

Essential Knowledge About Hormonal Implants

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Essential Knowledge About Hormonal Implants

Hormonal implants are safe, highly effective, and quickly reversible long-acting progestin-only contraceptives that require little attention after insertion. Clients are satisfied with them because they are convenient to use, long-lasting, and highly effective. This review presents the latest biomedical, social science, and programmatic knowledge about hormonal implants as of January 2010. The information pertains to all types of implants currently available [*Jadelle*[®], *Implanon*[®], and *Sino-implant (II)*[®]], unless otherwise specified.

Method Characteristics

Composition

Hormonal implants consist of small, thin, flexible plastic rods, each about the size of a matchstick, that release a progestin hormone into the body. The rods are inserted under the skin of a woman's upper arm. *Jadelle* and *Sino-implant (II)* have nearly identical physical properties. Both are two-rod systems with the same amount of active ingredient (75 mg of the progestin levonorgestrel per rod; 150 mg total). Each *Jadelle* rod measures 43 mm long by 2.4 mm outside diameter while each *Sino-implant (II)* rod measures 44 mm by 2.4 mm outside diameter. *Implanon* is a single-rod implant that contains 68 mg of the progestin etonogestrel (previously known as 3-ketodesogestrel) and measures 40 mm long by 2.0 mm outside diameter (see Table 1).

Table 1. Comparing the Composition of Hormonal Implants

Common Trade Name	Number of Rods	Formulation of Each Rod	Measurement of Each Rod
<i>Implanon</i> [®] , manufactured by Organon	1 rod	68 mg etonogestrel	40 mm X 2.0 mm
<i>Jadelle</i> [®] , manufactured by Bayer Schering Pharma	2 rods	75 mg levonorgestrel (150 mg total)	43 mm X 2.4 mm
<i>Sino-implant (II)</i> [®] , manufactured by Shanghai Dahua Pharmaceutical	2 rods	75 mg levonorgestrel (150 mg total)	44 mm X 2.4 mm

Effectiveness

Implants are among the most effective long-acting contraceptive methods, comparable in effectiveness to intrauterine devices, female sterilization, and vasectomy. In the first year of use, the pregnancy rate among users of implants is no more than 1 per 1,000 women (13, 61, 68, 76). The cumulative five-year pregnancy rate among *Jadelle* users is 11 per 1,000 women (68). Among *Sino-implant (II)* users, the cumulative four-year pregnancy rate was 9 and 10.6 per 1,000 women in the two clinical trials with data up to four years (76). Data from numerous clinical trials of *Implanon* reveal zero pregnancies through up to four years of use (13, 29, 61).

Duration of Effective Use

Jadelle is labeled effective for up to five years of continuous use; Sino-implant (II) for up to four years and Implanon for up to three years. However, all of them may be effective for longer than their respective labeled length of use.¹ Conversely, a woman can have the implant removed at any time, whether or not she has used it for the full length of the duration of effective use.

Some clinical trials have followed women using implants for longer than their labeled length of use. As mentioned above, long-term studies of Implanon users have found zero pregnancies through four years of use (13, 29, 61). Combined data from three long-term studies of Jadelle show that the pregnancy rate is about 10 per 1,000 women in the sixth year of use and about 20 per 1,000 women in the seventh year (72). In comparison, annual pregnancy rates were at or near zero through four years of use and 8 per 1,000 users in the fifth year of use. Three long-term clinical trials of Sino-implant (II) have found cumulative five-year pregnancy rates ranging from 7 to 21 per 1,000 women (76). The cumulative four-year pregnancy rate was 9 and 10.6 per 1,000 women in the two trials reporting data up to four years. (See Table 2.)

Table 2. Comparing Duration of Effective Use of Hormonal Implants

Common Trade Name	Labeled Length of Use	Pregnancy Rates Through Labeled Length of Use	Pregnancy Rates Beyond Labeled Length of Use
<i>Implanon</i> [®]	Up to 3 years	0 per 1,000 women (cumulative 3-year pregnancy rate)	0 per 1,000 women in Year 4
<i>Jadelle</i> [®]	Up to 5 years	11 per 1,000 women (cumulative 5-year pregnancy rate)	about 10 per 1,000 women in Year 6; about 20 per 1,000 women in Year 7
<i>Sino-implant (II)</i> [®]	Up to 4 years	9 to 10.6 per 1,000 women (cumulative 4-year pregnancy rate)	7 to 21 per 1,000 women (cumulate 5-year pregnancy rate)

Sources: 13, 29, 61, 72, 76

By way of perspective, when compared to the shorter-acting “resupply” methods, these pregnancy rates for use of implants beyond their labeled length of use are comparable to first-year typical-use pregnancy rates of injectable contraception (pregnancy rate 30 per 1,000 women), and considerably lower than pregnancy rates of condoms (150 to 210 pregnancies per 1,000 women) and oral contraceptives (80 pregnancies per 1,000 women).

¹ Clients currently using *Norplant*[®] implants, which are no longer available, can continue to use the method until it is time to get the capsules removed. *Norplant* is labeled effective for up to five years of continuous use, but large studies have found it effective for seven years (30, 70).

Return to Fertility

After implants are removed, there is no delay in return to fertility (9, 27, 71). Furthermore, implants have no impact on long-term fertility (27, 71).

Mechanism of Action

Implants work by releasing a small amount of progestin hormone steadily into the blood. This prevents pregnancy by thickening the cervical mucus, which blocks the sperm from meeting an egg (6, 10, 12), and by preventing ovulation (release of eggs from the ovaries) to various degrees (12). Implanon prevents ovulation in every cycle throughout almost the entire three years of its labeled length of use (11, 12, 81).

Side Effects

Bleeding

Users of hormonal implants, like users of other progestin-only contraceptive methods, are likely to experience changes to their normal menstrual bleeding patterns.² However, the exact bleeding changes vary for each woman and over time and thus are hard to predict. Bleeding changes are more common in the first months of use and tend to diminish over time (3, 13, 23, 61, 71).

Possible bleeding changes include irregular menstrual bleeding, prolonged episodes of bleeding or spotting, heavy bleeding, bleeding or spotting between periods, no bleeding at all for several months, or a combination of these patterns (71). Users of levonorgestrel implants (Jadelle or Sino-implant (II)) are more likely to experience irregular bleeding and frequent bleeding and spotting than infrequent bleeding or amenorrhea (21, 51, 71). In contrast, users of etonogestrel implants (Implanon) are more likely to experience amenorrhoea or infrequent bleeding (1, 13, 22, 23, 27, 32, 41, 45, 90).

Counseling about bleeding changes is critical because changes in menstrual bleeding patterns are the most commonly reported side effect and the most common reason given for the discontinuation of implant use (4, 22, 27, 61, 83). (See Counseling and Informed Choice, p. xx.)

Other Side Effects

Besides changes in bleeding patterns, the most frequent side effects reported in clinical trials are headaches (10% to 30%) and acne (3% to 27%). Weight gain (4% to 22%), dizziness 4% to 11%), and mood changes including nervousness and depression (1% to 9%) are also frequently mentioned side effects. Other less frequently reported side effects (less than 5%) are loss of libido, fatigue, hair loss, and other skin conditions (4, 5, 49, 61). There is no sufficient evidence that any of these side effects (besides bleeding changes) are method-related, and thus, they may be due to other factors.

² In comparison with DMPA injectables, levonorgestrel implants such as Jadelle have been shown to produce less dramatic menstrual bleeding changes (34).

Non-Contraceptive Health Benefits

Pelvic Inflammatory Disease

Use of implants is associated with a reduced risk of symptomatic pelvic inflammatory disease (PID) compared with nonusers and with users of other methods (68).

Ectopic Pregnancy

Because they are so effective in preventing pregnancy, implants protect well against ectopic pregnancy (68). Women who use implants have an 80% to 90% lower chance of ectopic pregnancy than do women using no contraception (69). In the unlikely event of pregnancy in an implant user, that pregnancy is more likely to be ectopic than is a pregnancy in a non-user. Still, the pregnancy in an implant user is far more likely to be normal than ectopic: only an estimated 1 in every 7 to 10 pregnancies, or 10% to 14%, is ectopic (25).

Anemia and Dysmenorrhea

Some implant users have a decreased risk of iron-deficiency anemia due to lighter, less frequent, or absent menstrual bleeding (68). Use of Implanon may improve dysmenorrhea (painful menstrual periods) (33). While there are no data regarding dysmenorrhea improvement among users of two-rod contraceptive implants (Jadelle or Sino-implant (II)), it is reasonable to suggest that they may have a similar effect on dysmenorrhea symptoms as Implanon.

Metabolic Effects

Implants have a very low metabolic effect. They appear to have no clinically meaningful effect on lipid metabolism, hemostatic factors, liver function, thyroid function, carbohydrate metabolism, or blood pressure in healthy women (8, 15, 36, 49, 52). A small study of Implanon use among diabetic women also found no effect on carbohydrate and lipid metabolism (82).

Complications

Complications during insertion and removal of implants are rare. The incidence of infection or expulsion following insertion of implants ranges from 0% to 1.4% (5, 8, 49). Pain at the site of insertion has been reported by 0.7% to 7.1% of implant users (4, 5).

The percentage of women experiencing complications during removal of their implants has ranged from 0.2% to 14.8% (5). Comparative studies have shown reduced rates of removal complications with Jadelle and Implanon than with Norplant (5).

Client Knowledge and Attitudes

Knowledge About Implants

Knowledge about hormonal implants varies widely among countries. Among 42 countries with data from Demographic and Health Surveys, the percentage of married women of reproductive age who had heard of hormonal implants ranges from a low of 2% in Chad to 94% in Haiti. In 25 of the 42 countries, less than half of the women surveyed had heard of implants (47).

Satisfaction and Acceptability

Women who are satisfied with their choice of contraceptive method continue using their method longer than women who are not satisfied with their method. Implants (as well as IUDs) have the highest continuation rates among users of reversible contraceptive methods, even after taking into account age, parity, and fertility intentions (68). In clinical trials, between 85% to 99% of women using implants continue to use the method for at least one year. Between 58% to 96% of women continue to use implants for at least three years, and 40% to 76% continue using the method for at least five years (68, 71). In a meta-analysis of eight clinical trials, the continuation rate of Implanon was 92% at one year, 67% at two years, and 17% at three years (61). There are marked differences in continuation rates based on geographical area, with higher continuation rates in studies conducted in developing countries compared with studies conducted in developed countries (1, 61).

The most appealing aspects of implants to users are the long duration of contraceptive protection, ease of use, high effectiveness, and reversibility (57). Women also like that implants do not interfere with sex and that they are placed in the arm rather than in the vagina or uterus (64, 91). On the other hand, some women report concerns and fear of pain with implant insertion and removal, and problems of confidentiality due to the potential visibility of the implants (28, 64). Myths and misconceptions about implants are common in some parts of the world and affect the acceptability of the method. Contrary to common myths and misconceptions, implants do **not** cause cancer, permanent sterility, spontaneous abortions, low birth weight babies in future pregnancies, or negatively affect breastmilk. They also do **not** make users thin, cause death, or result in arm loss (64, 91).

Counseling and Informed Choice

All individuals and couples have the basic human right to decide freely and responsibly the number and spacing of their children and to have the information, education, and means to do so. Under the Cairo Programme of Action, 180 governments have committed to "...provide universal access to a full range of safe and reliable family-planning methods..." (para 7.16) and to "...conform to ethical and professional standards in the delivery of family planning and related reproductive health services aimed at ensuring responsible, voluntary and informed consent..." (para 7.17) (79).

Greater contraceptive choice has been shown to improve uptake and use of all methods (58, 75). Therefore, it is important that women have access to an array of methods, including implants.

The quality of services provided, particularly quality counseling, has been associated with the successful use of implants. It also is associated with both satisfaction with the method and higher continuation rates (7).

Counseling about bleeding changes is particularly important. Apart from being a considerable nuisance, unpredictable and prolonged vaginal bleeding affect women's daily lives and, in some cultures, restrict their community and religious activities.

Training of Implants Providers

Although insertions and removals of implants are minor surgical procedures and relatively easy to learn, experience has shown that a formal program of competency-based training is more likely to produce proficient and confident providers (7). A key element of competency-based training for

implants is providing practical, hands-on experience for the trainees, first on an artificial arm and then moving to supervised training with real clients (7).

In addition to training in insertion and removal techniques, providers should also receive training in counseling and management of side effects. Providers must communicate the characteristics of the method and inform women about side effects, particularly changes in bleeding patterns (see Counseling and Informed Choice, p. xx). During training, providers should learn not only to tell women that menstrual changes may happen, but that they are *likely* to happen and may take a year or more to settle to more predictable patterns (7).

Training should also cover infection prevention techniques. In training for infection prevention, the emphasis should not only be on strict asepsis (hand washing, gloving, no-touch techniques), but also on decontaminating, cleaning, and sterilizing or high-level disinfecting of instruments and properly disposing of sharp instruments and contaminated waste (7, 49).

Insertion and Removal Times

Because the newer implant systems have only one rod (Implanon) or two rods (Sino-implant (II) and Jadelle) in contrast to the older Norplant implant's six capsules, they can be inserted and removed more quickly and with less discomfort to users than Norplant (43, 49). In clinical trials, average insertion time of Implanon takes 2 minutes or less. Insertion of Jadelle takes about 2.5 minutes. In contrast, it took providers about 4 minutes to insert Norplant. Average removal times for Implanon range from 2.5 to 3.5 minutes, and for Jadelle, from 5 to 7.5 minutes. The average removal time for Norplant was about 10 minutes (see Table 3).

Table 3. Average Insertion and Removal Times of Implants in Clinical Trials

Common Trade Name	Average Insertion Time	Average Removal Time
<i>Implanon</i> [®]	2 minutes or less	2.5 to 3.5 minutes
<i>Jadelle</i> [®]	2.5 minutes	5 to 7.5 minutes
<i>Norplant</i> [®]	4 minutes	10 minutes

Sources: 4, 5, 14, 24, 43, 46, 61, 65, 68, 69, 71

Service Delivery

Who Can Provide Implants

Different cadres of health professionals can safely and effectively provide implants, such as physicians, nurse-midwives, nurses and other paramedical personnel (2, 7). Depending on educational and professional standards in each country, physician assistants and associates may also be trained for this procedure. In Ethiopia, health extension workers have been trained to insert and remove implants (59). Having a wide variety of health care professionals trained can spread awareness of implants and increases access to implants services (17, 26, 40, 62, 73).

Who Can Use Implants

Implants are safe and suitable for nearly all women (87), including, but not limited to, those who have or have not had children, are not married, are of any age (adolescents through women over

40), have just had an abortion, miscarriage, or ectopic pregnancy, smoke cigarettes (regardless of woman's age or number of cigarettes smoked), are breastfeeding (as soon as six weeks after birth), have anemia now or in the past, or have HIV infection or AIDS (88).

The only condition for which WHO recommends that implants should not be used (category 4) is current breast cancer (88). Conditions for which the method is not usually recommended unless other more appropriate methods are not available or not acceptable (category 3) include: less than six weeks postpartum, unexplained vaginal bleeding (before evaluation), past and no evidence of current breast cancer for five years, acute deep vein thrombosis/pulmonary embolism, severe (decompensated) cirrhosis, hepatocellular adenoma, malignant liver tumor, and some forms of systemic lupus erythematosus (a type of rheumatic disease) (88).

Modality of Provision

Provision of implants does not need to be limited to fixed facilities; mobile clinics can provide implants services as well (37, 39, 60). In addition, community-based health workers can refer implants clients to mobile or fixed facilities to increase access.

Timing of Insertion

A woman does not need to wait until she is menstruating to have a hormonal implant inserted (89). She can start using implants any day of the menstrual cycle. If she is starting within seven days after the start of her menstrual cycle (five days for Implanon), she does not need to use a backup method. If it is more than seven days after the start of her menstrual cycle (more than five days for Implanon), she can have implants inserted as long as it is reasonably certain she is not pregnant. In this case, she will need to abstain from sex or use a backup method for the first seven days after insertion.

Also, a woman can have implants inserted postpartum or postabortion (88, 89). If the woman is not breastfeeding, she can have implants inserted immediately postpartum and does not need a backup method if insertion is done within three weeks after delivery. If the woman is fully or nearly fully breastfeeding and her monthly bleeding has not returned, she can have implants inserted any time between six weeks and six months after giving birth and does not need to use a backup method. If the woman is fully or nearly fully breastfeeding and her monthly bleeding has returned, or her baby is at least six months old, pregnancy should be ruled out prior to insertion and she will need to use a backup method for the first seven days after insertion. (87, 89). (For more information on when to start implants and a checklist to help assess whether it is reasonably certain a woman is not pregnant, see [Family Planning: A Global Handbook for Providers.](#))

Follow-Up Visits

No routine follow-up visit is required for users of implants. The client should be counseled to return at any time if she has any problems or concerns, as well as when it is time to have the implants removed after their effective duration of use (89).

Programs need to employ a reliable and easy-to-use method to follow up with implants clients when the effective duration of use is over. In some settings, women are given a follow-up card that gives the date of the implant insertion and the suggested date for removal. In other settings, staff maintain an annual file of cards for each client whose implants are to be removed; some mail or send reminder cards and some send staff out to locate women. Sometimes, if the implant is

inserted postpartum, the woman may be asked to return for removal when her child reaches 3 years of age (for Implanon), 4 years (for Sino-implant (II)), or 5 years (for Jadelle) (7).

At the same time, programs should keep in mind that a woman does not need to keep her implants in place for the entire length of the effective lifespan. If she wants them removed before that point, her provider should remove them upon request.

Medical Barriers

Medical barriers (that is, “policies or practices derived at least partly from a medical rationale that result in scientifically unjustifiable impediment to, or denial of, contraception”) are a significant problem impeding wider access to modern contraception, including implants (67).

Many women are denied their choice of contraception based on eligibility criteria that are neither scientifically justified nor consistent with national guidelines. These medically unjustified criteria include marriage and spousal consent requirements, minimum or maximum age and parity restrictions, menstruation requirement, or norms that discourage uptake by requiring too many routine follow-up visits (53, 67, 74).

Provider Perspectives

The perspectives of providers—their attitudes, motivations, needs, as well as their knowledge and skills—are an important variable in service delivery programs that should be considered (66). For example, would a provider garner more “rewards” (for example, greater prestige or income, or reduction of other duties) if s/he became more active in providing implants? Conversely, does being asked to provide implants represent more work for an already overburdened provider?

Inserting and removing implants involve somewhat more work than providing some other contraceptive methods, such as pills and condoms. Thus, work needs to be organized accordingly to take account of these increased demands. Providers who demonstrate an interest in providing implants should be well supported.

Cost Considerations

While the initial price of implants is high, they can be cost-effective when used for a number of years. Also, over the long term, making implants available may reduce workload on the health system, and thus costs, because implants have higher continuation rates and are more effective than most other methods (44).

A study of contraceptive costs in 13 developing countries, which took into account the cost of the commodity itself as well as of disposable supplies needed for insertion and of labor costs, found that the cost of implants compared favorably with other methods, including oral contraceptives. The IUD had the lowest median cost per couple-year of protection (CYP) at US\$1.64. Sino-implant (II) had the second lowest median cost/CYP at US\$4.02. Median cost/CYP for injectables, oral contraceptives, and Jadelle were similar, ranging from US\$7.90 to \$8.70. Implanon had the highest median cost/CYP at US\$13.03 (38). These costs do not take into consideration that some methods require more training to provide than others (as well as the maintenance of a clinical training system) or that they require special communication efforts to promote their use. Implants require less training to provide than do IUDs. Also, demand for implants is high among clients

where implants are available and so do not require as intensive communication efforts as do IUDs (38).

Several other detailed analyses and modeling studies have concluded that in the long run implants are relatively less expensive than shorter-acting methods such as pills and injectables, particularly when such factors as staff time, facility costs (such as consultation space), and equipment are taken into account (16, 54, 55).

Furthermore, the cost of implants should be weighed against their potential to reduce unintended pregnancies. In a modeling study using data from Kenya, researchers estimated that if 100,000 users of oral contraceptives switched to implants, an estimated 26,000 unintended pregnancies would be prevented over a five-year period (35). If 20% of women in sub-Saharan Africa using oral contraceptives or injectables switched to implants, 1.8 million unintended pregnancies could be averted over a five-year period (35).

The relatively high initial per-unit cost of implants has prevented widespread provision of implants in resource-poor countries. Donors have limited their purchases because of the high price (63). Fortunately, manufacturing costs are declining, donors and governments are placing larger orders and negotiating lower prices, and the lower-priced Sino-implant (II) has become available— on average, costing US\$8.00 per set (19, 63). Between 2008 and April 2009, approximately 112,000 units of Sino-implant (II) were ordered in three countries, at a cost savings of about US\$1.6 million (77). As of April 1, 2010, Sino-implant (II) was registered in seven countries (China, Indonesia, Kenya, Madagascar, Malawi, Sierra Leone, and Zambia). It was also under review in nine other countries and in progress in an additional 25 countries (77). With such efforts to reduce costs, programs are more likely to be able to meet the demand for implants and to offer them to clients at lower prices.

Logistics: Commodities, Supplies, and Instruments

Two-rod levonorgestrel implants were added to the World Health Organization's list of essential medicines in March 2007 (86). This inclusion is significant because many developing countries base their national drug lists on these guidelines.

Stockouts of contraceptive commodities and other needed equipment, instruments, and supplies for family planning provision are commonly reported in service programs. Unavailability of either the method itself or of other needed instruments and supplies means that implants services are also unavailable. Thus, attention to logistics is critical, and must include instruments expendable medical supplies as well as the contraceptive implant itself (84). The table below indicates which instruments and supplies are needed for both insertion and removal of the hormonal implants currently available: Implanon, Jadelle, and Sino-implant (II) (92).

Table 4. Instruments and Supplies for Insertion and Removal of Hormonal Implants

Instruments and Supplies	Insertion	Removal
Instruments (reusable)		
Light source (if no natural light at service site)	X	X
Clean tray	X	X
Cup, bowl, or gallipot	X	X
Holding forceps (5.5" or 14 cm)	X	X
Mosquito forceps (5" or 12.5 cm, curved, delicate)		X
Scalpel handle with blade*		X
Supplies (expendable)		
Implants	X	
Antiseptic soap and water	X	X
Sterile surgical drapes	X	X
One pair of sterile gloves**	X	X
Antiseptic solution, such as iodine	X	X
Local anesthetic	X	X
5 ml syringe with needle	X	X
Trocar #10***	X	
Sterile gauze****	X	X
Skin bandage or band-aid	X	X

* Scalpel may or may not need disposable blades; if needed, they should be ordered on a regular basis.

** Gloves need to be talc-free. They can be ordered talc-free (preferable), or else the talc should be removed prior to the procedure.

*** A trocar is not needed for insertion of Implanon, which comes in a sterile insertion applicator. Jadelle and Sino-implant (II) may or may not come packaged with a disposable trocar.

**** To be used during insertion and at the end of procedure for pressure dressing (but does not need to be sterile if placed on top of skin bandage or band-aid).

Marketing and Communication

To maximize effect, demand-side communication and marketing activities should be coordinated and integrated with supply-side activities that focus on making implants available (for example, training on clinical procedures and counseling and securing logistics and supplies).

Consumer-directed information about implants can increase demand for and use of implants. In settings where the audience's awareness of implants is low, the primary needs of marketing and communication activities are to raise awareness, provide correct information, and connect potential clients to qualified providers. Where awareness is high but negative information and myths are common, the objective is not only to provide correct knowledge but also to counter barriers by specifically addressing prevailing myths, rumors, and health concerns (50).

Clients who have been informed prior to a clinic visit about implants and their benefits may be more likely to ask their provider about the method, thereby creating a "pull." This also ensures that the method is included among the contraceptive options presented to clients (50).

The benefits valued by implants users include: the long duration of contraceptive protection, ease of use, high effectiveness, and reversibility (57). Women also like that implants do not interfere with sex and that they are placed in the arm rather than in the vagina or uterus (64, 91).

Communication activities should specifically advertise sites where implants services are available, linking clients to providers who are trained in proper insertion and can provide accurate, unbiased, and more detailed information, including proper counseling on side effects. Channeling clients to skilled providers ensures that clients will be given the method if they want it and that they have a more positive experience, leading to positive word-of-mouth.

Marketing for implants needs to target potential clients as well as influencer groups, such as spouses, community leaders, journalists, and providers. Communication activities should include provision of general information for providers who do not offer implants so that they can support referral systems to providers who do provide the method.

If using shorter communication formats (for example, radio or television spots or posters), formative research should be used to identify the benefits as well as the negative aspects of implants as perceived by a particular group in order to create focused messages. Attempts to address multiple issues simultaneously may result in dilution of individual messages and less overall impact.

Key Guidance Documents

The World Health Organization publishes and periodically updates its four “cornerstones of effective contraceptive use” in a family planning guidance series. Together, these four cornerstones, described below, support the safe and effective provision and use of family planning methods; they are:

- [Medical Eligibility Criteria for Contraceptive Use](#) (MEC) (4th edition, 2009) is intended for policy makers, program managers, and the scientific community to support national programs in preparing service delivery guidelines. The document reviews the medical eligibility criteria for use of contraception, offering guidance on the safety of use of 19 different methods for women and men with specific characteristics or known medical conditions. The recommendations are determined by expert consensus and are based on systematic reviews of available clinical and epidemiological research (88).
- [Selected Practice Recommendations for Contraceptive Use](#) (2nd edition, 2004) along with the [2008 Update](#), the companion guideline to *Medical Eligibility Criteria for Contraceptive Use*, provides guidance on the safe and effective use of a wide range of contraceptive methods. The recommendations, which answer 33 questions selected by the WHO, were determined by expert consensus and are based on systematic reviews of available clinical and epidemiological research. Six of the 33 questions address use of implants and related issues (89).

- [*Decision-Making Tool for Family Planning Clients and Providers*](#) incorporates the guidance of the first two cornerstones and reflects evidence on how best to meet clients' family planning needs. It is intended for use during counseling (85).
- [*Family Planning: A Global Handbook for Providers*](#) is the fourth cornerstone and also incorporates the guidance of the first two cornerstones. As a thorough reference guide, it offers technical information to help health care providers deliver family planning methods appropriately and effectively, providing specific guidance on 20 family planning methods including implants (87).

Bibliography

1. Affandi, B. (1998). An integrated analysis of vaginal bleeding patterns in clinical trials of Implanon. *Contraception*, 58 (Suppl), 99S-107S.
2. Affandi, B., Prihartono, J., Lubis, F., Sutedi, H., & Samil, R. (1987). Insertion and removal of Norplant contraceptive implants by physicians and nonphysicians in an Indonesian clinic. *Studies in Family Planning*, 18, 302-306.
3. Bachman, G., & Korner, P. (2009). Bleeding patterns associated with non-oral hormonal contraceptives: A review of the literature. *Contraception*, 79 (4), 247-258.
4. Blumenthal, P., Gemzell-Danielsson, K., & Marintcheva-Petrova, M. (2008). Tolerability and clinical safety of Implanon. *European Journal of Contraception and Reproductive Health Care*, 13 (Suppl 1), 29-36.
5. Brache, V., Faundes, A., Alvarez, F., & Cochon, L. (2002). Nonmenstrual adverse events during use of implantable contraceptives for women: Data from clinical trials. *Contraception*, 65, 63-74.
6. Brache, V., Faundes, A., Johansson, E., & Alvarez, F. (1985). Anovulation, inadequate luteal phase and poor sperm penetration in cervical mucus during prolonged use of Norplant implants. *Contraception*, 31, 261-273.
7. Chikamata, D., & Miller, S. (2002). Health services at the clinic level and implantable contraceptives for women. *Contraception*, 65 (1), 97-106.
8. Coukell, A., & Balfour, J. (1998). Levonorgestrel subdermal implants: A review of contraceptive efficacy and acceptability. *Drugs*, 55, 861-887.
9. Croxatto, H. (2000). Clinical profile of Implanon: A single-rod etonogestrel contraceptive implant. *European Journal of Contraception and Reproductive Health Care*, 5 (Suppl 2), 21-28.
10. Croxatto, H. D., Salvatierra, A., Morales, P., Epensberger, C., & Brandeis, A. (1987). Treatment with Norplant subdermal implants inhibits sperm penetration through cervical mucus in vitro. *Contraception*, 36, 193-201.
11. Croxatto, H. (2002). Mechanisms that explain the contraceptive action of progestin implants for women. *Contraception*, 65, 21-27.
12. Croxatto, H. (2002). Progestin implants for female contraception. *Contraception*, 65, 15-19.
13. Darney, P., Patel, A., Rosen, K., Shapiro, L., & Kaunitz, A. (2009). Safety and efficacy of a single-rod etonogestrel implant (Implanon): Results from 11 international clinical trials. *Fertility and Sterility*, 91 (5), 1646-1653.
14. del Carmen Craviato, M., Alvarado, G., Canto-de-Cetina, T., Bassol, S., Oropeza, G., Santos-Yung, R., Valencia, J., Palma, Y., Fuziwara, JL, Navarette, T, Garza-Flores, J, Pérez-Palacios, G. (1997). A multicenter comparative study on the efficacy, safety, and acceptability of the contraceptive subdermal implants Norplant and Norplant-II. *Contraception*, 55, 359-367.
15. Dorflinger, L. (2002). Metabolic effects of implantable steroid contraceptives for women. *Contraception*, 65, 47-62.
16. Doucoure, A., Tandia, D., Sangare, M., & Katz, L. (1995). *Programmatic evaluation of Norplant introduction in Mali*. Bamako, Mali: Division Sante Familiale et Communautaire.

17. EngenderHealth. (2004). *Improving access and quality of clinical family planning services in the public and private sectors in Ghana: End of project report*. Accra, Ghana: EngenderHealth.
18. EngenderHealth. (2008). *Instruments and supplies needed to provide clinical methods of family planning*. New York: EngenderHealth.
19. Family Health International; U.S. Agency for International Development; Pharm ACCESS AFRICA; Marie Stopes International; EngenderHealth/The RESPOND Project. (2010). Comparison of Hormonal Implants.
20. Fan, H., Han, L., Jiang, J., Wu, M., & Chen, B. (2004). A multicenter comparative clinical study of sino-levonorgestrel-releasing implants-No. I and No. II with Norplant. *Journal of Reproduction and Contraception*, 15 (2), 101-107.
21. Fang, K., Guan, Y., Fan, H., Gao, E., & Yang, D. (1997). A multicentre study of CLa implant and Sino-implant -- expanded application (two-year follow-up). *Reproduction and Contraception*, 8 (2), 101-110.
22. Flores, J., Balderas, M., Bonilla, M., & Vazquez-Estrada, L. (2005). Clinical experience and acceptability of the etonogestrel subdermal contraceptive implant. *International Journal of Gynecology and Obstetrics*, 90 (3), 228-233.
23. Fraser, I., Tiitinen, A., Affandi, B., Brache, V., Croxatto, H., Diaz, S., Ginsberg, J, Gu, S, Holma, P, Johansson, E, Meirik, O, Mishell, DR Jr, Nash, HA, von Schoultz, B, & Sivin, I. (1998). Norplant consensus statement and background review. *Contraception*, 57, 1-9.
24. Funk, S., Miller, M., Mishell, DR Jr, Archer, D., Poindexter, A., Schmidt, J., Zampaglione, E, & Implanon US Study Group. (2005). Safety and efficacy of Implanon, a single-rod implantable contraceptive containing etonogestrel. *Contraception*, 71 (5), 319-326.
25. Furlong, L. (2002). Ectopic pregnancy risk when contraception fails: A review. *Journal of Reproductive Medicine*, 47, 881-885.
26. Ghana Statistical Service, Health Research Unit of the Ministry of Health, and ORC Macro. (2003). *Ghana service provision assessment survey 2002*. Calverton, Maryland: Ghana Statistical Service and ORC Macro.
27. Glasier, A. (2002). Implantable contraceptives for women: Effectiveness, discontinuation rates, return of fertility, and outcome of pregnancies. *Contraception*, 65 (1), 29-37.
28. Gold, M., & Coupey, S. (1998). Young women's attitudes toward injectable and implantable contraceptives. *Journal of Pediatric and Adolescent Gynecology*, 11, 17-24.
29. Graesslin, O., & Korver, T. (2008). The contraceptive efficacy of Implanon: A review of clinical trials and marketing experience. *European Journal of Contraception and Reproductive Health Care*, 13 (Suppl 1), 4-12.
30. Gu, S., Siving, I., Du, M., Zhang, L., Ying, L., Meng, F., Wu, S, Wang, P, Gao, Y, He, X, & et al. (1995). Effectiveness of Norplant implants through seven years: A large-scale study in China. *Contraception*, 52 (2), 99-103.
31. Harrison-Woolrych, M., & Hill, R. (2005). Unintended pregnancies with the etonogestrel implant (Implanon): A case series from postmarketing experience in Australia. *Contraception*, 71 (4), 306-308.
32. Hickey, M., & d'Arcangues, C. (2002). Vaginal bleeding disturbances and implantable contraceptives. *Contraception*, 65 (1), 75-84.

33. Hohmann, H., & Creinin, M. (2007). The contraceptive implant. *Clinical Obstetrics and Gynecology*, 50, 907-917.
34. Hubacher, D., Lopez, L., Steiner, M., & Dorflinger, L. (2009). Menstrual pattern changes from levonorgestrel subdermal implants and DMPA: Systematic review and evidence-based comparisons. *Contraception*, 80 (2), 113-118.
35. Hubacher, D., Mavranezouli, I., & McGinn, E. (2008). Unintended pregnancy in sub-Saharan Africa: Magnitude of the problem and potential role of contraceptive implants to alleviate it. *Contraception*, 78, 73-78.
36. Isley, M., & Edelman, A. (2007). Contraceptive implants: An overview and update. *Obstetrics and Gynecology Clinics*, 34, 73-90.
37. Jacobstein, R., & Pile, J. (2010). *Hormonal implants: Service delivery considerations for an improved and increasingly popular method*. New York: EngenderHealth/The RESPOND Project.
38. Janowitz, B., Bratt, J., Rademacher, K., & Steiner, M. (2009). Are contraceptive implants finally affordable to programs? *Presented at the International Conference on Family Planning: Research and Best Practices*. Kampala, Uganda.
39. Karlsen, M., Taracena, B., & Outterson, B. (2009). *Improving family planning by creating community-service provider partnerships in Guatemala*. Washington, D.C.: Save the Children with support from USAID, ICF Macro and the CORE Group.
40. Kerrigan, M., & Gaffikin, L. (1996). *The effect of Norplant implants training on increasing access to family planning services: The Senegal and Mali experiences*. Baltimore, Maryland: JHPIEGO.
41. Kiriwat, O., Patanayindee, A., Koetsawang, S., Korver, T., & Bennink, H. (1998). A 4-year pilot study on the efficacy and safety of Implanon, a single-rod hormonal contraceptive implant, in healthy women in Thailand. *European Journal of Contraception and Reproductive Health Care*, 3 (2), 85-91.
42. Lapido, O., & Akinso, S. (2005). Contraceptive implants. *African Journal of Reproductive Health*, 9, 16-23.
43. Levine, J., Sinofsky, F., & Christ, M. (2008). Assessment of Implanon insertion and removal. *Contraception*, 78 (5), 409-417.
44. Lipetz, C., Phillips, C., & Fleming, C. (2009). The cost-effectiveness of a long-acting reversible contraceptive (Implanon) relative to oral contraception in a community setting. *Contraception*, 79, 304-309.
45. Mansour, D., Korver, T., Marintcheva-Petrova, M., & Fraser, I. (2008). The effects of Implanon on menstrual bleeding patterns. *European Journal of Contraception and Reproductive Health Care*, 13 (Suppl 1), 13-28.
46. Mascarenhas, L., van Beek, A., Bennink, H., & Newton, J. (1998). Twenty four month comparison of apolipoproteins A-1, A-II and B in contraceptive implant users (Norplant and Implanon) in Birmingham, United Kingdom. *Contraception*, 58, 215-219.
47. Measure DHS. (Accessed 1 March 2010.). STATcompiler. Calverton, Maryland, USA.
48. Meirik, O. (2002). Implantable contraceptives for women. *Contraception*, 65 (1), 1-2.
49. Meirik, O., Fraser, I., & d'Arcangues, C. (2003). Implantable contraceptives for women. *Human Reproduction Update*, 9 (1), 49-59.

50. Melngailis, I., & Eber, M. (2006). *Marketing and communication strategies for "revitalizing" the IUD*. IUD Toolkit.
51. Meng, F., Fan, M., Fan, H., & Jiang, J. (1997). [An analysis of menstrual bleeding patterns of women using two types of subdermal sino-implant and Norplant for 1 year]. *Chinese Journal of Family Planning*, 5 (5), 265-269, 319.
52. Merki-Feld, G., Imthurn, B., & Seifert, B. (2008). Effects of the progestagen-only contraceptive implant Implanon® on cardiovascular risk factors. *Clinical Endocrinology*, 68, 355-360.
53. Miller K, M. R. (1998). *Clinic-based family planning and reproductive health services in Africa: Findings from situation analysis studies*. New York: Population Council.
54. Nakhaee, N., Mirahmadizadeh, A., Gorji, H., & Mohammadi, M. (2002). Assessing the cost-effectiveness of contraceptive methods in Shiraz, Islamic Republic of Iran. *Eastern Mediterranean Health Journal*, 8 (1), 55-63.
55. National Institute for Health and Clinical Excellence. (2005). *Long-acting reversible contraception: The effective and appropriate use of long-acting reversible contraception*. London: RCOG Press.
56. Organon. (2005). *Implanon Product Monograph*.
57. Ortayli, N. (2002). Users' perspectives on implantable contraceptives for women. *Contraception*, 65, 107-111.
58. Pariani, S., DM, H., & Van Arsdol, M. (1991). Does choice make a difference to contraceptive use? Evidence from east Java. *Studies in Family Planning*, 30, 384-390.
59. Pathfinder International/Ethiopia. (2010). *Scaling up community-based service delivery of Implanon: The integrated Family Health Program's experience training health extension workers*. Pathfinder International/Ethiopia.
60. Population Services International (PSI). (2009). Innovative approaches to implant service delivery. *Panel presented at the 2009 Global Health Council Conference*. Washington, D.C.
61. Power, J., French, R., & Cowan, F. (2007). Subdermal implantable contraceptives versus other forms of reversible contraceptives or other implants as effective methods of preventing pregnancy. *Cochrane Database of Systematic Reviews*, 3 (3), 1-31.
62. Quansah Asare, G., Kanlisi, N., Jain, A., & Pile, J. (2006). Training nurses in Norplant® insertion/removal increases awareness of and access to Norplant® services in Ghana [poster]. *Presented at USAID's 2006 Global Health Mini-University*. Washington, D.C.
63. Ramchandran, D., & Upadhyay, U. (2007). *Implants: The next generation*. *Population Reports*. Baltimore, Maryland: INFO Project, Johns Hopkins Bloomberg School of Public Health.
64. Sangi-Haghpeykar, H., Frank, M., Leonard, L., & Poindexter, A. (2000). A qualitative study of perceptions, attitudes and experiences of long-term levonorgestrel implant users. *Women and Health*, 30, 93-108.
65. Schulman, L., & Gabriel, H. (2006). Management and localization strategies for the nonpalpable Implanon rod. *Contraception*, 73 (4), 325-330.
66. Shelton, J. (2001). The provider perspective: Human after all. *International Family Planning Perspectives*, 27, 152-153, 161.

67. Shelton, J., Angle, M., & Jacobstein, R. (1992). Medical barriers to access to family planning. *Lancet*, 340, 1334-1335.
68. Sivin, I. (2003). Risks and benefits, advantages and disadvantages of levonorgestrel-releasing contraceptive implants. *Drug Safety*, 26 (5), 303-335.
69. Sivin, I., Campodonico, I., Kiriwat, O., Holma, P., Diaz, S., Wan, L., Biswas, A., Viegas, O, el din Abdalla, K, Anant, MP, Pavez, M, & Stern, J. (1998). The performance of levonorgestrel rod and Norplant contraceptive implants: A 5 year randomized study. *Human Reproduction*, 13, 3371-3378.
70. Sivin, I., Mishell, DR Jr, Diaz, S., Biswas, A., Alvarez, F., Darney, P., и др. (2000). Prolonged effectiveness of Norplant capsule implants: A 7-year study. *Contraception*, 61 (3), 187-194.
71. Sivin, I., Nash, H., & Waldman, S. (2002). *Jadelle levonorgestrel rod implants: A summary of scientific data and lessons learned from programmatic experience*. New York: Population Council.
72. Sivin, I., Wan, L., Ranta, S., Alvarez, F., Brache, V., Mishell, DR Jr, Darney, P, Biswas, A, Diaz, S, Kiriwat, O, Anant, MP, Klaisle, C, Pavez, M, & Schechter, J. (2001). Levonorgestrel concentration during 7 years of continuous use of Jadelle contraceptive implants. *Contraception*, 64 (1), 43-49.
73. Solo, J., Odonkor, M., Pile, J., & Wickstrom, J. (2005). *Repositioning family planning—Ghana case study: 'Give them the power'*. New York: ACQUIRE Project/EngenderHealth.
74. Stanback, J., & Twum-Baah, K. (2001). Why do family planning providers restrict access to services? An examination in Ghana. *International Family Planning Perspectives*, 27, 37-41.
75. Steele, F., Curtis, S., & Choe, M. (1999). The impact of family planning service provision on contraceptive use dynamics in Morocco. *Studies in Family Planning*, 30, 28-42.
76. Steiner, M., Lopez, L., Grimes, D., Cheng, L., Shelton, J., Trussell, J., Farley, TM, and Dorflinger, L. (2010). Sino-implant (II) -- a levonorgestrel-releasing two-rod implant: Systematic review of the randomized controlled trials. *Contraception*, 81, 197-201.
77. Steiner, M., Luo, D., Cancel, A., Jenkins, D., Asante, D., Vahdat, H., et al. (2009). Increasing access by introducing a low-cost contraceptive implant. *Presented at the International Conference on Family Planning (22 slides)*. Kampala, Uganda: Family Health International. Updated April 1, 2010, Personal communication, Markus Steiner.
78. Trussell, J. (2007). Contraceptive efficacy. R. Hatcher, J. Trussell, A. Nelson, W. Cates, F. Stewart, & D. Kowal (editors), *Contraceptive Technology: Nineteenth Revised Edition*. New York: Ardent Media.
79. United Nations Department for Economic and Social Information and Policy Analysis. (1994). *Population and Development: Programme of Action Adopted at the International Conference on Population and Development, Cairo, 5-13 September 1994*. New York: United Nations.
80. Upadhyay, U., & Ramchandran, D. (2007). Equipment for inserting and removing implants in Implants. *INFO Reports, Implants: Tools for Providers*. Baltimore, Maryland: Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs, INFO Project.
81. Varma, R., & Mascarenhas, L. (2001). Endometrial effects of etonogestrel (Implanon) contraceptive implant. *Current Opinion in Obstetrics and Gynecology*, 13, 335-341.
82. Vicente, L., Mendonça, D., Dingle, M., Duarte, R., & Boavida, J. (2008). Etonogestrel implant in women with diabetes mellitus. *European Journal of Contraception and Reproductive Health Care*, 13, 387-395.

83. Wan, L., Stiber, A., & Lam, L. (2003). The levonorgestrel two-rod implant for long-acting contraception: 10 years of clinical experience. *Obstetrics and Gynecology*, 102 (1), 24-26.
84. Wickstrom, J. & Jacobstein, R. (2008). Contraceptive security: Incomplete without long-acting and permanent methods. Advocacy Brief No. 4. New York: EngenderHealth, The ACQUIRE Project.
85. World Health Organization (WHO) and Johns Hopkins Bloomberg School of Public Health Center for Communication Programs, INFO Project. (2005). *Decision-Making Tool for Family Planning Clients and Providers*. Baltimore and Geneva: INFO Project and WHO.
86. World Health Organization (WHO). (2007). *WHO Model List of Essential Medicines: 15th List, March 2007*. Geneva: WHO.
87. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), INFO Project. (2007). *Family Planning: A Global Handbook for Providers*. Baltimore and Geneva: CCP and WHO.
88. World Health Organization. (2009). *Medical Eligibility Criteria for Contraceptive Use*. Geneva: World Health Organization.
89. World Health Organization. (2004). *Selected Practice Recommendations of Contraceptive Use*. Geneva: World Health Organization.
90. Zheng, S., Zheng, H., Qian, S., Sang, G., & Kaper, R. (1999). A randomized multicenter study comparing the efficacy and bleeding pattern of a single-rod (Implanon) and a six-capsule (Norplant) hormonal contraceptive implant. *Contraception*, 60 (1), 1-8.
91. Zimmerman, M., Haffey, J., Crane, E., Szumowski, D., Alvarez, F., Bhiromrut, P., Brache, V, Lubis, F, Salah, M, Shaaban, M, & et al.. (1990). Assessing the acceptability of Norplant implants in four countries: Findings from focus group research. *Studies in Family Planning*, 21, 92-103.

Addendum

92. Cagatay L, Cordero C, Jacobstein R, Yacobson I, and Quinn H. (2010) Instruments and supplies for insertion and removal of hormonal implants. Implants Toolkit.