children."

methods are inserted properly, the user does not have to take any other action for three, five, or 10 years but will remain protected against pregnancy.

It is important to note that IUDs and implants do not protect against sexually transmitted infections (STIs).

LARCS ARE COST-EFFECTIVE

Both LARC methods are cost effective when used for the entire allowable duration. Implanon or Nexplanon range in cost from $400 to $800 for insertion and $100 to $300 for removal and include three years of protection from unintended pregnancy. The cost of IUDs range from $500 to $1,000 upfront for the device and insertion (removal may incur additional costs); they prevent pregnancy for five to ten years. For both methods, these fees are often covered by insurance.[4] Some women may also qualify for financial assistance with IUDs or contraceptive implants through Medicaid or other state programs.

USE OF LONG-ACTING REVERSIBLE CONTRACEPTIVE METHODS

LARCs are growing in popularity but use remains comparatively low. Under 9 percent of women (and under 5 percent of young women) who are using contraceptives use LARCs.

LARC methods have been available for many years but are not among the most popular methods among U.S. women today. There are a number of sources of data that provide information on who is using these methods.

National Survey of Family Growth Data

According to analysis of the 2006-2010 National Survey of Family Growth, the popularity of LARCs is growing. As of 2009, 8.5% of women ages 15-44 who are using contraceptives use long-acting reversible methods (the implant and the IUD). In 2002, this proportion was 2.4 percent.[5]

In 2009, only 0.8 percent of women ages 15–44 reported currently using either hormonal implants.[5] This is similar to 2002 when 0.8 percent of women used one of these methods.[3]

Use of LARCs among young women remains lower than among all women. In 2009, only 4.5 percent of sexually active females ages 15–19 reported using either an IUD or a contraceptive implant at last intercourse.[5]

Title X Family Planning Clinic Data

Another source of data on contraceptive choice comes from the reports of Title X family planning health centers. In 2010, six percent of female family planning users who reported using a method of contraception reported using the IUD compared to six percent in 2009, five percent in 2008, four percent in 2007, three percent in 2006, two percent in each year 2001–2005, and just one percent in 1999. In 2010, one percent of female family planning users who reported using a method of contraception reported using a contraceptive implant; this was the same as in 2009 and 1999. Between 2001 and 2008, however, fewer than 0.5 percent of female family planning users who reported using a method of contraception used this method.[6] This is not surprising as the original implant, Norplant, was taken off the market in 2002 and the new generation was not approved by the FDA until 2006.

In 2010, hormonal implants were equally popular (one percent) with women of all age groups but IUDs were more popular among older women. Only one percent of female family planning users ages 15–17 reported using IUDs, compared to two percent of those 18–19, five percent of those 20–24, seven percent of those 25–29, eight percent of those 30–34, and seven percent of those 40–44.[7]

Worldwide Data

IUDs are more popular in other parts of the world including Europe, Asia, and Africa. For example, in 2006, 27 percent of women in Norway used an IUD, as did 21 percent in Sweden, 17 percent in France, 11 percent in the United Kingdom, and 10 percent in Germany.[8] Similarly, 16 percent of women in Asia used an IUD in 2005 as did 14 percent in the Near East and North Africa, and eight percent in Latin American and the Caribbean. Most IUD users (60 percent) are in China where 36 percent of women use an IUD.[9]

HISTORY OF LONG-ACTING REVERSIBLE CONTRACEPTIVE METHODS

IUDs and implants have been available for many years but both have had a complicated history which has led to controversy and negative public opinion.

IUDs

Modern IUDs were first introduced in the United States for contraception in 1960s. By the 1970s, there were over 17 models in development by 15 different companies. One model, the Dalkon Shield, had serious design flaws which led to an increase in Pelvic Inflammatory Disease (PID) in users causing scarring in the uterus and fallopian tubes and subsequently leading to increased infertility. The Dalkon Shield also had a higher failure rate than expected and women who became pregnant while using it risked spontaneous septic abortions (miscarriages followed by infection). Eighteen deaths were attributed to the Dalkon Shield and more than 400,000 lawsuits were brought against the manufacturer.

Though the design flaws were unique to the Dalkon Shield, public opinion of all IUDs soured and by 1986 there was only one model of IUD on the market in the United States and few women were using it.

Today there are two IUDs on the market in the United States. ParaGard, the copper IUD, was originally approved for use in 1986 but did not gain popularity until the early 2000s when a new company began to market it and train physicians to insert it. Mirena, the hormonal IUD, was approved for sale by the FDA in 2000 but the company that manufactured it initially only sought permission for use in women who had already had children.[10]

Public opinion of IUDs has been improving in recent years thanks, in part, to a concerted effort by public health professionals including the American College of Obstetricians and Gynecologists (ACOG) and the Centers for Disease Control and Prevention (CDC) to increase the usage of this and other long-acting methods especially among younger women.[11]

Implants

Implants were developed in the early 1980s and first approved by the FDA in 1990 under the brand name Norplant which consisted of six rods implanted in the inside of a woman's upper arm and lasted for five years. Though pregnancy rates were very low—over seven years of use fewer than one percent of women became pregnant—Norplant was taken off the market in 2002 because of limitations on component supplies as well as difficulties with the removal process which negatively impacted public opinion of the product.[12]

Norplant was also subject to a fair share of controversy in the United States as some states coerced women, particularly women on welfare, low-income women, and women of color, into using this method. In some cases, the state would pay for insertion but not removal and coerce women into keeping Norplant in for the full five years. In other instances women convicted of drug abuse or child abuse were asked to choose between having the device implanted or going to jail.[13]

Today there is a new generation of implants. The FDA approved Implanon in 2006. Implanon consists of just one rod which makes it less obtrusive and ensures that insertion and removal are much easier. In trials in the United States and Europe, for example, the average insertion time for Implanon was one minute and removal time was three minutes. In contrast, Norplant required up to 10 minutes to insert and one hour to remove.[13]

The company that makes Implanon has since developed Nexplanon which is even easier to insert and remove. Nexplanon also has barium which makes the rod detectable by X-ray in cases of deep-insertion.[14] Implanon remains safe and will continue to be used in the United States until supplies run out at which point it will be replaced by Nexplanon.

LARC USE IN ADOLESCENTS AND YOUNG WOMEN

In recent years, ACOG has released numerous opinions supporting the use of IUDs in a wide range of women. In 2007, it suggested that LARCs "should be considered as first-line choices" for teenagers. Specifically, the opinion explained: "Because adolescents contribute disproportionately to the epidemic of unintended pregnancy in this country, top tier methods of contraception, including IUDs and implants, should be considered as first-line choices for both nulliparous and parous adolescents. After thorough counseling regarding contraceptive options, health care providers should strongly encourage young women who are appropriate candidates to use this method."[15]

In 2011, ACOG revised its official practice guidelines on LARCs, including implants and IUDs. After reviewing the latest available research, the guidelines conclude that,

"The complicated history of LARCs may be a barrier to more widespread adoption."

"Adolescents who are sexually active and at high risk of unintended pregnancy should be encouraged to consider LARCs as a contraceptive option."

Both the American College of Obstetricians and Gynecologists (ACOG) and the World Health Organization (WHO) support the use of LARCs for women of all ages.

"Nulliparous women and adolescents can be offered LARC methods, including IUDs."[16] These guidelines represent the best practices in obstetrics and gynecology and strongly influence what health care providers recommend to patients.

In 2012, ACOG revised its practice guidelines on LARCs, including implants and IUDs. The new guidelines advise that adolescents who are sexually active and at high risk of unintended pregnancy should be encouraged to consider LARCs as a contraceptive option.[17]

The World Health Organization (WHO) also supports the use of LARCs for women of all ages. In its Family Planning Handbook for Providers, WHO says that nearly all women can use implants safely and effectively including women who have or have not had children, are not married, are of any age including adolescents and women over 40. The Handbook uses the same language for copper IUDs, states that hormonal IUDs are safe for nearly all women, and notes that there is no minimum age for IUD use.[18]

These opinions are echoed in an editorial in the Association for Reproductive Health Professional's (ARHP's) Contraceptive Journal. The authors, J. Joseph Speidel, Cynthia C. Harper, and Wayne C. Shields, write: "Unfortunately, outdated perceptions about appropriate patient candidates for LARC among health care providers continue to negatively impact their use. An emerging body of research has disproved a number of contraindications to IUC use. Specifically, women of any age or parity and those who are postpartum or post first or second trimester abortion are eligible for IUC. The benefits of IUC also outweigh the risks of a wide variety of medical conditions that might contraindicate the use of combined hormonal contraceptives."[19]

EFFORTS TO INCREASE LARC USE IN YOUNG WOMEN

In the last few years, public health professionals around the country have been working to increase knowledge and use of LARCs among young women. An extensive evaluation of one program, the Contraceptive CHOICE Project, shows promising results.

Contraceptive CHOICE Project – Saint Louis, Missouri

The Contraceptive CHOICE Project is being conducted by researchers at Washington University in Saint Louis. The goal of the project is to remove financial barriers to the most effective long-acting reversible methods including IUDs and implants. The project aims to provide free contraception for enough women in the St. Louis region to make an impact on teen pregnancy and repeat abortion procedures.

Researchers hypothesized that if they increase rates of IUD use in health clinics in the Saint Louis region from less than two percent to six percent or more, increase rates of post-abortion IUD use from less than one percent to 10 percent or more, and increase use of implants to three percent or more, teen pregnancy rates in the area will decline by 10 percent and repeat abortions among women of all ages will also decline by 10 percent.[22]

They began recruiting women ages 14-45 in 2007 and by September 2011 had closed the study having enrolled 9,256 women. Women enrolled in the study had to have primary residence in the Saint Louis area, be sexually active with a male partner (or planning to soon be), not want to become pregnant in the next 12 months, and be willing to try a new contraceptive method. Participating women receive three years of contraceptive services for free.[20]

The mean age of women enrolled in the project is 25, five percent of participants were between 14 and 17 at enrollment, 22 percent were between 18 and 20, and just under 40 percent were between 21 and 25. About half of the women (48 percent) were nulliparous but two-thirds (66 percent) had experienced an unintended pregnancy with 21 percent reporting three or more unintended pregnancies. Forty percent of the women had a history of abortion and 39 percent had a history of STIs.[21]

One of the primary objectives of the project is to increase the acceptance and use of LARCs among women of childbearing age as well as to measure the satisfaction and

continuation of use among participants. Women enrolled in the study receive contraceptive counseling to help them choose a method. Counseling includes a "standardized script regarding the effectiveness of LARC methods, participants are presented evidence-based information about safety, effectiveness and risk and benefits of all reversible contraceptive methods."[22]

In a preliminary study of 5,086 participants, 70 percent chose a LARC method. Of those, 47 percent chose Mirena, 11 percent ParaGard, and 12 percent Implanon. Among participants 14–17, 69 percent chose a LARC method as did 61 percent of participants ages 18–20. Researchers suggest that when given adequate information and financial assistance to overcome the price of LARCs, these methods are acceptable to young people.[23]

Researchers working with the CHOICE project have also found that the satisfaction and continuation rates among LARC users are higher than that of women using other methods. Specifically at 12 months, 87.5 percent of women who chose Mirena were still using it as were 84.1 percent of those who chose the copper IUD, and 83.3 who chose the implant. In comparison, only 56.2 percent who chose the shot, 55 percent of those who chose the pill, 49.5 percent of those who chose the patch, and 54.2 percent of those who chose the contraceptive ring were still using their chosen method. Overall, 86 percent of women who chose any LARC method were still using it at 12 months compared to 54.7 percent of non-LARC users. Women using LARCs reported being more satisfied with their method than those using non-LARC methods. Moreover, at the one year mark, pill, ring, and patch users had unintended pregnancy rates more than 16 percent higher than LARC users.[23]

Finally, in a recent evaluation of the project, researchers found that participants using oral contraceptive pills, a transdermal patch, or a vaginal ring had a risk of contraceptive failure that was 20 times as high as the risk among those using long-acting reversible contraception. Participants under 21 years who used pills, patch, or ring had a higher risk of failure than older women who used these methods. For this reason researchers stressed the potential benefits of offering LARCs to sexually active adolescents.[24]

The CHOICE Project is ongoing and researchers believe that it can impact public health outcomes for individuals and communities by reducing unintended pregnancy and the subsequent costs involved. They further believe the project can serve as a model for increasing use of LARC methods in other communities.

RESOURCES FOR PROFESSIONALS

There is a great deal of information available for providers, educators, counselors, and other professionals who are helping young women choose the birth control method that is best for them. This section provides a list of some resources where professionals can find basic information, guidance, and facts.

Guidance for Professionals and Providers

Contraceptive Technology, 20th Edition. This is largely considered the reference book for health care providers who provide contraception and counsel women about their birth control options. It includes detailed chapters on each method of contraception as well as comparisons between methods, and other important information about women's health. (Citation: Hatcher, RA, Trussell J, Nelson AL, et al., *Contraceptive Technology*, 20th Edition, New York, Ardent Media, Inc., 2012. This publication is not available online but can be ordered from http://www.managingcontraception.com/shopping/product.php?productid=16164.)

World Health Organization, Family Planning a Handbook for Providers. This international resource created by the World Health Organization, the United States Agency for International Development, and Johns Hopkins University is designed to translate complicated scientific information about contraception into easily usable information. It represents the consensus of health experts from around the world. (Citation: *Family Planning a Handbook for Providers*, World Health Organization, Geneva, 2011. This publication is available online at http://whqlibdoc.who.int/publications/2011/9780978856373_eng.pdf.)

"The Contraceptive CHOICE project seeks to increase the acceptance and use of LARCs and to measure the satisfaction and continuation of use among participants."

National Survey of Family Growth. The National Survey of Family Growth (NSFG), conducted regularly by the U.S. Department of Health and Human Services (HHS), collects and analyzes data on family life, marriage and divorce, pregnancy, infertility, use of contraception, and men's and women's health. (More information on the NSFG is available at http://www.cdc.gov/nchs/nsfg.htm.) NSFG data is used for numerous reports that shed light on contraceptive use among young people and adults. Recent reports include:

- Mosher, WD et al, Use of Contraception in the United States 1982-2008. *Vital Health Statistics* 2010; 23(29). (This study is available online at http://www.cdc.gov/nchs/data/series/sr_23/sr23_024.pdf.)
- Martinez G, Copen CE, Abma JC. Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006–2010 National Survey of Family Growth. National Center for Health Statistics. Vital Health Stat 23(31). 2011 (This study is available online at http://www.cdc.gov/nchs/data/series/sr_23/sr23_031.pdf .)

ACOG Practice Guidelines. In these recent practice guidelines the American College of Obstetricians and Gynecologists (ACOG) formally endorse the use of IUDs in both nulliparous and parous women and adolescents. These guidelines represent the best practices in gynecology and greatly influence the decisions of health care providers, (Citation: ACOG Practice Bulletin No. 121; Long-Acting Reversible Contraception: Implants and Intrauterine devices. *Obset Gynecol* 2011; 118(1): 184-96. The full text of this bulletin is not available online.)

ACOG Committee Decision 539. In 2012, the American College of Obstetricians and Gynecologists (ACOG) revised its practice guidelines on Long-Acting Reversible Contraception (LARCs), including implants and IUDs. The new guidelines advise that adolescents who are sexually active and at high risk of unintended pregnancy should be encouraged to consider LARCs as a contraceptive option. (This decision can be read here: http://www.acog.org/Resources_And_Publications/Committee_Opinions/Committee_on_Adolescent_Health_Care/Adolescents_and_Long-Acting_Reversible_Contraception)

Association of Reproductive Health Professional's Slideshow. This PowerPoint presentation provides detailed information on contraceptive implants including history, mechanism of action, efficacy, and side effects. It also dispels common myths and includes insertion information for providers. (This slideshow is available online at http://site.blueskybroadcast.com/Client/ACNM_06/docs/Ed_Session_306_Contraceptive_Update_-_Part_1.pdf.)

Facts and Data

WHO Fact Sheet on Family Planning. This fact sheet by the World Health Organization offers an overview of the benefits of family planning and unmet need for contraception worldwide. It also presents a simple chart comparing the risks and benefits of various methods. (Citation: WHO Fact Sheet No 351 Family Planning, April 2011. This resource is available online at http://www.who.int/mediacentre/factsheets/fs351/en/.)

Guttmacher Fact Sheet on Contraceptive Use in the United States. This fact sheet by the Guttmacher Institute presents data on method preference, teen contraceptive use, and trends in contraceptive use. (Citation: Facts on Contraceptive Use in the U.S., Guttmacher, June 2010. This fact sheet is available online at http://www.guttmacher.org/pubs/fb_contr_use.html.)

Articles on IUDs and Implants

Hubacher D. The checkered history and bright future of intrauterine contraception in the United States. Perspect Sex Reprod Health. 2002; 34:98–103. This article discusses the controversies and debates surrounding the IUD that have shaped the opinions of consumers and providers over the past several decades.

Hubacher D, Finer LB, Espey E. Renewed interest in intrauterine contraception in the United States: Evidence and Explanation. Contraception 2011; 83:291-294. This article examines the new products, improved attitudes, increased access and awareness of IUDs to explain why they are an important option for pregnancy prevention and why they are gaining popularity.

Rubin SE, et. al. Determinants of intrauterine contraception provision among U.S. family physicians: a national survey of knowledge, attitudes and practice. Contraception 2011; 83(5) 472-478. This article includes the results of a survey of 3,500 family physicians in the United States to assess their training and knowledge gaps in inserting IUDs as well as their attitudes about the method.

Darney, P. Everything you need to know about the contraceptive implant, The Journal of Family Planning 2006; 18(9). This ar-

ticle contains all of the basic information about implants including history and prescribing information. (This article is available online at http://www.jfponline.com/pages.asp?aid=4431#bib2)

Articles about LARC Use in Adolescents

Whitaker AK, et.al. Adolescent and young adult women's knowledge of and attitude toward the intrauterine device. Contraception 2008; 91:112-116. This study assessed knowledge and attitude toward IUDs among young women ages 14-24 before and after they were shown a three-minute educational video. The study found that most participants were unaware of the availability of IUDs before the intervention.

Speidel, JJ, Harper CC, and Shields, W. The Potential of Long-acting Reversible Contraception to Decrease Unintended Pregnancy, Contraception Journal, 2008. This editorial written for the American Association of Reproductive Health Professionals' journal argues that outdated perceptions of LARCs among health care providers is resulting in these methods having a limited reach. The editorial goes on to suggest that the benefits of these methods in young women outweigh any risks.

Mestad R., et. al. Acceptance of long-acting reversible contraceptive methods by adolescent participants in the Contraceptive CHOICE Project, Contraception 2011 84(5):493-8. This study provides some initial results from the Contraceptive CHOICE Project which aims to increase LARC use among young women. The study found that LARC use was acceptable among adolescents and that younger participants were more interested in the implant than the IUD.

Winner et al. Effectiveness of Long-Acting Reversible Contraception, New England Journal of Medicine 2012 366 (21): 1998-2007. The Contraceptive CHOICE project team examines the failure rates of LARCs compared to other reversible contraceptive methods and finds that women using birth control pills, the transdermal patch, and the vaginal ring had a risk of contraceptive failure that was 20 times as high as those using LARCs.

RESOURCES FOR CONSUMERS

Professionals counseling women on their contraceptive choices may wish to provide additional information to their clients. This section includes resources designed to provide consumers with the basic information they need about LARCs.

Basic Information/Websites

IUDs at a Glance & Birth Control Implants at a Glance, Planned Parenthood Federation of America. (http://www.plannedparenthood.org/health-topics/birth-control/iud-4245.htm) This website answers the basic questions about these birth control methods including how they work, how effective they are, and the advantages and disadvantages of each method. The website is designed to help women choose a method and includes a clinic finder.

Bedsider (http://bedsider.org). This website contains information on all birth control methods aimed at young adults. The method explorer allows users to compare methods of birth control based on criteria such as most effective, easy to hide, party ready, and "do me now." In addition, the site offers videos from young people about how they chose their birth control method, news about contraception, and tips about other aspects of health care. The site also helps young people find a health care provider or store where they can obtain their method of choice and allows users to set up reminders for appointments and follow-up.

Articles

Brody, J. Americans Get Reacquainted With IUDs, New York Times, February 27, 2012. This article by author Jane Brody reviews the history of IUDs and discusses why this method is gaining popularity. (This article is available online at http://well.blogs.nytimes.com/2012/02/27/americans-get-reacquainted-with-iuds/.)

Couzin-Frankel, J. Contraceptive Comeback: The Maligned IUD Gets a Second Chance, Wired Magazine, July 15, 2011. This article presents a detailed history of the IUD in easy-to-understand language. (This article is available online at http://www.wired.com/magazine/2011/07/ff_iud/all/1)

Manufacturer Information

Mirena (http://www.mirena-us.com/).

This website contains all of the manufacturer's information about the hormonal IUD both for consumers and providers.

ParaGard (http://www.paragard.com/).

This website contains all of the manufacturer's information about the copper IUD both for consumers and providers.

Implanon (http://www.implanon-usa.com/en/consumer/index.asp).

RELATED PUBLICATIONS

The Facts: Unintended Pregnancy Among Young People in the United States

Issues at a Glance: Young Women and Long-Acting reversible Contraception

Respect Yourself, Protect Yourself: Birth Control and STD Prevention Options for Teens

This websites allows users to download patient information and provider information about contraceptive implants.

Written by Martha Kempner

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