

Essential Knowledge About Vasectomy

Permanent Methods Toolkit

www.k4health.org/toolkits/permanent-methods

Fonda Ripley, MHS

Johns Hopkins Bloomberg School of Public Health
Center for Communication Programs
Knowledge for Health (K4Health) Project

Ruwaida M. Salem, MPH

Johns Hopkins Bloomberg School of Public Health
Center for Communication Programs
K4Health Project

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Vasectomy, a surgical procedure for male sterilization, provides permanent and very effective protection against pregnancy. Vasectomy does not work immediately; there is a three-month delay during which another contraceptive method should be used before relying on vasectomy to protect against pregnancy. Vasectomy and female sterilization are about equally effective. However, vasectomy is quicker, safer, and more cost-effective than female sterilization. It is also suitable to provide vasectomy in more settings than female sterilization, and vasectomy has a faster recovery period than female sterilization. Vasectomy should be considered permanent — reversal is usually not possible in settings with limited resources, and success (pregnancy) cannot be guaranteed.^{29,71}

Besides male condoms, vasectomy is the one other male contraceptive method currently available on the market. Scientists around the world are researching other male contraceptive options in an effort to expand the method mix for men. For example, scientists and pharmaceutical companies are currently working to develop a male hormonal contraceptive analogous to female hormonal contraceptives that would work by suppressing sperm production.^{20,42} Another promising method builds on the approach of vas occlusion, but with the intent of leaving the vas intact for easy reversal. Scientists are working on developing silicone plugs that could be placed into the vas to prevent sperm from passing from the testicles to the penis.^{6,60}

This review focuses on vasectomy only and presents the latest biomedical, social science, and programmatic knowledge about vasectomy as of August 2012.

Method Characteristics

Vasectomy is a safe and simple surgical procedure performed under local anesthesia in an outpatient setting. Vasectomy involves blocking the vasa—two tubes that carry sperm from the testicles to the penis—usually by cutting and tying them. Vasectomy is a two-step procedure:

1. The provider accesses the vasa by penetrating the skin of the scrotum and bringing a loop of the vas outside of the scrotum.
2. The provider blocks the vasa.

For both steps there are several options.²⁹

Procedures for Accessing the Vasa

Providers can open the scrotum to access the vasa by either no-scalpel vasectomy (NSV) or vasectomy with a scalpel (SV):^{4,10}

- **No-scalpel vasectomy.** One small puncture is created in the midline of the scrotum with the tip of a sharp-pointed, forceps-like instrument. The scrotum is punctured preferably at the site where the needle entered to administer local anesthesia. Both vasa are accessed through the same puncture. No stitches are required to close the skin.
- **Vasectomy with a scalpel** (also known as conventional vasectomy). A scalpel is used to make one incision (about 1 cm) in the midline of the scrotum to access both vasa. Alternatively, two incisions on either side of the scrotum can be made — one for each vas. Once the vasa are occluded, the scrotal skin typically is closed with absorbable sutures.

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Although both NSV and SV procedures are quick, safe, and effective, NSV is the recommended technique for accessing the vasa.⁷¹ Compared with SV, NSV appears to have fewer complications with lower rates of hematoma or bleeding after the procedure, lower rates of infection, and a lower likelihood of pain reported during or shortly after the surgery.^{10, 31, 71} Note, however, the technique used for accessing the vasa has no influence on vasectomy effectiveness.^{10, 71} Table 1 compares the procedures and complications of NSV with SV.

Table 1. Comparing no-scalpel vasectomy (NSV) and vasectomy with scalpel (SV)^a		
Characteristic	Incidence (%)	
	No-scalpel vasectomy (n=705)	Vasectomy with scalpel (n=723)
Mild pain during surgery*	24.8	35.0
Moderate or severe pain	4.8	4.8
Performing Surgery		
Difficulty isolating the vasa*	8.1	4.6
Bleeding*	2.1	4.3
Sutures needed to close opening in scrotum**	2.2	28.9
Operating time 6 minutes or less**	59.9	38.3
Early Follow-Up (1-15 Days After Surgery)		
Mild or moderate scrotal pain** ^b	44.6	55.1
Severe scrotal pain ^b	0.7	1.6
Hematomas** ^c	1.9	12.2
Infection at the puncture or incision* ^c	0.2	1.5
Congestive epididymitis, excessive bleeding or drainage from incision, backache, discomfort in lower abdomen, unspecified infection, or scrotal abscess ^c	No significant difference	
Resumed sex within six days*	34	22
Long-Term Follow-Up^d (>15 Days After Surgery)		
Patient satisfaction ^e	No significant difference	
Complications or complaints	5.3	5.9
Pain/tenderness	4.0	5.1
*p<0.05; **p<0.01		
^a Ligation and excision used for almost all vasectomies		
^b NSV 545 men; SV 548 men		
^c NSV 547 men; SV 549 men		
^d NSV 627 men, long-term follow-up ranged from 16-511 days; SV 649 men, long-term follow-up ranged from 16-498 days		
^e Almost 90 percent of men in both groups were satisfied or very satisfied with the vasectomy.		

Sources: Sokal et al. 1999;⁵⁹ and Sokal 2008.⁵⁵

Procedures for Blocking the Vasa

There are many methods used for occluding the vasa.^{3,4}

1. **Ligation and Excision.** Ligation and excision involves tying each vas closed in two places and removing a short section between closures. This is the most common method of vas occlusion worldwide.⁴⁷
2. **Cautery.** Cautery involves inserting a needle and applying heat or electricity to the inside lining of each vas before cutting it. The resulting scar tissue blocks the vas.
3. **Metal Clips.** Some providers use metal clips to block the vas after excision. Using clips to block the vas after excision, however, is not recommended because failure rates in the first year have been as high as 9 percent.^{33,71}

For most vasectomies, either ligation and excision or cautery is used. Some providers also use the technique of fascial interposition in addition to ligation and excision or cautery. Fascial interposition involves enclosing the tied or cauterized ends of the vas in the thin layer of tissue that surrounds the vas (the fascial sheath). A suture is used to keep the testicular end of the vas contained within the fascial sheath while the non-testicular end remains open. Fascial interposition helps to prevent the two cut ends of the vas from reconnecting (recanalization).³⁰

The effectiveness of vasectomy does partly depend on the method of occlusion used.^{11,58} Ligation and excision is effective; adding fascial interposition to ligation and excision improves effectiveness.³¹ Cautery is more effective than ligation and excision with or without fascial interposition. Cautery combined with fascial interposition might be the most effective method of occlusion.^{11,58}

Effectiveness

Vasectomy is a permanent form of contraception and one of the most effective methods. However, “permanent” does not mean infallible. In the United States, vasectomy has a first-year pregnancy rate (failure rate) of 0.2 percent (2 pregnancies per 1,000 couples).⁶⁴ In other words, 998 of every 1,000 couples relying on vasectomy would *not* get pregnant in the first year of use. In low-resource settings, where semen analysis post-vasectomy is generally not available, first-year pregnancy rates after vasectomy are generally higher, at 2 to 3 percent (2 to 3 pregnancies per 100 couples).^{41,56}

Vasectomy is not fully effective until three months after the procedure. After vasectomy, new sperm cannot get into the vasa, but the sperm that was already there at a time of the procedure remain in the vasa. Until these sperm are cleared from the vasa, couples need to use another method to prevent pregnancy. This three-month delay in effectiveness leads to some pregnancies because not all couples use another effective method of contraception, such as condoms, consistently and correctly during this time period. Beyond this three-month delay, there remains a small risk of pregnancy, with a cumulative rate of about 4 pregnancies per 100 women over three years of use.⁷¹

Most vasectomy failures that occur beyond the initial three-month delay period are thought to be due to recanalization of the severed vasa.^{2,32,52} Recanalization is the spontaneous reconnection of the two ends of the severed vas. In an analysis of early recanalization after vasectomy,

researchers found that early recanalization occurred in 13 percent of study participants overall and was associated with more than four-fifths of vasectomy failures.³² Further analysis revealed recanalization to be dependent on vasectomy occlusion technique. Using ligation and excision alone to occlude the vasa was associated with a 25 percent risk of recanalization (approximately half of the cases were found to be subclinical or transient, so the failure rate of ligation and excision alone was 13 percent). Using ligation and excision with fascial interposition was associated with a 10 percent risk of early recanalization and a 5 percent occlusive failure rate. Cautery alone was associated with a 9 percent risk of recanalization and a 1 percent occlusive failure rate, while cautery with fascial interposition was associated with no risk of recanalization.^{32,58} Recanalization rates and occlusive failure rates are not equivalent to vasectomy failure (pregnancy) rates; however recanalization of the vas and occlusive failure will increase the risk of vasectomy failure resulting in pregnancy.

Adding fascial interposition to ligation and excision improves vasectomy effectiveness (see Table 2).⁵⁸ Based on one large randomized trial, when fascial interposition is used with ligation and excision, risk of occlusive failure is about 5 percent.⁵⁷ Cautery alone is more effective than ligation and excision, with occlusive failure rates ranging from 0.3 percent to 4.8 percent.⁵⁸ Cautery combined with fascial interposition improves effectiveness of vasectomy further, with occlusive failure rates of 0 percent to 1.2 percent.⁵⁸ Thus, using cautery to occlude the vasa seems to have the lowest risk of failure and adding fascial interposition further lowers the risk of vasectomy failure.^{31, 58}

Table 2. Vasectomy Occlusive Failure Rates by Occlusion Method

<i>Vasectomy Occlusion Method</i>	<i>Occlusive Failure Rate</i>
Ligation and Excision	
Without Fascial Interposition	13%
With Fascial Interposition	5%
Cautery	
Without Fascial Interposition	1%
With Fascial Interposition	0.5*

* Including one technically failed vasectomy
 Source: Sokal and Labreque, 2009⁵⁸

Pregnancy can also occur because the provider mistakenly cuts the wrong structure and not the vas or because the provider cuts the same vas twice and leaves one uncut. These kinds of mistakes are rare.^{45, 52}

Post-Vasectomy Semen Analysis

Semen analysis, where available, can confirm contraceptive effectiveness of vasectomy after the three month waiting period.⁶⁸ Vasectomies are not considered effective until sperm are cleared from the vasa or the concentration of nonmoving sperm is less than 100,000 per milliliter (fertile men normally have 20 million or more moving sperm per milliliter). For most men, it takes about three months for the sperm to be cleared from the vasa to a level of less than 100,000 per milliliter. A post-vasectomy semen analysis can help reassure the client that vasectomy is fully effective at the three month time point or indicate whether further delay in relying on vasectomy

for contraception should be advised. This might help prevent some unintended pregnancies after vasectomy. However, semen analysis is not required, and if men wait three months before having unprotected sex, pregnancy rates due to vasectomy failure will be low—2 to 3 per 100 in the first year.^{29, 58} (Note that the man should resume sexual activity while using another form of contraception during the three month waiting period in order to clear any remaining sperm from his semen.)

Return to Fertility

Vasectomy is intended to be permanent; fertility does not return because vasectomy generally cannot be stopped or reversed. Reversal surgery is difficult, expensive, and unavailable in most areas. When performed, reversal surgery does not always lead to pregnancy;⁷¹ reported pregnancy rates range from 38 percent to 82 percent with the time interval between vasectomy and reversal being a major factor in the success of reversal. Reversal is usually more successful when done within 10 years after vasectomy.²¹

Mechanism of Action

Vasectomy involves blocking or cutting the vasa to prevent sperm from mixing with semen. So when semen is ejaculated, it is sperm-free and cannot cause pregnancy.²¹

Side Effects

There are no common side effects associated with vasectomy. Vasectomy does not affect a man's sexual performance.^{29, 71} Short-term pain is to be expected after vasectomy; the scrotum hurts for a few days after the procedure.⁷¹ Approximately 30 percent of patients report some type of pain two to three weeks after the procedure.^{1, 37} A few men have reported pain or discomfort in the scrotum or testicles that lasts for months or years after the vasectomy.^{1, 37} Rates of reported pain vary by study, but range from less than one percent to six percent.^{8, 35, 36, 37, 39} The cause of pain is unknown, but might be due to pressure build-up of sperm, sperm granulomas, or nerve damage.⁷

Health Risks

There are no known health risks or long-term adverse health effects associated with vasectomy. Vasectomy does not increase risk of prostate cancer or testicular cancer, nor does vasectomy increase risk of autoimmune disease or cardiovascular disease.^{12, 13, 28, 29}

There have been many studies of vasectomy and prostate cancer. In response to mixed results from previous studies of a possible relationship between vasectomy and prostate cancer, the World Health Organization (WHO) supported a hospital-based case-control study in China, Nepal, and the Republic of Korea to evaluate the risk of prostate cancer after vasectomy. The study included 294 cases of prostate cancer and 879 matched controls. Study results revealed no association between vasectomy and prostate cancer in these settings, where the rate of the disease is low and vasectomy is prevalent.⁵⁰

Safety and Complications

Vasectomy involves minor surgery lasting about 15 minutes.³⁴ It is proven to be very safe, with few medical restrictions. The risk of serious complications from vasectomy is exceedingly low, and deaths associated with vasectomy are very rare. In fact, serious complications and deaths associated with vasectomy are so rare that rates have not been measured.^{29, 44} Adverse long-term

effects have not been found. Minor complications such as post-operative infection, bleeding/hematoma formation, and short- or long-term pain occur at reported rates of 5 percent to 10 percent.^{5, 14, 33, 50} The no-scalpel technique has a much lower incidence of post-operative complications than does conventional vasectomy with incision.¹⁰

Client Knowledge, Attitudes, and Behavior

Vasectomy Knowledge and Use

Although vasectomy is very safe, highly effective, and a simple surgical form of contraception for men, it remains the least known and least used modern contraceptive method. Worldwide, it is estimated that more than 28 million women of reproductive age who are married or in union rely on their partner's vasectomy for contraception, accounting for fewer than 3 percent of women of reproductive age who are married or in union.⁶⁵

The use of vasectomy throughout the world varies significantly by region and country. In developed countries overall, about 5 percent of couples rely on vasectomy.⁶⁵ In developing countries, fewer than 2 percent rely on vasectomy.⁶⁵ Asia has the highest number of vasectomy users—a prevalence of 2 percent accounts for about 60 percent of the 28 million women of reproductive age who are in union worldwide who rely on their partner's vasectomy for contraception.⁶⁵ Bhutan has the highest proportion of vasectomy users, with more than 40 percent of couples using contraception relying on vasectomy.⁶⁵ In China about 5 percent or 12 million women of reproductive age who are in union rely on vasectomy for contraception. Although the prevalence of vasectomy use in India is low-- 1 percent-- this accounts for about 2.2 million couples using vasectomy.⁶⁵

Lack of awareness is one reason vasectomy use remains so low. Demographic and Health Surveys have demonstrated that among 36 countries surveyed since 2000, men were less likely to know of vasectomy than the pill, injections, condoms, or female sterilization.³⁸ Furthermore, among 56 countries surveyed since 2000, women were less likely to know of vasectomy than any of these four methods or the IUD.³⁸ Thus many couples opt for female sterilization or other modern methods of contraception without knowing that vasectomy is also an option.²⁹

Attitudes and Acceptance

Widespread misconceptions related to manhood, masculinity, and sexual function deter men from vasectomy. For example, many men confuse vasectomy with castration and therefore fear vasectomy will make them impotent.²⁹ Furthermore, sociocultural and gender influences are often barriers to vasectomy use. In many cultures, men are the main decision makers regarding the choice and use of family planning but take little responsibility for contraception themselves. Many men and women believe that family planning is the woman's duty, not the man's, and that women should bear any burdens related to contraception. Also, in some societies, sterilization might be or is believed to be prohibited by religion.²⁹

Conversely, vasectomy has been widely accepted and adopted in some countries, such as Bhutan and New Zealand. In New Zealand, vasectomy is more widespread than female sterilization. A telephone survey from the late 1990s documented more 57 percent of surveyed men ages 40 to 49 had had vasectomies.⁵⁴ The high prevalence of vasectomy use in New Zealand and Bhutan

reflects the accepting attitudes surrounding vasectomy in these countries as well as a more widespread view of male involvement in family planning and responsibility for contraception.²⁹

Satisfaction with Vasectomy

Studies suggest that men who choose to undergo vasectomy are largely satisfied with their decision. The most common reason for satisfaction appears to be the reduction in anxiety surrounding the risk for unintended pregnancy.¹⁴

Avoiding Regret

Most men who choose vasectomy do not regret their decision.¹⁴ Studies show, however, that those most likely to regret vasectomy are: young, have few or no children, have just lost a child, are not married, are having marital problems, make the decision to have vasectomy under financial or other pressure, or have a partner who opposes sterilization.^{25, 34} Thus, health care providers should make especially sure that people with these characteristics make informed and thoughtful choices. (See “A provider’s Guide for Assessing a Client’s Decision to Have a Vasectomy” in the INFO Reports [Vasectomy: Tools for Providers](#).³⁴)

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) (United Nations Department for Economic and Social Information and Policy Analysis, 1994).

Greater contraceptive choice has been shown to improve uptake and use of all methods;^{43, 61} therefore, it is important that men and couples have access to an array of methods, including vasectomy.

Because vasectomy is permanent, it is especially important to provide careful and thorough counseling to help men and couples make a voluntary and informed decision. Counseling should address the following:

- Vasectomy’s intended permanence
- A review of alternative methods (for example, condoms, reversible long-acting methods, or female sterilization for the man’s partner)
- The client’s reasons for his choice
- Screening and discussion of risk indicators for regret
- Details of the procedure (including the surgical nature of the procedure and the risk of associated complications)
- The rare possibility of failure and the need for another method of contraception for three months after the vasectomy procedure
- The completion of the informed consent process (authorization)

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- The need to use condoms in addition to vasectomy if there is a risk of exposure to STIs including HIV
- Fears about the procedure or method, such as post-procedure sexual functioning or pain,
- Correct myths—for example, vasectomy is not like castration, and vasectomy does not decrease sexual desire.^{25, 34, 70, 71}

Training of Vasectomy Providers

Training plays a central role in assuring the quality of vasectomy services. Vasectomy must be provided by well trained providers in properly equipped settings where full attention is given to good and gentle surgical technique, infection prevention, and counseling.

When provided at a health facility, training for the provision of vasectomy should involve the entire health facility staff.^{9, 22, 27} A whole-site training approach can improve staff members' attitudes toward vasectomy, help them feel comfortable with male clients, strengthen counseling, and help the staff work effectively as a team. Thus, while certain providers need to learn the surgical skills to perform vasectomies, all staff members need a basic understanding of vasectomy and its benefits.

If possible, it is best to train surgical teams at their own worksite rather than send them away to a training center. Onsite training prepares providers and support staff to work together and to offer vasectomies in that setting. Additionally, programs and facilities that interact with male clients but that do not provide vasectomy services can train staff to counsel clients on vasectomy and refer interested men to a nearby facility or hospital that does offer the vasectomy procedure.²⁹

To help providers of family planning services learn how to offer high-quality vasectomy services that ensure clients' voluntary, fully informed, and well-considered decision making in a context that is medically safe, EngenderHealth has produced the [No-Scalpel Vasectomy Curriculum: A Training Course for Vasectomy Providers and Assistants, 2nd Edition](#). This clinical training course presents all of the information that both trained providers in vasectomy and their assistants need to be able to provide safe and effective no-scalpel vasectomy services.

- The [Trainer's Manual](#) contains information to guide the trainer during a workshop and to assist him or her in making decisions that will enhance the trainee's learning experience.¹⁸
- The [Participant Handbook](#) contains information on all topics covered in no-scalpel vasectomy training and contains diagrams, charts, and other graphic materials that can be adapted for use with clients.¹⁷

An additional training resource developed by EngenderHealth is [No-Scalpel Vasectomy: An Illustrated Guide for Surgeons, Third Edition](#). This is an easy-to-use reference for surgeons that describes each step of the no-scalpel approach and is useful both as a supplement during no-scalpel vasectomy training and as a reference while surgeons develop competency.¹⁶

Service Delivery

Who Can Provide Vasectomy

All doctors, including general practitioners, can perform vasectomies if they have been properly trained. Under certain conditions, other health personnel can be trained to perform vasectomy procedures if the country's laws and regulations permit. When a non-doctor performs the procedure, a doctor should be available for consultation and in case of surgical difficulties or complications. In addition to training doctors, programs have trained clinical officers, medical assistants, nurses, and other types of health workers to perform the vasectomy procedure effectively and safely.^{23, 29}

Who Can Use Vasectomy

With proper counseling and informed consent, any man can have vasectomy safely, including men who:^{69, 71}

- Are young,
- Are not married,
- Have no children or few children,
- Do not have their wife's permission,
- Are at high risk of infection with HIV or another STI, or
- 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 man will not regret his decision.

While no medical conditions prevent a man from using vasectomy, there are some conditions for which WHO recommends that the vasectomy procedure be delayed or performed in a special setting with extra caution exercised. These conditions include local infection such as a scrotal skin infection, active STI, balanitis, epididymis or orchitis, filariasis, or elephantiasis; intrascrotal mass; a systemic infection or gastroenteritis; AIDS; and a coagulation disorder.^{69, 71} For the complete list of conditions for which the procedure should be delayed or performed in a special setting with extra caution, see WHO's [Medical Eligibility Criteria for Contraceptive Use](#).

The only examination considered essential and mandatory in all circumstances for safely and effectively providing vasectomy includes a genital examination. Men can have vasectomy:^{68, 71}

- Without any blood tests or routine laboratory tests.
- Without a blood pressure check.
- Without a hemoglobin test.
- Without a cholesterol or liver function check.
- Even if the semen cannot be examined by microscope later to see if it still contains sperm (post-vasectomy semen analysis).

STIs and HIV/AIDS

Vasectomy does not protect against HIV and other sexually transmitted infections (STIs), nor does it prevent the transmission of these infections from men who have HIV or other STIs to their partners. Men who are at risk for these infections should be counseled to use condoms. Men who are infected with HIV, have AIDS, or are on antiretroviral (ARV) therapy can safely have a

vasectomy. However, the presence of an AIDS-related illness might require that the procedure be delayed.^{69, 71}

Where Can Vasectomy Be Performed?

Vasectomy involves a surgical procedure, so there are limitations as to where, how, and by whom it can be provided. However, vasectomy is a relatively simple procedure and requires little infrastructure; it does not require a fully equipped hospital to be performed.⁸ Thus, it is possible to offer vasectomy services closer to the community. It can be performed in almost any health care setting, including hospitals, treatment rooms in family planning clinics, private physicians' offices, or mobile/temporary clinic sites.^{14, 23}

Basic facilities should include a waiting or reception area, a private space for counseling, an examination area, a clean surgical area isolated from the outside and from clinic traffic, and a recovery area.¹⁴

Possible service delivery models for vasectomy include:

- Integrating vasectomy services into operations of primary care facilities;
- Building referral systems to direct clients from primary health care centers and family planning clinics to central facilities for vasectomy services;
- Offering vasectomy services via the private sector (for example, private doctors can perform vasectomies in their treatment rooms); and
- Employing mobile surgical teams to offer vasectomies at outreach sites.

Service delivery models might depend on the resources, health services structure, and existing demand for the procedure. Offering vasectomies at primary care facilities should be considered when the demand for vasectomy is high. This model reduces barriers to clients by increasing the number of locations that offer vasectomies and by bringing the service closer to clients (versus providing vasectomies at a hospital). It also reduces or eliminates the need for referrals, which carry the risk of the client not actually going to the referral site. A referral system does have advantages to expanding vasectomy services in certain situations. In areas where there is weak demand or a shortage of trained providers, a referral network is a great option for increasing access to vasectomy without investing heavily in additional infrastructure and training. (Provider training in counseling clients about vasectomy is crucial in implementing effective referral networks). Use of mobile teams allows programs to offer vasectomy to clients who live far away from static facilities, to maximize use of trained providers, and to respond to demand for vasectomy services during selected months of the year.^{14, 29}

Timing of Procedure

If there is no medical reason to delay, a man can undergo vasectomy at any time.^{69, 71} See [Family Planning: A Global Handbook for Providers](#) for more details. No medical conditions prevent a man from using vasectomy. Some conditions might limit when, where, or how the vasectomy should be performed.⁶⁹ See WHO's [Medial Eligibility Criteria](#) for more details.

Performing the Vasectomy Procedure

The following steps are involved in performing a vasectomy (from [Family Planning: A Global Handbook for Providers](#) and [No-Scalpel Vasectomy: An Illustrated Guide for Surgeons, 3rd Edition](#).^{* †}

1. First, the client is asked to wash his genital area thoroughly with soap and water. Then the provider will clean the scrotum, the lower part of the penis, the lower abdomen, and the thighs near the scrotum. Shaving the surgical site is not recommended, as it produces small breaks in the skin and might increase the risk of infection. If the scrotal hair is obstructing the operative area, the provider can carefully clip the hair right before the procedure.
2. The provider uses proper infection-prevention procedures at all times.
3. The man receives an injection of local anesthetic in his scrotum to prevent pain. He stays awake throughout the procedure.
4. The provider feels the skin of the scrotum to find each vas deferens—the two tubes in the scrotum that carry sperm.
5. The provider makes a puncture or incision in the skin:
 - Using the no-scalpel vasectomy technique, the provider grasps the scrotal skin and underlying vas with specially designed forceps and makes a tiny puncture in the skin at the midline of the scrotum with a special sharp surgical instrument.
 - Using the conventional procedure, the provider makes one or two small incisions in the skin with a scalpel.
6. The provider lifts out a small loop of each vas from the puncture or incision. Most providers then tie each vas at two points about 1.5 cm or more apart using two separate ligatures. After that, the segment of vas between the two ties is cut. Alternatively, instead of tying each vas, some providers close them off with heat or electricity. They can also enclose one end of the vas in the thin layer of tissue (called fascia) that surrounds the vas (fascial interposition).
7. The puncture is covered with an adhesive bandage, or the incision can be closed with stitches.
8. The man receives instructions on what to do after he leaves the clinic or hospital. The man might feel faint briefly after the procedure. He should stand first with help, and he should rest for 15 to 30 minutes. He usually can leave within an hour.^{34, 71}

Pain Management

Men who undergo vasectomy will receive an injection of local anesthesia in their scrotum to stop pain during the procedure. After the procedure, men can expect to feel discomfort in the scrotum for two to three days. Ibuprofen (200-400 mg), paracetamol (325-1000 mg), or other pain relievers can be used to manage pain or discomfort.⁷¹ (Aspirin is not recommended because it slows blood clotting.)

Follow-up Visits

No follow-up visit is required after vasectomy.⁷¹ If semen analysis is available, however, a semen examination can be conducted at any time after three months following the procedure to

^{*} 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.

[†] EngenderHealth. (2003) *No-scalpel vasectomy: An illustrated guide for surgeons*. 3rd ed. New York

confirm that the semen contains no sperm and a back-up method of contraception is no longer needed. No man should be denied a vasectomy, however, because a follow-up semen analysis would be difficult or not possible.

The client should be counseled to return at any time if:

- He has bleeding, pain, pus, heat, swelling, or redness in the genital area that becomes worse or does not go away.
- He has a fever within one week after the vasectomy.

Additionally, the client should be encouraged to come back any time—for example, if he has problems or questions, or his partner thinks she might be pregnant.^{34, 71}

Access Barriers

Vasectomy remains the least known and least used of all family planning methods. While many barriers contribute to this, including misinformation, misperceptions, and cultural bias, barriers to access are also major limiting factors.²⁵ Quality vasectomy services will remain a crucial component of comprehensive family planning services and, good access to services will be important for spurring and meeting demand.¹⁴ Good access to vasectomy 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 vasectomy. Service delivery and program barriers, policy barriers, and medical barriers can all serve as hurdles to obtaining a vasectomy.^{14, 25} Easy access to vasectomy might 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.⁶⁶

Service-Delivery and Program Barriers

Although vasectomy is a surgical procedure, it is a simple procedure and does not require a fully equipped hospital. Vasectomy can therefore be offered in a variety of settings including treatment rooms in family planning clinics, mobile clinics, and physicians' offices.^{14, 27} Just making vasectomy available, however, is not enough. Evidence has shown that in every region of the world and in nearly all social and cultural settings, men will use vasectomy services, provided they are offered appropriately.^{14, 46} Services need to be affordable, accessible, and to address men's needs.²⁵

Services should be provided at a place and time that is convenient and in a setting that is comfortable for men. That is, services and sites should be male-friendly, with trained and skilled providers who can effectively communicate with men and who have a positive attitude toward vasectomy.²⁵

Provider bias against vasectomy is a main barrier in some countries or clinics.^{15, 29, 40, 62, 67} Sometimes providers share clients' doubts about vasectomy or might simply overlook vasectomy and thereby fail to inform clients that it is an available option.^{29, 15} Some providers actually discourage clients from considering vasectomy due to their own personal bias (for example, they might believe that family planning is a woman's responsibility).^{29, 67} Another common service-delivery barrier is the fact that most family planning providers are female. In some cultures, men do not feel comfortable discussing their reproductive health with women. Furthermore, in some

instances, the provider, male or female, is not comfortable discussing vasectomy with male clients due to lack of knowledge or cultural barriers.²⁹

Additional options for making services male-friendly include providing services in male-only settings (for example, having separate clinic hours for men only) and/or providing a broad range of men's reproductive health services, such as urology, infertility treatment, testing and treatment of STIs, and counseling for sexual problems.

Policy Barriers

Laws and policies supportive of vasectomy are necessary for vasectomy to be available and accessible and for programs to be successful. For example, policies that restrict the provision of vasectomy to only high-level health care professionals or to hospital settings vastly limit availability of and access to vasectomy. Political will and support from policy makers and donors are requisite for advocating, initiating, and sustaining vasectomy services as well. When political support and championship for vasectomy are lacking, potential funds will often be prioritized elsewhere, limiting the ability of programs to provide vasectomy services.^{24, 29}

Medical Barriers

Medical barriers (that is, policies, practices, or health concerns that have no scientific basis and might result in unjustifiable impediment to, and denial of, contraception) are a significant problem preventing wider access to modern contraception, including vasectomy.⁵³ Contraceptive provision in many settings continues to be based on outdated medical information, unproven theoretical concerns, and provider biases. Medically unjustified criteria such as outdated contraindications, marriage and/or spousal consent requirements, minimum or maximum age and parity restrictions, or norms that discourage uptake by requiring too many routine follow-up visits can prohibit use of vasectomy.

Provider Fears, Myths, and Misconceptions

In many countries, potential providers of vasectomy services hold misconceptions about the vasectomy procedure, mechanism of action, side effects, and demand for vasectomy. For example, some providers erroneously believe that vasectomy causes health problems or will make men impotent, confuse the procedure with castration, incorrectly believe men in their community or region do not want vasectomies, or think that it is easier and safer for women to undergo female sterilization than for men to undergo vasectomy.⁷¹

Addressing providers' fears, myths, and misconceptions requires multiple and repeated interventions.⁴⁸ Passive dissemination of scientific evidence and new guidelines often has little or no effect on providers' 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.¹⁹

Cost Considerations

One U.S.-based study estimated that with the exception of female sterilization, the initial cost of providing vasectomy is higher than any other method.⁶⁴ However, because vasectomy is a permanent method and continues to protect against pregnancy throughout a couple's reproductive years, over time it is one of the most cost-effective contraceptive methods.⁶⁴ The

estimated cost of providing vasectomy varies greatly by setting and procedure. One analysis found that direct program costs per vasectomy averaged about US\$20 in India, US\$40 in Mexico, and US\$50 in Kenya.⁵¹ Of note, female sterilization procedures generally cost two to four times more than vasectomies.²⁹

Logistics: Facilities, Supplies, and Equipment

Providing quality vasectomy services is partly dependent on having adequate facilities, supplies, and equipment to carry out the procedure safely. Vasectomy services can be performed in almost any setting, from a doctor's office to a hospital, and can be offered in a number of different permanent and temporary locations. However, regardless of where vasectomies are done, in general, 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 vasectomy are generally available in most facilities where surgical services are offered. Additionally, all equipment, supplies, and drugs needed to stabilize a client who experiences a complication must be on hand. Specifically, surgical supplies needed to provide no-scalpel vasectomy include:^{14, 16, 17, 23}

- Examination/procedure table with adequate lighting,
- Dissecting forceps and ringed clamp,
- Straight scissors for cutting sutures,
- Scissors for clipping any scrotal hair that would interfere with the procedure (if necessary),
- Suture material or cautery instruments (depending on the type of vassal occlusion),
- Needle (1.5 inch, 25- or 27-gauge) and syringe (10 cc),
- Adhesive tape or Band-Aid for dressing the wound,
- Soap and running water or antiseptic agents for the surgical hand scrub,
- Alcohol rinse (recommended if plain soap is used for the surgical hand scrub),
- Sterile gloves,
- Antiseptic solution for cleaning the operative site,
- Sterile drapes,
- 1% or 2% lidocaine (lignocaine, xylocaine) without epinephrine (adrenaline),
- Sterile gauze, and
- Adhesive tape or bandage for dressing the wound.

The [Marie Stopes Vasectomy Kit](#) includes all of the necessary instruments needed to provide no-scalpel vasectomy; the instruments are of good quality and come in an auto-clavable pouch for easy sterilization and transportation of the equipment.^{14, 23}

Marketing and Communication

Often people learn about vasectomy directly from other people—friends, neighbors, relatives, or co-workers. Because men are likely to have less contact with health workers than women, other contacts such as friends, family, and co-workers are key players in relaying information about family planning and vasectomy. Thus, satisfied vasectomy clients and users will help inform

others of the benefits of vasectomy. Additionally, information in the mass media or on the Internet can be an effective way to reach many potential users of vasectomy, delivering accurate information on the procedure, mechanism of action, and side effects.²⁶

To increase public knowledge and understanding of vasectomy as a permanent contraceptive option, mass media campaigns as well as educational materials and counseling messages used by family planning providers or other health workers should address concerns and misconceptions and explain vasectomy accurately. Effective marketing and communication efforts must also address men's interest and concerns. Reasons why one would choose vasectomy differ by country and/or culture. In some countries, marketing and communication campaigns to increase use of vasectomy might focus on the benefit vasectomy offers in terms of ability to provide for one's family while other settings may focus messages on the permanence of vasectomy.²⁹

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 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.

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