

Essential Knowledge About Female Sterilization

Permanent Methods Toolkit

www.k4health.org/toolkits/permanent-methods

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2012

Suggested citation: Ripley F and Salem RM. (2012) Essential Knowledge About Female Sterilization. Permanent Methods Toolkit. Available: <http://www.k4health.org/toolkits/permanent-methods/female-sterilization>

Contents

Method Characteristics	3
Procedures for Reaching the Fallopian Tubes.....	3
Methods of Occlusion	4
Effectiveness	5
Return to Fertility.....	6
Mechanism of Action	6
Side Effects	6
Non-Contraceptive Health Benefits	6
Safety and Complications.....	7
Client Knowledge, Attitudes, and Behavior	7
Knowledge About Female Sterilization	7
Use of Female Sterilization.....	7
Counseling and Informed Choice	8
Training of Female Sterilization Providers	9
Service Delivery	10
Who Can Provide Female Sterilization	10
Who Can Use Female Sterilization	11
Where Can Female Sterilization Be Performed?.....	12
Timing of Procedure	12
Pain Management	13
Follow-Up Visits.....	13
Access Barriers	13
Provider Fears, Myths, and Misconceptions	14
Cost Considerations.....	14
Logistics: Facilities, Supplies, and Equipment	15
Marketing and Communication	15
Key Guidance Documents	16
References	17

Female sterilization provides permanent and very effective protection against pregnancy. Female sterilization generally involves surgery, but most of the time it requires only light sedation and can be provided in an outpatient facility. It can be safely provided during the immediate postpartum or postabortion period or as an interval procedure (28 days or more after last delivery).³⁸ Newer non-surgical methods of female sterilization, called transcervical approaches, involve reaching the fallopian tubes through the vagina and uterus. This review presents the latest biomedical, social science, and programmatic knowledge about female sterilization as of April 2012.

Method Characteristics

Female sterilization involves blocking the fallopian tubes that carry eggs from the ovaries to the uterus. There are several ways to reach the tubes; the two most common ways—minilaparotomy and laparoscopy—involve surgery. Once the provider reaches the tubes, there are several methods of occluding, or blocking, the tubes (ligation and excision, mechanical devices such as clips or rings, and electrocoagulation).³⁸

Procedures for Reaching the Fallopian Tubes

Approaches used to perform female sterilization include^{3, 13, 38}:

- **Minilaparotomy.** A small incision (less than 5 cm) is made in the abdomen, and the fallopian tubes are brought to the incision to be cut or blocked. This procedure can be performed under general, regional, or local anesthesia, but in most cases local anesthesia is sufficient and considered to be the safest option.
- **Laparoscopy.** A small incision (about 1 cm) is made in the abdomen, and a laparoscope, which is a long thin tube with a lens in it, is inserted into the abdomen through the incision, allowing the provider to see the fallopian tubes. The fallopian tubes are then cut or blocked. Similar to minilaparotomy, this procedure can be performed under general, regional, or local anesthesia. Local anesthesia is the safest option in most cases.
- **Laparotomy.** A vertical incision (greater than 5 cm) is made in the abdomen, and the fallopian tubes are brought to the incision to be cut or blocked. Laparotomy is associated with more complications and longer recovery time than minilaparotomy or laparoscopy and is *not recommend for the sole purpose of female sterilization*. Rather, female sterilization can be done at a time when laparotomy is being performed for other indications such as cesarean delivery.
- **Transcervical.** The fallopian tubes are accessed through the vagina, cervix, and uterus, eliminating the need for surgery. Some transcervical methods (Essure and Adiana) involve the use of a hysteroscope (a thin, telescope-like instrument that is inserted into the uterus) to reach the fallopian tubes. A hysteroscope is an expensive instrument; thus transcervical approaches to female sterilization are not common in low-resource settings.^{1, 2}

Laparoscopy and minilaparotomy are the procedures of choice to reach the fallopian tubes. Both procedures are simple, safe, and inexpensive, and they can be performed on an outpatient basis.^{13, 28}

Where equipment and trained staff are available, the laparoscopic approach to the fallopian tubes is quicker and results in less minor morbidity compared with minilaparotomy.⁴⁷ However, minilaparotomy is recommended for settings with basic resources.²¹

Minilaparotomy^{14, 28}:

- Requires only simple, inexpensive, easily maintained surgical equipment,
- Requires only basic surgical skills and thus can be offered more widely by various cadre of providers,
- Is the preferred procedure for postpartum sterilization,
- Involves lower start-up and continuing costs than laparoscopy services, and
- Does not require sophisticated facilities, and thus more health centers can offer it.

Methods of Occlusion

There are three types of occlusion methods used to block the fallopian tubes^{3, 38}:

1. **Ligation and Excision.** Ligation involves tying each fallopian tube with suture material and cutting it. Ligation and excision techniques also include removing a section of the tube. These methods are used with minilaparotomy and laparotomy. They cannot be used during laparoscopy without highly specialized techniques and equipment.
2. **Mechanical Devices.** Mechanical devices can be applied externally to the tubes to achieve occlusion by blocking the tubes without having to actually cut them. Mechanical devices used for female sterilization include rings (or bands) and clips. These devices are applied using specially designed applicators. Mechanical occlusion can be used for female sterilization with minilaparotomy, laparotomy, and laparoscopy.
3. **Electrical Methods.** Electrocoagulation, or electrical methods of female sterilization, occludes the fallopian tubes by burning a segment of each tube. Electrocoagulation can be performed with laparoscopy. Electrical methods require special equipment and supplies not normally found in places performing basic surgery.

In addition, transcervical methods of occlusion are achieved by mechanical, thermal, or chemical techniques (however, none of the following three techniques are used in family planning programs):

- **Essure® (mechanical):** A spring-like device that scars and plugs the fallopian tubes. A trained clinician uses a hysteroscope to insert the micro-coils into each of the fallopian tubes going through the vagina and uterus. Over the three months following the procedure, scar tissue grows into and around the device. The scar tissue permanently plugs the fallopian tubes so that sperm cannot pass through to fertilize an egg. Women need to use a temporary contraceptive method for three months after insertion to allow time for scar tissue to form. After the scar tissue is formed, Essure is not reversible, as with other female sterilization methods. Because the Essure method of transcervical sterilization requires the use of an expensive hysteroscope to insert the device, it is not a practical method to use in low-resource settings.^{18, 49}
- **The Adiana Procedure (thermal):** A plastic implant is inserted into the fallopian tubes after cauterizing the tissue inside the tubes. A clinician delivers a catheter through a

hysteroscope into the fallopian tube and uses the catheter to apply a small amount of heat to each tube using low-level radiofrequency energy. The heat causes a tiny insert in the superficial tissue inside each fallopian tube. Next, the clinician places a porous, plastic implant, called a matrix, into the inserts in the tissue of the tubes. The matrix remains in the fallopian tubes, and the surrounding tissue grows into it over the next 12 weeks. The ingrown tissue results in total closure of the fallopian tube. Like Essure, women must rely on another contraceptive method for three months after the Adiana procedure.^{4, 49}

- **Quinacrine (chemical):** A chemical compound that scars and blocks the fallopian tubes. The insertion of quinacrine pellets into the uterine cavity was a commonly used method in many developing countries because of its high success rate and low cost.⁵⁰ However, in 2009, a panel of experts met at the World Health Organization (WHO) to review the data available on quinacrine and cancer risk. The WHO panel recommended that “until the totality of safety, effectiveness and epidemiological data has been reviewed, quinacrine should not be used for non-surgical sterilization of women in either clinical or research settings.” The panel also recommended continued surveillance of women who have received quinacrine sterilization in the past for risk of gynecologic cancer and other health complications, such as ectopic pregnancy, adhesion-related morbidity, or adverse maternal and fetal outcomes related to unintended pregnancies.⁶⁸ Subsequent to WHO’s 2009 statement regarding quinacrine sterilization, two new research studies have been published addressing quinacrine and cancer risk. In one study, rates of cancer among women exposed to intrauterine quinacrine in Chile were similar to population-based rates.⁵⁷ A case-control study in Vietnam found no evidence of a relationship between quinacrine sterilization and gynecologic cancer.⁵²

The research findings available on the safety of quinacrine sterilization remain varied and unclear. Dialogue on this issue continues as the safety and efficacy, sociocultural contexts, and ethical considerations are weighed.^{29, 42, 45} To date, the 2009 WHO guidance remains in place to *not* use quinacrine for female sterilization.

Effectiveness

Female sterilization is one of the most effective methods of contraception. However, “permanent” does not mean infallible. Female sterilization has an associated pregnancy (failure) rate of 0.5 percent in the first year of use.⁵⁷ This means that 995 of every 1,000 women relying on female sterilization will *not* become pregnant. In addition, a small though increased cumulative risk of pregnancy remains beyond the first year of use. In a long-term, multicenter study conducted by the U.S. Centers for Disease Control and Prevention, the 10-year cumulative failure rate for women using female sterilization was 1.85 percent. Women younger than 28 years of age had higher pregnancy rates after sterilization than older women; the 10-year cumulative failure rate for younger women was as high as 5.43 percent.⁴⁰

A review of trials found pregnancy rates are low with all techniques of female sterilization, and all techniques are associated with few adverse effects.³⁰ Although pregnancy rates are low among all techniques of female sterilization, some data suggests that tubal occlusion with a clip or bipolar coagulation is somewhat less effective than other methods of tubal occlusion.^{40, 46}

Pregnancy after undergoing female sterilization is less likely if an experienced practitioner has performed the procedure.³⁶ On the rare occasion pregnancy is detected soon after the sterilization procedure, most often it is because the woman was already pregnant at the time of sterilization. In some cases, however, the method fails because an opening in the fallopian tube develops (recanalization) or occlusion by the electrical or clip method is not complete. Pregnancy also can occur if the provider mistakenly cuts and ties a structure other than the fallopian tube (for example, the round ligament).⁷⁰

Return to Fertility

Female sterilization is intended to be permanent; fertility does not return because sterilization generally cannot be stopped or reversed. While the reversal of female sterilization is possible in some cases, it is difficult and expensive, does not guarantee a return of fertility, and is not available in most areas.⁷⁰

Mechanism of Action

Female sterilization involves cutting or blocking the fallopian tubes to prevent sperm and egg from joining. That is, the woman's eggs cannot move down the fallopian tubes once they are cut and tied, or blocked, and so they do not meet sperm and cannot be fertilized.

Side Effects

There are no side effects associated with the use of female sterilization.⁷⁰ There was concern that female sterilization could cause menstrual abnormalities, such as changes in menstrual cycle flow or length or in menstrual pain. However, recent studies have found that women who undergo female sterilization are no more likely than other women to have menstrual abnormalities.^{3,39} Studies have also found that female sterilization does not adversely affect sexual interest or pleasure.¹⁰

Non-Contraceptive Health Benefits

In addition to protecting against pregnancy, female sterilization may also protect against pelvic inflammatory disease and ovarian cancer.^{3, 8, 9, 38}

Ectopic Pregnancy

Because female sterilization is highly effective in preventing pregnancy, ectopic pregnancy is very rare among women who have had female sterilization. The rate of ectopic pregnancy among women who have had female sterilization is 6 per 10,000 women per year (0.06 percent per year). In contrast, the rate of ectopic pregnancy among women in the United States not using any contraceptive method is 65 per 10,000 women per year (0.65 percent per year). Thus, female sterilization has an overall protective effect against ectopic pregnancy.⁷⁰

However, on the rare occasions that a pregnancy occurs among a woman who has had female sterilization, the risk of it being an ectopic pregnancy is significant. One-third of all pregnancies that occur among women who had female sterilization will be ectopic. The risk of ectopic pregnancy varies somewhat by method of female sterilization and by age at sterilization. Because they have a longer fertile period remaining, women sterilized before age 30 have a higher risk of ectopic pregnancy compared with women sterilized at age 30 or older.^{38, 41}

Safety and Complications

Female sterilization is safe, and all women can undergo female sterilization although the timing might need to be delayed in some cases (see Timing of Procedure, p. 11). Serious complications and morbidity from female sterilization are rare²⁸ but can include anesthesia-related injuries, hemorrhage, or infection (<1 percent risk).²⁶ Death due to the procedure or anesthesia is extremely rare: 1 to 2 per 100,000 procedures in the U.S. result in death (usually related to anesthesia),³⁸ and about 5 per 100,000 procedures in developing countries result in death.²⁵

Complications of Surgery and Anesthesia. Female sterilization requires surgery with either local or general anesthesia. Overall complication rates are generally low, estimated at 9 to 16 per 1,000 procedures. Complications can include: infection, bleeding, unintended bleeding to internal organs, and depressed respiration or blood pressure due to anesthesia.²⁶ The risk of anesthesia-related complications is significantly lower with local anesthesia than with general anesthesia. In fact, the safety, efficacy, and high levels of client satisfaction associated with the use of local anesthesia for minilaparotomy and laparoscopy are well established.^{13, 70}

The risk of procedure-related complications is significantly increased among women with diabetes, obesity, and previous abdominal or pelvic surgery.²⁶

Hysterectomy. Some studies in North America have found an increased risk for subsequent hysterectomy among women who have had female sterilization. It appears unlikely that this increase in risk is related to the sterilization procedure itself, as there are no known biologic explanations for the increased risk. It may be that other characteristics of women who undergo sterilization are a factor influencing the risk for subsequent hysterectomy; studies have shown the risk to be increased among women undergoing sterilization regardless of age and method of tubal occlusion used.^{3, 17, 38}

Client Knowledge, Attitudes, and Behavior

Knowledge About Female Sterilization

Knowledge about female sterilization varies widely by country and region. Among 81 countries with data from Demographic and Health Surveys (DHS), the percentage of women who had heard of female sterilization ranges from a low of 9 percent in Azerbaijan to 99 percent in Nepal. In 29 of the 81 countries, less than half of the women surveyed had heard of female sterilization. Many of these countries are in sub-Saharan Africa: in 23 of 39 surveyed sub-Saharan African countries, less than half of the women surveyed know about female sterilization. In other regions of the world, knowledge about female sterilization is much greater. In Latin America and the Caribbean, for example, knowledge of female sterilization was 65 percent or greater in all 15 countries surveyed. In 10 of 12 surveyed countries in South and South East Asia, greater than 80 percent of women know about female sterilization, and in 8 of 11 North African countries, greater than 50 percent of women know about female sterilization.³³

Use of Female Sterilization

Female sterilization is the most widely used modern method of contraception in the world. Worldwide it is estimated that more than 220 million women of reproductive age who are married or in union use female sterilization, accounting for about 20 percent of women of

reproductive age who are married or in union. Approximately 70 percent, or 66 million, of female sterilization users live in China and India. Proportionally, use of female sterilization is highest in Latin America and the Caribbean with 26 percent of all women of reproductive age who are married or in union using female sterilization, followed by Asia and South America, each with 23 percent. In sub-Saharan Africa in general, fewer than 2 percent use female sterilization. Some sub-Saharan African countries do have higher prevalence of female sterilization use among women of reproductive age who are married or in union, for example: 10 percent in Malawi and Namibia, 13 percent in Cape Verde, and 15 percent in South Africa.^{33, 61}

Satisfaction with Female Sterilization

Studies suggest that women who choose to use female sterilization are largely satisfied with their decision. In general, satisfaction rates across studies range from 76 percent in Sao Paulo, Brazil, to 98 percent in Senegal. The most common reason for satisfaction appears to be the reduction in anxiety about the risk of unintended pregnancy.¹³

Avoiding Regret

Much of the literature suggests that regret is generally low among sterilization users. Across studies, regret rates range from about 7 percent in Columbia and the United States to about 17 percent in Bangladesh and the Dominican Republic.¹³ In general, people most likely to regret sterilization are young, have few or no children, have just lost a child, are not married, are having marital problems, or have a partner who opposes sterilization.¹¹ None of these characteristics rule out sterilization, but health care providers should make especially sure to provide thorough counseling to help people with these characteristics (and others) to carefully consider the permanent nature of sterilization and make an informed choice.^{13, 62} (See Counseling and Informed Choice, below.)

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)⁶⁰

Greater contraceptive choice has been shown to improve uptake and use of all methods.^{37, 55} Therefore, it is important that women have access to a range of methods, including female sterilization.

Because female sterilization is permanent, it is especially important to provide careful and thorough counseling to help women make a voluntary and informed decision. Counseling should address the following:^{13, 16, 20, 69, 70}

1. Emphasize that female sterilization is considered to be permanent and probably cannot be reversed.

Essential Knowledge About Female Sterilization

2. State that the procedure will prevent the client from ever having any more children, although a small chance of method failure exists.
3. Explain that other effective and reversible contraceptive methods are available to the client (including reversible long-acting methods) as well as vasectomy for the male partner.
4. Inform the client that sterilization is a surgical procedure and review details of the procedure to be used.
5. Discuss the risks and benefits of the procedure and method.
6. Screen the client for and discuss risk indicators for regret.
7. Explain that the client can decide against having the procedure at any time before it takes place.

Health care providers can help clients think about having female sterilization and make an informed choice by asking the following questions:⁷⁰

- "Do you want to have any more children in the future?"
- "If not, do you think you could change your mind later? What might change your mind? For example, suppose one of your children died?"
- "Suppose you lost your spouse, and you married again?"
- "Does your partner want more children in the future?"

Informed decision-making and informed consent are fundamental to providing good quality health care services and are a fundamental human right. International human rights treaty law protects individuals' rights to informed decision-making and consent for sexual and reproductive health services, including sterilization. This law is intended to protect the right to decide freely and responsibly on the number and spacing of children by legally obligating health care providers to provide and obtain full informed consent prior to performing a sterilization procedure. Nevertheless, forced and coerced sterilizations have and likely continue to occur around the world. Groups particularly vulnerable to forced and coerced sterilization include adolescents, ethnic and indigenous minorities, disabled women and girls, and women with HIV/AIDS. Many of these violations occur during the provision of health services and are perpetrated by health service personnel.^{19, 71} The International Federation of Gynecology and Obstetrics (FIGO) 2011 guidelines on female sterilization recognize the long history of forced and coerced sterilization of marginalized women and provide detailed recommendations for when and how consent to sterilization can be obtained.²⁰

Training of Female Sterilization Providers

Training of providers plays a central role in assuring the quality of sterilization services. Female sterilization must be done by well-trained providers in properly equipped health facilities where full attention is given to good surgical technique, infection prevention, and counseling.

For both laparoscopy and minilaparotomy, in-service training can be conducted in university training facilities or regional training centers. Because minilaparotomy can be performed without extensive specialized equipment, training also can take place in free-standing clinics. Wherever training takes place, it requires:^{13, 14}

- Experienced trainers familiar with the procedure and the training curriculum.

- Adequate surgical facilities and equipment.
- Sufficient number of patients for each trainee to observe a number of procedures and to practice newly acquired skills under supervision.

Where doctors cannot meet the demand for sterilization services, nurses and nurse-midwives have been trained to safely and successfully perform interval or postpartum minilaparotomies.¹⁴ A study from Thailand compared the performance of doctors and trained nurse-midwives in performing postpartum female sterilization by minilaparotomy. Rates of postoperative complications were low in both groups and additional data suggests that nurse-midwives might be more thorough than doctors in counseling their patients about the procedure.^{12, 27} To better meet the unmet need for permanent contraceptive methods in Uganda, the national sexual and reproductive health policy guidelines and service standards were changed to allow mid-level providers, including clinical officers, to provide permanent methods of contraception if they are properly trained.³⁵ In Malawi, clinical officers can receive additional competency-based in-service training to provide minilaparotomy.³²

Training for all providers of female sterilization should cover both clinical/surgical skills and communication with clients. Training should emphasize the following:

- The importance of informed and voluntary decision-making, free of any coercion,
- The need for counseling and obtaining informed consent,
- Use of local anesthesia (unless indicated otherwise) ,
- Use of gentle surgical technique,
- The importance of monitoring the patient,
- How to manipulate the uterus and tube,
- Infection prevention,
- Pain management, and
- Postoperative recovery^{13, 14}

In most developing country settings, female sterilization will be offered by minilaparotomy with local anesthesia. Thus, training curricula should emphasize these approaches. Trainees should perform at least 10 laparoscopic sterilizations and 10 minilaparotomies on their own under direct supervision during their training.²¹

Service Delivery

Who Can Provide Female Sterilization

Specialized or non-specialized doctors can perform minilaparotomy, provided they have been properly trained both in operative technique and in the technique of local anesthesia. Under certain conditions, such as when demand for female sterilization exceeds the supply of trained doctors, nurses and midwives with surgical experience can be trained to perform the procedure if the country's laws and regulations permit. When cadres of health care professionals other than doctors perform the procedure, a doctor should be available for consultation in case of surgical difficulties or complications. All female sterilization providers should be certified for competence in performing sterilization procedures by an accredited training authority and should have done at least 10 solo cases during training. Only doctors with experience in abdominal and pelvic surgery should be trained to perform laparoscopic sterilization.²¹

Who Can Use Female Sterilization

With proper counseling and informed consent, *any* woman can have female sterilization safely, including women who: ^{67, 70}

- Are young,
- Are not married,
- Have no children or few children,
- Do not have their husband's permission,
- Just gave birth (within the last 7 days),
- Are breastfeeding,
- Are infected with HIV or have AIDS, whether or not on antiretroviral therapy.

In some of these situations, careful counseling is especially important to make sure the woman will not regret her decision. (See Counseling and Informed Choice, p. 6.)

While no medical condition or circumstance will prevent a woman from being eligible to use female sterilization, there are some conditions for which WHO recommends that female sterilization be delayed or postponed until the conditions are treated and resolved. These conditions include being 7 to 41 days postpartum, severe pre-eclampsia or eclampsia, unexplained vaginal bleeding, and acute deep vein thrombosis or pulmonary embolism. ^{67, 70} For the complete list of conditions for which the procedure should be delayed or postponed, see the World Health Organization's [Medical Eligibility Criteria for Contraceptive Use](#).

There are also some conditions for which WHO recommends that the procedure should be done in a special setting with extra caution exercised. These include some cases of uterine rupture or perforation, some cases of hypertension, endometriosis, and pelvic tuberculosis. ^{67, 70} For the complete list of conditions for which the procedure should be performed in a special setting with extra caution, see the World Health Organization's [Medical Eligibility Criteria for Contraceptive Use](#).

The only examinations and tests considered essential and mandatory in all circumstances for safe and effective use of female sterilization include a pelvic/genital examination and blood pressure screening. Women can have female sterilization: ^{65, 70}

- Without any blood tests or routine laboratory tests.
- Without cervical cancer screening.
- Even when a woman is not having monthly bleeding at the time, if it is reasonably certain she is not pregnant (see [Pregnancy Checklist](#)).

STIs and HIV/AIDS

Female sterilization does not protect against HIV or other sexually transmitted infections (STIs). Women with HIV/AIDS should be urged to use condoms consistently and correctly to help prevent the transmission of HIV and other STIs. Women with HIV infection can safely have female sterilization. Special arrangements are needed to perform female sterilization on women with AIDS; those who are clinically stable may receive sterilization in settings with experienced staff and the needed equipment and support. (see [WHO Medical Eligibility Criteria](#)). ^{67, 70}

Where Can Female Sterilization Be Performed?

Female sterilization usually involves a surgical procedure (unless a transcervical option is available), so there are limitations as to where, how, and by whom it can be provided. However, female sterilization is a relatively simple procedure and does not require a fully equipped hospital to be performed. Thus, it is possible to offer female sterilization services closer to the community.

Basic facilities should include a waiting or reception area, an examination area, access to laboratory services, a clean surgical area isolated from the outside and from clinic traffic, and a recovery area.

Most female sterilization services are provided in permanent service delivery sites (for example, tertiary, regional, or district hospitals or family planning clinics having simple operating theaters). In some countries, however, female sterilization services are offered by mobile surgical teams who are deployed on a periodic or seasonal basis. Providing mobile services takes careful planning and follow-up to ensure quality services. Use of mobile teams allows programs to offer female sterilization to clients who live far away from static facilities, to maximize use of trained providers, and to respond to demand for sterilization services during selected months of the year.

Female sterilization services can be offered during the postpartum period by integrating family planning into a site's existing maternity services. Postpartum minilaparotomy is a safe and effective procedure that does not increase hospitalization time and that allows women access to female sterilization during their delivery hospitalization.¹³

If no pre-existing medical conditions require special arrangements:

- Minilaparotomy can be provided in maternity centers and basic health facilities where surgery can be done. These include both permanent and temporary facilities that can refer the woman to a higher level of care in case of emergency.
- Laparoscopy requires a better-equipped center, where the procedure is performed regularly and an anesthetist is available.⁷⁰

Timing of Procedure

If there is no medical reason to delay, a woman can have the female sterilization procedure any time she wants if it is reasonably certain she is not pregnant.^{67, 70} See [Family Planning: A Global Handbook for Providers](#) for more details.

Also, a woman can have female sterilization performed postpartum or postabortion. If a client has made a voluntary, informed choice in advance, she can have female sterilization immediately following childbirth, within seven days of giving birth, or within 48 hours of uncomplicated abortion. Additionally, a woman can have the female sterilization performed any time six weeks or more after childbirth if it is reasonably certain the client is not pregnant (see [Pregnancy Checklist](#)). Sterilization should not be performed if a woman is between seven days and six weeks postpartum. (For more information on when to perform female sterilization and a checklist to help assess whether it is reasonably certain a woman is not pregnant, see [Family Planning: A Global Handbook for Providers](#).)^{67, 70}

Pain Management

Pain management is intended to reduce a client's anxiety during the female sterilization procedure and reduce any discomfort and pain. Generally, women who undergo female sterilization will receive local anesthesia to manage pain during the procedure. Except in special cases, women will also be sedated but remain awake. Women can feel the health care provider moving their uterus and fallopian tubes during the procedure, which can be uncomfortable, but not painful. General anesthesia may be offered to women who are very frightened of pain if a trained anesthetist or anesthesiologist and suitable equipment are available.^{24, 70}

Follow-Up Visits

One follow-up visit within seven days (or at least within two weeks) after the female sterilization procedure is strongly recommended. No woman should be denied the procedure, however, because follow-up would be difficult or not possible. At the follow-up visit, the health care provider checks the site of the incision, looks for signs of infection, and removes any stitches. This can be done in the clinic, in the client's home, or at any other health center.

The client should be counseled to come back to the clinic for medical care from a nurse or doctor at any time if she:

- Has bleeding, pain, pus, heat, swelling, or redness of the wound that becomes worse or does not go away.
- Develops high fever (greater than 38° C/101° F), or
- Experiences fainting, persistent, light-headedness, or extreme dizziness in the first four weeks and especially in the first week.

Additionally, the woman should be encouraged to come back any time she has problems or questions, experiences a major change in health, or thinks she might be pregnant.⁷⁰

Access Barriers

Female sterilization continues to be the most prevalent contraceptive method used worldwide, and demand for this method is projected to continue. Quality female sterilization services will remain a crucial component of comprehensive family planning services, and good access to services will be important for meeting demand.⁷ Good access to female sterilization services includes conveniently available service delivery sites that are well known, welcoming, and free of unnecessary administrative and medical barriers. Unfortunately, many factors can limit accessibility to family planning services, including female sterilization. Financial barriers, hospital policies, and uncoordinated and inefficient systems can all serve as hurdles to obtaining female sterilization.^{56, 72} Easy access to female sterilization may also be limited by a lack of trained health care providers available to perform the procedure within a given geographic area and a lack of equipment and supplies needed to perform the procedure.⁶³

Medical Barriers

Medical barriers (that is, policies, practices, or health concerns that have no scientific basis and that result in scientifically unjustifiable impediment to, or denial of, contraception) are a significant problem impeding wider access to modern contraception, including female sterilization.⁴⁸ Contraceptive provision in many settings continues to be based on outdated medical information, unproven theoretical concerns, and provider biases. Studies have found that

in some developing countries, 25 percent to 50 percent of women seeking contraceptives are refused services until they come to a clinic at a time of menstruation.^{5, 53}

Additionally, many women who request a contraceptive method, such as female sterilization, are denied their choice based on eligibility criteria that are neither scientifically justified nor consistent with national guidelines. These 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.^{48, 54, 64}

There should not be unjustified policy or practice barriers to provision of this service, including legal restrictions, age and parity restrictions, marriage requirements, spousal or parental consent requirements, and provider bias. Some programmatic considerations to improve access to female sterilization include:²⁵

- Offer female sterilization in as many places and for as many women as possible. Clinics, hospitals, mobile units, and temporary facilities should provide services.
- Train, equip, supervise, and support providers to offer locally acceptable, feasible, safe, and effective female sterilization services.
- Provide postpartum and postabortion female sterilization services.
- Task-shifting.
- Public-private partnerships with dedicated providers.

Provider Fears, Myths, and Misconceptions

Provider bias against female sterilization; inappropriate eligibility restrictions; process barriers, such as unnecessary laboratory tests; and unjustified restrictions on which of the staff are allowed to provide a method all contribute to limiting access to female sterilization.²³ In many countries, potential providers of female sterilization services hold misconceptions about the female sterilization procedure and mechanism of action, side effects, and eligibility criteria. For example, some providers erroneously believe that female sterilization increases risk of ectopic pregnancy, causes cancer, and/or is inappropriate for unmarried women or women without children. Many also believe, incorrectly, that female sterilization involves removing the uterus or leads to a need to have it removed.^{25, 70}

Addressing providers' fears, myths, and misconceptions requires multiple and repeated interventions.⁴⁴ Passive dissemination of scientific evidence and new guidelines often has little or no effect on providers' attitudes and practices. Effective approaches that facilitate the application of research findings include educational outreach, interactive workshops, supportive supervision, on-the-job reminders, the engagement of opinion leaders, and the involvement of local stakeholders.¹⁵

Cost Considerations

The cost of female sterilization varies greatly by procedure and setting. Nevertheless, female sterilization is one of the most cost-effective contraceptive methods, falling behind vasectomy and IUDs.^{31, 58} Generally, female sterilization procedures cost two to four times more than vasectomies, unless performed at the time of cesarean section.^{42, 58}

Because female sterilization is permanent, over time it becomes a very cost-effective contraceptive method, even though it carries a high up front cost to provide the method.^{6, 59}

Logistics: Facilities, Supplies, and Equipment

Providing quality female sterilization services is partly dependent on having adequate facilities, supplies, and equipment to carry out the procedure safely. Minilaparotomy can be performed at almost any facility that has surgical capacity, from a separate outpatient facility to a hospital-based facility. Laparoscopy requires a hospital or health facility with an anesthetist and general anesthesia backup available. In general, to provide female sterilization, a facility needs good lighting, electricity, a supply of clean water, and the capacity to handle or quickly refer emergencies.

The equipment, instruments, and supplies needed to perform minilaparotomy are generally available in most facilities where surgical services are offered. In addition to standard surgical instruments, two special instruments are also needed—a tubal hook and a uterine elevator. Laparoscopy requires delicate and expensive endoscopic equipment. Transcervical methods require a hysteroscope. Additionally, all equipment, supplies, and drugs needed to stabilize a client who experiences a complication must be on hand.^{14, 21, 66}

Marketing and Communication

Family planning programs and providers play an important role in communicating accurate information about female sterilization to communities. In most places, people learn about female sterilization services directly from other people—friends, neighbors, relatives, or family planning workers. Additionally, information in the mass media can be an effective way to reach many potential users of female sterilization with accurate information about the procedure, how it works, and other characteristics.

To increase public knowledge and understanding of female sterilization as a permanent contraceptive option, mass media campaigns as well as educational materials and counseling messages used by family planning providers should address concerns and misconceptions and explain female sterilization accurately. Communication efforts can focus on: encouraging potential users to seek out more information on female sterilization, helping providers and clients to understand that contraceptive needs change and female sterilization is a safe and convenient option for preventing pregnancy permanently, and promoting male support for the method.⁷

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

Consumer-directed information about female sterilization can increase demand for and use of the method. In settings where the audience's awareness of female sterilization 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.³⁴

Clients who have been informed prior to a clinic visit about female sterilization and its benefits might be more likely to ask their provider about the method, thereby indicating interest and potential demand for female sterilization. This might help to ensure that the method is included among the contraceptive options presented to clients.³⁴

The benefits valued by female sterilization users include: no side effects, permanent contraceptive protection, and ease of use.⁷⁰ Communication activities should specifically advertise sites where female sterilization services are available, linking clients to providers who are trained to perform the procedure and can provide accurate, unbiased, and more detailed information, including proper counseling on issues to address when considering female sterilization. Channeling clients to skilled providers ensures that clients will be given the method if they want it and that they have a good experience, leading to positive word-of-mouth.

Marketing for female sterilization 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 or perform female sterilization so that they can support referral systems to providers who do offer 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 female sterilization as perceived by a particular group in order to create focused messages. Attempts to address multiple issues simultaneously might result in dilution of individual messages and less overall impact.

Key Guidance Documents

[*Medical Eligibility Criteria for Contraceptive Use*](#) (2010 edition) (MEC) is one of WHO's two evidence-based guidelines on contraceptive use and one of their four family planning cornerstone resources to support the safe and effective provision and use of family planning methods. The MEC 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 (World Health Organization, 2009).

[*Selected Practice Recommendations for Contraceptive Use*](#) (2004 edition) along with the [2008 Update](#), the companion guideline to [*Medical Eligibility Criteria for Contraceptive Use*](#) and one of the WHO's four family planning cornerstone resources to support the safe and effective provision and use of family planning methods. The Selected Practice Recommendations provide guidance on the safe and effective use of a wide range of contraceptive methods. The recommendations, which answer 33 questions selected by WHO, were determined by expert consensus and are based on systematic reviews of available clinical and epidemiological

research. The questions address general issues relevant to the use of contraception with one of the questions addressing male sterilization.

[*Decision-Making Tool for Family Planning Clients and Providers*](#) (World Health Organization (WHO) *et al.*, 2005) 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

[*Family Planning: A Global Handbook for Providers*](#) (World Health Organization *et al.*, 2011) 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 male sterilization.

References

1. Abbott J. Transcervical sterilization. *Best Pract Res Clin Obstet Gynaecol.* Aug 2005;19(5):743-56.
2. Abbott J. Transcervical sterilization. *Curr Opin Obstet Gynecol.* Aug 2007;19(4):325-30.
3. American College of Obstetrics and Gynecology. ACOG practice bulletin. Benefits and risks of sterilization. Number 46, September 2003 (replaces Technical Bulletin Number 222, April 1996). *Int J Gynaecol Obstet.* 2003 Dec;83(3):339-50.
4. Anderson TL, Vancaillie TG. The Adiana System for permanent contraception: safety and efficacy at 3 years. *J Minim Invasive Gynecol.* 2011 Sep-Oct;18(5):612-6.
5. Callahan, R. (2006). Checklists to Reduce Medical Barriers to Contraceptive Use. *Global Health Technical Briefs.* Baltimore, MD: INFO Project, Johns Hopkins Bloomberg School of Public Health.
6. Chiou CF, Trussell J, Reyes E, Knight K, Wallace J, Udani J, Oda K, Borenstein J. Economic analysis of contraceptives for women. *Contraception.* 2003 Jul;68(1):3-10.
7. Church CA, Geller JS. (1990) *Voluntary Female Sterilization: Number One and Growing.* Baltimore, MD: Johns Hopkins University School of Public Health.
8. Cibula D, Widschwendter M, Májek O, Dusek L. Tubal ligation and the risk of ovarian cancer: review and meta-analysis. *Hum Reprod Update.* 2011 Jan-Feb;17(1):55-67.
9. Cibula D, Widschwendter M, Zikan M, Dusek L. Underlying mechanisms of ovarian cancer risk reduction after tubal ligation. *Acta Obstet Gynecol Scand.* 2011 Jun;90(6):559-63.
10. Costello C, Hillis SD, Marchbanks PA, Jamieson DJ, Peterson HB. The effect of interval tubal sterilization on sexual interest and pleasure. *Obstet Gynecol.* 2002 Sep;100(3):511-17.
11. Curtis KM, Mohllajee AP, Peterson HB. Regret following female sterilization at a young age: a systematic review. *Contraception.* 2006 Feb;73(2):205-10.
12. Dusitsin N, Satayapan S. Sterilization of women by nurse-midwives in Thailand. *World Health Forum.* 1984;5:259-62.
13. EngenderHealth. (2002). *Contraceptive Sterilization: Global Issues and Trends.* New York.
14. EngenderHealth. (2003) *Minilaparotomy for Female Sterilization: An Illustrated Guide for Service Providers.* New York.
15. Grimshaw J, Shirran E. Getting Evidence into Practice. *Effective Health Care.* 1999 Feb;5(1):1-16.
16. Guidelines for pre-sterilization counseling. *Contracept Rep.* 1996 Sep;7(3):12-3.

17. Hillis SD, Marchbanks PA, Tylor LR, Peterson HB. Higher hysterectomy risk for sterilized than nonsterilized women: findings from the U.S. Collaborative Review of Sterilization. The U.S. Collaborative Review of Sterilization Working Group. *Obstet Gynecol.* 1998 Feb;91(2):241-6.
18. Hurskainen R, Hovi SL, Gissler M, et al. Hysteroscopic tubal sterilization: a systematic review of the Essure system. *Fertil Steril.* 2010 Jun;94(1):16-9.
19. International Community of Women Living with HIV/AIDS (ICW). The forced and coerced sterilization of HIV positive women in Namibia. London. March 2009.
20. International Federation of Gynecology and Obstetrics (FIGO). Female Contraceptive Sterilization. 2011.
21. International Planned Parenthood Federation (IPPF). (2004) Medical and Service Delivery Guidelines: For Sexual and Reproductive Health Services. 3rd ed. London: IPPF.
22. International Planned Parenthood Federation (IPPF). (2007). Contraceptive Myths and Counseling Messages.
23. Jacobstein R. Fostering change in medical settings: some considerations for family planning programmes. *IPPF Medical Bulletin.* 2009 Sep;43(3):3-4.
24. Jacobstein R, Cordero C, Ahlborg J. Pain management for female sterilization by minilaparotomy. *ACQUIRE Clinical Update.* August 2007.
25. Jacobstein R, Pile J. (2004) Female Sterilization: The Most Popular Method of Modern Contraception. *Global Health Technical Briefs.* Baltimore, MD: INFO Project, Johns Hopkins Bloomberg School of Public Health.
26. Jamieson DJ, Hillis SD, Duerr A, Marchbanks PA, Costello C, Peterson HB. Complications of interval laparoscopic tubal sterilization: findings from the United States Collaborative Review of Sterilization. *Obstet Gynecol.* 2000 Dec;96(6):997-1002.
27. Kanchanasinith K, Piyapinyo P, Pitaktepsombati P, Vibulsresth S, Gaits DS, Janowifz B, Robbins M. Postpartum sterilization by nurse-midwives in Thailand. *Int Fam Plann Perspect* 1990;16(2):55-8.
28. Kulier R, Boulvain M, Walker D, Candolle G, Campana A. Minilaparotomy and endoscopic techniques for tubal sterilisation. *Cochrane Database Syst Rev.* 2004(3):CD001328.
29. Large qunacrine study comes under fire from family planners. *Contracept Technol Update.* 1994 Apr;15(4):45-7.
30. Lawrie TA, Nardin JM, Kulier R, Boulvain M. Techniques for the interruption of tubal patency for female sterilisation. *Cochrane Database Syst Rev.* 2011 Feb 16;(2):CD003034.
31. Mavranezouli I. Health economics of contraception. *Best Pract Res Clin Obstet Gynaecol.* 2009 Apr;23(2):187-98.
32. McGrath JA, Schenck-Yglesias C, Lacoste M. Estimating the need for family planning/ reproductive health service providers in Malawi. *JHPIEGO.* March 2004.
33. Measure DHS. (Accessed 1 July 2012.). *STATcompiler.* Calverton, Maryland, USA.
34. Melngailis, I., & Eber, M. (2006). Marketing and communication strategies for “revitalizing” the IUD. *IUD Toolkit.*
35. Moffett J. Expanding roles for family planning providers. *Family Health Research.* FHI 360. 2009;3(2):4-5.
36. Nardin JM, Kulier R, Boulvain M. Techniques for the interruption of tubal patency for female sterilisation. *Cochrane Database Syst Rev.* 2003(1):CD003034.
37. Pariani S, Heer DM, Van Arsdol MD, Jr. Does choice make a difference to contraceptive use? Evidence from east Java. *Stud Fam Plann.* 1991 Nov-Dec;22(6):384-90.

38. Peterson HB. Sterilization. *Obstet Gynecol.* 2008 Jan;111(1):189-203.
39. Peterson HB, Jeng G, Folger SG, Hillis SA, Marchbanks PA, Wilcox LS. The risk of menstrual abnormalities after tubal sterilization. U.S. Collaborative Review of Sterilization Working Group. *N Engl J Med.* Dec 7 2000;343(23):1681-7.
40. Peterson HB, Xia Z, Hughes JM, Wilcox LS, Tylor LR, Trussell J. The risk of pregnancy after tubal sterilization: findings from the U.S. Collaborative Review of Sterilization. *Am J Obstet Gynecol.* 1996 Apr;174(4):1161-8; discussion 1168-1170.
41. Peterson HB, Xia Z, Hughes JM, Wilcox LS, Tylor LR, Trussell J. The risk of ectopic pregnancy after tubal sterilization. U.S. Collaborative Review of Sterilization Working Group. *N Engl J Med.* 1997 Mar;336(11):762-7.
42. Pollack AE, Carignan CS. Association for Voluntary Surgical Contraception: a technical statement on quinacrine pellets for nonsurgical female sterilization. *Adv Contracept.* 1994 Mar;10(1):43-50.
43. Pollack AE, Thomas LJ, Barone MA. (2012). *Female and Male Sterilization.* Hatcher, R.A., Trussell, J., Nelson, A.L., Cates, W., Kowal, D., Policar, M. (editors). *Contraceptive Technology.* 20th. New York: Ardent Media.
44. Ramchandran D, Salem RM. (2008). *New findings on contraceptives.* Population Reports. Baltimore, Maryland: INFO Project, Johns Hopkins Bloomberg School of Public Health.
45. Reproductive Health Technologies Project. (2002). *The Quinacrine Debate and Beyond: Exploring the Challenges of Reproductive Health Technology Development and Introduction.*
46. Rodriques M, Edelman AB, Kapp N. Postpartum sterilization with the titanium clip: a systematic review. *Obstet Gynecol.* 2011 Jul;118(1):143-7.
47. Royal College of Obstetricians and Gynaecologists (RCOG). (2004). *Male and Female Sterilization.*
48. Shelton JD, Angle MA, Jacobstein RA. Medical barriers to access to family planning. *Lancet.* 1992 Nov;340(8831):1334-5.
49. Smith RD. Contemporary hysteroscopic methods for female sterilization. *Int J Gynaecol Obstet.* 2010 Jan;108(1):79-84.
50. Sokal DC, Hieu do T, Loan ND, et al. Safety of quinacrine contraceptive pellets: results from 10-year follow-up in Vietnam. *Contraception.* 2008 Jun;78(1):66-72.
51. Sokal DC, Trujillo V, Guzman SC, Guzman-Serani R, Wheelless A, Hubacher D. Cancer risk after sterilization with transcervical quinacrine: updated findings from a Chilean cohort. *Contraception.* 2010 Jan;81(1):75-8.
52. Sokal DC, Vach TH, Nanda K, et al. Quinacrine sterilization and gynecologic cancers: a case-control study in northern Vietnam. *Epidemiology.* 2010 Mar;21(2):164-71.
53. Stanback J, Thompson A, Hardee K, Janowitz B. Menstruation requirements: a significant barrier to contraceptive access in developing countries. *Stud Fam Plann.* 1997 Sep;28(3):245-50.
54. Stanback J, Twum-Baah KA. Why do family planning providers restrict access to services? an examination in Ghana. *International Family Planning Perspectives.* March 2001;27(1):37-41.
55. Steele F, Curtis SL, Choe M. The impact of family planning service provision on contraceptive-use dynamics in Morocco. *Stud Fam Plann.* Mar 1999;30(1):28-42.
56. Thurman AR, Harvey D, Shain RN. Unfulfilled postpartum sterilization requests. *J Reprod Med.* 2009 Aug;54(8):467-72.

57. Trussell J. (2007). Contraceptive Efficacy. Hatcher RA, Trussell J, Nelson AL, Cates W, Stewart FH, Kowal D. (editors). Contraceptive Technology. Nineteenth Revised Edition. New York: Ardent Media.
58. Trussell J, Lalla AM, Doan QV, Reyes E, Pinto L, Gricar J. Cost effectiveness of contraceptives in the United States. *Contraception*. 2009 Jan;79(1):5-14.
59. Trussell J, Leveque JA, Koenig JD, London R, Borden S, Henneberry J, LaGuardia KD, Stewart F, Wilson TG, Wysocki S, et al. The economic value of contraception: a comparison of 15 methods. *Am J Public Health*. 1995 Apr;85(4):494-503.
60. 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.
61. United Nations, Department of Economic and Social Affairs (UNDESA), Population Division (2011). World Contraceptive Use Wall Chart 2011.
62. Verkuyl DA. Sterilisation during unplanned caesarean sections for women likely to have a completed family--should they be offered? Experience in a country with limited health resources. *BJOG*. 2002 Aug;109(8):900-4.
63. Wickstrom J, Jacobstein R. Contraceptive security: incomplete without long-acting and permanent methods. The ACUQIRE Project. Advocacy Brief No. 4. 2008.
64. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. *Reprod Health*. 2009;6:3.
65. World Health Organization (WHO). (2004). Selected Practice Recommendations for Contraceptive Use. Geneva: World Health Organization.
66. World Health Organization (WHO). (1992). Female Sterilization: A Guide to Provision of Services. Geneva: World Health Organization.
67. World Health Organization (WHO). (2010). Medical Eligibility Criteria for Contraceptive Use. Geneva: World Health Organization.
68. World Health Organization (WHO). (2009). The safety of quinacrine when used as a method of non-surgical sterilization in women. Geneva: Department of Reproductive Health and Research, WHO.
69. World Health Organization, Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), INFO Project. (2005). Decision-Making Tool for Family Planning Clients and Providers. Baltimore, Maryland and Geneva: INFO Project and WHO.
70. 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. (2011). Family Planning: A Global Handbook for Providers. Baltimore, MD and Geneva: CCP and WHO.
71. Zampas C, Lamackova A. Forced and coerced sterilization of women in Europe. *Int J Gynaecol Obstet*. 2011 Aug;114(2):163-6.
72. Zite N, Wuellner S, Gilliam M. Barriers to obtaining a desired postpartum tubal sterilization. *Contraception*. 2006 Apr;73(4):404-7.