



Department of Health

No-Scalpel Vasectomy

A Skills Training Course for Vasectomy Providers and Assistants

Participant's Handbook



FOREWORD

The Department of Health, with its commitment to the delivery of quality care in family planning services, is strengthening the training system for the acquisition of knowledge and skills. In line with this commitment, the Training Manual on No-scalpel Vasectomy (NSV) has been revised with the goal of establishing a training system that will aid in the implementation of a national standardized training for health workers all over the country. With the revised training manual on NSV, service provision on NSV is expected to improve in terms of performance and quality. The revised manual will serve as a reference for the conduct of training in voluntary surgical contraception, particularly in male sterilization. The revised manual adapts up-to-date and evidence-based information on vasectomy and provision of services.

The manual contains topics and components that are important in teaching and learning the standardized NSV technique. The topics include counseling, voluntary decision making and informed consent, the surgical procedure, local anesthesia, infection prevention, postoperative recovery, and complication management. The overall objective of the manual is to build the competence of health service providers on male sterilization by NSV in terms of their knowledge, skills, and attitudes.

I encourage the dissemination and use of this manual by health service providers in the implementation of training and expansion of VSC services to increase the number of competent NSV providers across the country.

ENRIQUE T. ONA, MD
Secretary of Health

ACKNOWLEDGMENT

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We also recognize and acknowledge the Engender Health Module entitled No Scalpel Vasectomy Curriculum, Trainers Manual, 2nd Edition, which served as reference in the development of this manual.

ACRONYMS

AO	Administrative Order
BTL	Bilateral tubal ligation
BHW	Barangay health worker
CCT	Conditional cash transfer
CHD	Center for Health and Development
CHT	Community health teams
COCs	Combined oral contraceptives
DOH	Department of Health
FP	Family planning
GIDA	Geographically isolated and disadvantaged area
HLD	High-level disinfection
IUD	Intrauterine device
LCE	Local chief executive
LAPM	Long acting and permanent method
LAHRC	Long acting hormonal reversible contraceptives
LGU	Local government unit
MNCHN	Maternal and newborn and child health and nutrition
MDGs	Millennium development goals
MEC	Medical Eligibility Criteria
MLLA	Mini-laparotomy under local anesthesia
NHTS	National Household Targeted Survey
NBB	No balance billing
NSV	No-scalpel vasectomy
PHO	Provincial health office
PHIC	Philippines Health Insurance Corporation
STIs	Sexually transmitted infections
VAWC	Violence against women and children
VSC	Voluntary surgical contraception
WHO	World Health Organization

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NO-SCALPEL VASECTOMY (NSV) TRAINING DESIGN

Course Description

This three-day competency-based skills training course on NSV is designed to train prospective NSV surgeons and assistants to perform NSV. This course provides the information necessary to offer safe and effective NSV services and may require extensive practice time. Participants are expected to bring skills, knowledge, and self-motivation to the training. The course consists of two parts: a two-day didactics and a one-day supervised practicum.

Goals:

- ◆ To provide the latest and evidence-based information on NSV
- ◆ To provide the knowledge, skills, and attitude in performing NSV
- ◆ To provide the knowledge and skills needed to prevent, recognize, and manage complications related to NSV
- ◆ To provide the knowledge and skills necessary to integrate NSV into their existing service delivery system

Specific Objectives

At the end of the three-day course, the trainee will be able to

- ◆ Carry out method-specific counseling, including the application of the principles of informed choice and voluntarism for VSC
- ◆ Perform client assessment based on the World Health Organization (WHO) standards (Medical Eligibility Criteria [MEC] and applicability of laboratory and other ancillary procedures)
- ◆ Perform the standardized NSV, including infection prevention and use of anesthesia
- ◆ Recognize and manage complications related to NSV
- ◆ Provide routine follow-up
- ◆ Develop an action plan on the integration of NSV into medical practice

Training/Learning Methods

- ◆ Illustrated lectures
- ◆ Individual and group exercises
- ◆ Case studies
- ◆ Demonstration and return demonstration
- ◆ Simulated practice on scrotal model (or other alternatives)
- ◆ Guided Clinical and surgical activities (Practicum)

Training Materials

- ◆ Training curriculum consisting of
 - NSV Trainers' Manual

- NSV Participants' Handbook
- Manual containing PowerPoint presentations for each module
- ◆ NSV videos produced by the Cooperative Movement for Encouraging No-scalpel Vasectomy (CMEN) or the WHO
- ◆ NSV instruments, including ringed clamp (extra-cutaneous ringed forceps) and dissecting forceps (especially designed for NSV by Dr. Li Shunqiang)
- ◆ Scrotal model
- ◆ NSV supplies, including suture material and a syringe with a 25- or 27-gauge needle, along with NSV instruments (straight scissors, sterile gloves, antiseptic solution, adhesive tape, etc.)
- ◆ Other training aids, including audiovisual equipment, condoms, penis model, flipchart paper, tape, and markers

NSV TRAINERS' MANUAL

Trainer's Notes, Options, Tips, and Activities

- ◆ The first two pages of each module contain introductory information with essential details about the following:
 - How to present the content of the module
 - Estimated time needed for the training based on the module
 - Training supplies
 - Advance preparation
 - Purpose and objectives of the module

NSV PARTICIPANTS' HANDBOOK

The NSV participants' handbook includes all essential course information. The distribution of this handbook minimizes the need for participants to take notes and allows them to concentrate on the course. The handbook can also be used for advanced reading of the course contents.

TRAINERS

The trainers of the course must be

- ◆ Proficient in providing training (Prior certification in Training of Trainers Course on Voluntary Surgical Contraception is an added advantage.)
- ◆ Proficient in performing NSV

This curriculum contains information that will guide and assist the trainer in workshops and in decision making to enhance the learning experience. However, the trainer must have full knowledge of adult learning concepts, experience with various training methods and techniques, and the ability to adapt materials depending on the needs of the participants.

The trainer for this course may or may not be affiliated with the site where the training is conducted or with the institution sponsoring the training. **The trainer should strictly follow the clinical content of the course, including standards and guidelines regarding certification, training follow-up/monitoring/evaluation, and supervision.**

TRAINING SITE

Whenever possible, skills training for NSV should be conducted at the location where the

participants work to increase the likelihood that the participants will use the skills immediately after training. However, the trainer should find as many opportunities as possible to have participants from various institutions or locations discuss how they can apply what they have learned at their own site.

TRAINEES' SELECTION CRITERIA

Trainees for this course should be doctors of medicine with experience in performing minor surgery. They should be family planning (FP) supporters who are interested and committed to learning about and providing NSV. Assistants who will be trained to work with the surgeons are either nurses or another doctor in the facility.

NSV is performed to conscious clients under local anesthesia; hence, the trainees should demonstrate empathy and sensitivity toward clients and any doubts that clients may have about the procedure.

The trainer should give priority to individuals from institutions that are committed to providing NSV and have an existing demand for NSV services. Without client demand and institutional commitment, the participants will not be able to use newly learned skills. Furthermore, each sponsoring institution should be able to provide the space, equipment, and operating time needed for NSV services.

Assessment of the knowledge and experience levels of the participants is necessary before the training commences. A trainer who is sending application forms or information about the course to potential participants will find the following questions useful:

- ◆ What experience do you have in performing surgery?
- ◆ Have you had any training in vasectomy?
- ◆ Do you currently provide vasectomy services?
- ◆ What experience and training have you had in providing FP services?
- ◆ What is your educational background?

METHODS OF EVALUATION

Trainee

- ◆ Attendance
- ◆ NSV Knowledge Assessment Test (Pretest and Post-test)
- ◆ These tests are designed to be given at the beginning and at the end of the workshop.
- ◆ NSV Surgical Skills Checklist.
The performance of the trainees will be evaluated using the NSV Surgical Skills Checklist because the course is competency based. Trainees can only begin supervised surgical practice when the trainer has considered their performance on the scrotal model (or alternative practice model) satisfactory based on the NSV Surgical Skills Checklist.

COURSE

Course evaluation completed by the trainees

DURATION

The course will be conducted in the selected training facility for three days (two days of didactics and one day of practicum). Trainees should ensure that enough clients are available for learning. For trainees not connected with the training facility or unable to demonstrate competency because of lack of case loads, an NSV Day will be arranged or scheduled in their site of practice.

SUGGESTED COURSE COMPOSITION

- ◆ 1:8 trainer/trainee (includes assistants) ratio during the didactics
- ◆ 1:1 trainer/trainee (surgeons only) ratio during the practicum

CLIENT SELECTION AND CLIENT RIGHTS

Client's Consent to be Training Subjects

As with any medical service, the rights of the client are paramount and should be considered at all times throughout the training course. All clients must be adequately counseled and must provide an informed and voluntary decision to undergo vasectomy. Each client's permission must be obtained before a participant in this training observes, assists with, or performs any aspect of care related to vasectomy.

Clients who agree to participate in the training should be informed in advance that they will receive care from a vasectomy trainer or from a participant under the direct supervision of a qualified trainer.

Clients are within their rights to refuse care from a participant. A client who refuses to grant permission and who appears uncomfortable with receiving services from a participant or with the presence of participants during the procedure should not be denied services nor should the procedure be postponed. If a client refuses to be operated on by a participant, the trainer or a qualified member of the training center should perform the procedure.

CONFIDENTIALITY

The client's right to confidential medical care must be observed. However, participants may need to discuss the specifics of a particular case during training sessions. Discussions about clients must be confined to rooms that afford the required degree of privacy. Hallways, corridors, waiting areas, and other public areas are not appropriate venues for discussing clients.

EVALUATION

Evaluation is an important part of the training. Evaluation involves giving feedback to participants about what they have learned and helps trainers determine effective training strategies. Each module contains several tools and activities for evaluation. For example, a self-assessment is included at the end of most modules. The trainer can use this instrument in several ways:

- ◆ At the beginning and end of the module, have individuals respond in writing to the questions.
- ◆ At the beginning and end of the module, have the group respond orally as each question is read aloud.
- ◆ Throughout the workshop, note which questions participants found difficult to answer.
- ◆ At the end of the last module that contains a self-assessment (Module 10), have participants review these questions. Use the assessments as part of a final group review.

A trainer who adapts this curriculum must include appropriate evaluation options to

- ◆ Assess participants' needs and abilities before training by
 - Using the knowledge assessment test as a written pretest

- Presenting the questions from the test to the participants for discussion
- Using the knowledge assessment test as a verbal pretest
- Asking all participants about their experience with vasectomy and ask specific questions related to their knowledge and skill levels
- ◆ Assess participants' progress during training by
 - Using the NSV Clinical Skills Checklist in every module where it is appropriate
 - Using the module's self-assessment
 - Observing participants during practice sessions
 - Asking questions to groups of participants or to individual participants
 - Presenting case studies or situations for discussion
- ◆ Assess cumulative knowledge and skills at the end of training by
 - Using the knowledge assessment test as a written or verbal post-test
 - Carrying out a final skills observation
 - Asking questions to test knowledge and comprehension
- ◆ Assess the outcomes or results of the course after training by
 - Carrying out a follow-up of the applications of the knowledge and skills taught during the training

An end-of-training evaluation is also necessary to have an overview of the process and results. Trainers should check if the institution they are working with has a preferred form. Trainers may have a form they have used before or may prefer to design one specifically for this course.

POST-TRAINING FOLLOW-UP/MONITORING/EVALUATION

A post-training follow-up is conducted 2, 3, and 12 months after the training (Level 3 per HRBD Guidelines on PTE) to assess the performance of the trainee, to assist the trainee in resolving problems on setting up and integrating his/her learned skills to his/her health service delivery system, and to evaluate the impact of the training program. The frequency of post-training follow-up depends on the needs of the trainee and of his/her facility toward successful integration of quality NSV services.

After three to five years of training (Level 4), the participant would undergo post-training evaluation to determine the effect of the training program on the health situation of the country.

CERTIFICATION

A Certificate of Training is given after the trainee has satisfactorily completed the requirements of the course (complete attendance, passing score in the post-test, and satisfactory skills ratings in the NSV Surgical Skills checklist).

A Certificate of Competency is given after the trainee has successfully integrated NSV into his/her professional practice (performing NSV independently and competently) as observed during the post-training monitoring. The Certificate of Competency may be given to the trainee during the training period if performance of NSV has been demonstrated competently.

The institution is responsible for providing the certification to ensure that the participant meets all the necessary requirements of competency in this procedure.

PROGRAM OF ACTIVITIES

TIME	ACTIVITIES
DAY 1	
8:00-8:30 AM	Registration
8:30-8:45 AM	Opening Program Invocation National Anthem Welcome Remarks
8:45-9:30 AM	Introduction to the Course Introduction of Participants and Trainers Pre-test Leveling of Expectations and Norms Course Objectives and Mechanics
9:30-10:15 AM	Session 1: Introduction to Vasectomy
10:15-10:30 AM	Morning Break
10:30 AM-12:00 NN	- Session 2: Anatomy and Physiology of the Male Genito-urinary System - Concept of Fertility and Joint fertility
12:00-1:00 PM	LUNCH
1:00-3:15 PM	Session 3: Counseling and Informed Consent
3:15-3:30 PM	Afternoon Break
3:30-4:30 PM	Session 4: Prevasectomy Evaluation WHO Medical Eligibility Criteria
4:30-5:30 PM	Session 5: Infection Prevention
DAY 2	
8:00 AM-12:00 NN	- Session 6: Surgical Procedure of Performing NSV - Practice on Scrotal Model Viewing of Training Video
12:00-1:00 PM	LUNCH

1:00–2:00 PM	Session 7: Postvasectomy Care
2:00–4:00 PM	– Session 8: Management of Complications
4:00–5:00 PM	– Session 9: Management of NSV Services – Action Planning
DAY 3 PRACTICUM	
8:00 AM–5:00 PM	Demonstration and Return Demonstration of NSV Surgical Skills using Surgical Performance Checklist with Coaching
5:00–5:30 PM	Closing Program Post-test Course Evaluation Closing Remarks

Session I

INTRODUCTION TO VASECTOMY

OVERVIEW

VSC is currently the most widely used contraceptive method in both developing and developed countries. This procedure accounts for nearly half of all contraceptive use.

Vasectomy is safer, simpler, less expensive, and just as effective as female sterilization, yet the number of female sterilization users exceeds the number of vasectomy users by five to one. The 2011 Family Health Survey showed an unmet need of 1.9%, with 8.8% on limiting and 10.5% for spacing birth. Although bilateral tubal ligation (BTL; 9%) is second to pills (16%) among the most commonly used FP methods, vasectomy rates remain very low at less than 1%.

For many years, the blame for the underutilization of vasectomy has been placed on men, who were believed to be reluctant to take responsibility for FP. However, evidence suggests otherwise: the principal reason is not the men's resistance to the method or their unwillingness to take responsibility but rather the failure of health professionals to make information and services available and accessible to men.

This failure has often been the result of health professionals' lack of knowledge, misinformation, and personal dislike of vasectomy or untested presumptions about what men thought and wanted.

As men lack full access to information and services, they can neither make informed decisions nor take an active part in FP, which they have otherwise been willing to do.

This session contains basic information on vasectomy to enable service providers to provide accurate, evidence-based information on vasectomy, especially NSV, which is the standard procedure approved by the Department of Health (DOH).

LEARNING OBJECTIVES

At the end of this session, the participant will be able to:

1. Discuss basic information on vasectomy
 - ◆ What it is
 - ◆ Mechanism of action
 - ◆ Effectiveness
 - ◆ Advantages and disadvantages
 - ◆ Possible side effects
 - ◆ Warning signs of complications
2. Provide evidence-based facts to address myths and misconceptions about vasectomy

NARRATIVE

VASECTOMY

Description

- ◆ Vasectomy is known as male sterilization, as it provides permanent contraception for men who decide to no longer have any more children.
- ◆ Vasectomy is a safe, simple, and quick surgical procedure. The procedure can be performed in a clinic or office with appropriate infection prevention practices.
- ◆ The procedure involves tying and cutting a segment of the two vas that carry the sperm.
- ◆ NSV involves a small puncture on the scrotum (not using a scalpel) to reach the vas.
- ◆ The NSV technique was developed by Dr. Li Shunqiang, who performed the first NSV at the Shunqiang Clinic in 1974.
- ◆ After the introduction of NSV as an alternative technique for the vasectomy procedure, several vasectomy surgeons became interested in the procedure and trained under Dr. Li.
- ◆ NSV is now the global technique of choice.

Mechanism of Action

- ◆ The service provider punctures the man's scrotum and then ties and cuts the two vas. The vas carries the sperm from the testicles.
- ◆ Semen is still produced and can be found in the tubes after the vas are blocked.
- ◆ With the two vas blocked, no sperm will be contained in the semen.
- ◆ The man continues to have erections and ejaculate semen.

Effectiveness

- ◆ Vasectomy is 99.9% effective for correct use, but the rate is slightly lower with typical use at 99.8%.
- ◆ Vasectomy is more effective when used correctly. Correct usage entails the use of condoms or his woman partner using another effective FP method (e.g., pills or injectables) consistently for at least three months after the procedure and after a semen check showing

no sperm has been performed.

Advantages

- ◆ Very effective
- ◆ Permanent. A single decision leads to lifelong, safe, and effective FP.
- ◆ Nothing to remember except to use condoms or another effective method for at least three months after the procedure
- ◆ No interference with sex and does not affect the man's ability to have sex
- ◆ Increased sexual enjoyment because the concern over pregnancy is eliminated
- ◆ No supplies to get, and no repeated clinic visits required
- ◆ No known long-term side effects or health risks
- ◆ Compared with BTL, vasectomy has the following advantages:
 - More effective
 - Safer
 - Easier to perform
 - Less expensive
 - Can be tested for effectiveness at any time
 - Less likely to result in ectopic pregnancy should it occur in the man's partner

Disadvantages

- ◆ Requires minor surgery by a specially trained health care provider
- ◆ Not immediately effective. The couple should use another effective FP method for at least three months after the procedure.
- ◆ Must be considered as permanent. Reversal surgery is difficult and expensive, may not be available in some areas, and has the possibility to fail. Men who may want to have more children in the future should choose a different method.
- ◆ Does not protect against STIs including HIV/AIDS

Possible Side Effects

- ◆ NSV is likely to produce tenderness, discomfort, and slight swelling during the first two to three days after the procedure.
- ◆ These symptoms are normal and may not require medication.
- ◆ Client may return to normal activities and sexual intercourse with temporary contraception after two to three days.

Warning Signs

Several problems affect men's satisfaction with vasectomy. Therefore, the service provider must attend to clients complaining of the following warning signs of complications and refer such clients to a facility or health service provider who can assess and manage the complaint.

These warning signs are:

- ◆ Fever

- ◆ Blood or pus oozing from the incision
- ◆ Strong pain or swelling

Common Fears of Vasectomy

- ◆ Fear of surgery
- ◆ Fear of pain
- ◆ Loss of masculinity or libido
- ◆ Limited activity
- ◆ Weight loss or weight gain
- ◆ Getting prostate/testicular cancer

Addressing the Fear of Surgery

- Recognize that fear exists.
- Recognize that vasectomy could be the best solution to address their personal or family situations.
- Short-term fear is offset by long-term benefits.
- Balance anxiety with knowledge and understanding that the procedure is widely used, accepted as safe and simple, and requires less time.
- Vasectomy is inexpensive.

Addressing the Fear of Pain

- The vasectomy procedure includes a local anesthetic and regional vasal block that numbs the area.
- After the anesthesia wears off, mild discomfort may be felt but can be relieved with pain medication, application of ice pack, and the use of an athletic supporter.
- Some men report chronic pain or discomfort, but surgery is not required to relieve the pain.

Addressing the Fear of Losing Masculinity or Libido

- Vasectomy only involves the cutting of the vas deferens that prevents the sperm from joining the semen.
- The testicles and its functions are not affected at all.
- The testicles continue to produce sperms and male hormones that maintain the male characteristics.
- The procedure does not affect sexual drive. Clients continue to have erections and ejaculations or engage in intercourse as before.

Addressing the Fear of Limited Activity

- Clients are advised to rest and avoid strenuous activities or heavy lifting for only one week.
- Most clients feel completely normal in one week and can work as hard as before.

Addressing the Fear of Losing or Gaining Weight

- Clients will neither gain nor lose weight after vasectomy.
- Vasectomy does not cause a man to grow fat or become weak.

Addressing the Fear of Getting Prostatic/Testicular Cancer

- Evidence from large, well-designed studies shows that vasectomy does not increase the risk of cancer of the testicles (testicular cancer) or prostate (prostatic cancer).

SESSION II

ANATOMY AND PHYSIOLOGY OF THE MALE GENITO-URINARY SYSTEM

OVERVIEW

This session provides basic information on the anatomy and physiology of the male genito-urinary system as well as on the concept of fertility and joint fertility as they relate to vasectomy. The knowledge gained from this session will help service providers further understand vasectomy as a procedure and enable them to perform vasectomy safely as an FP method and to reduce misconceptions about the method.

LEARNING OBJECTIVES

At the end of the session, the participant will be able to:

1. Describe the external and internal organs and the parts of the male genito-urinary system
2. Explain the physiology of the male genito-urinary system
3. Explain the changes in the physiology of the male genito-urinary system after vasectomy
4. Explain the effects of vasectomy
5. Explain the concept of fertility and joint fertility

NARRATIVE

EXTERNAL ORGANS OF THE MALE GENITO-URINARY SYSTEM (Figure 1)

The penis is the male organ for copulation. It is made up of spongy erectile tissues. When a man becomes sexually excited, the penis becomes erect; it stiffens and grows both in width and in length. An erect penis is approximately 5 inches to 7 inches long and approximately an inch or an inch-and-a-half in diameter.

The scrotum, the only other visible external male reproductive organ, is divided into two sacs (scrotal sacs). Each sac contains one testis.

During vasectomy, a puncture is made in the scrotum to allow access to the vasa (ductus) deferentia. The opening is made midway between the base of the penis and the top of the testes on the median raphe. This puncture site is chosen because of easy access to the vasa through the scrotal sac and the avoidance of risks of injury to the epididymides and the testicles.

The scrotal sac is the pair of wrinkled skin pouches that contain and protect the testes or testicles. The scrotum controls the temperature of the testicles. The normal temperature is approximately 6 °C lower than the body temperature, which is ideal for sperm production.

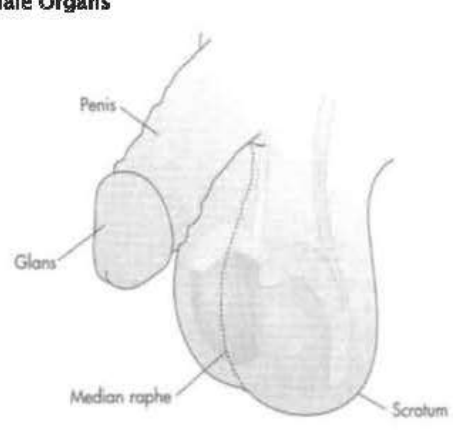
THE MALE INTERNAL REPRODUCTIVE ANATOMY

- ◆ A man is fertile everyday from puberty (ages 8 to 12) and for the rest of his life.
- ◆ The testes are the pair of male sex glands that produce sperm and testosterone.
- ◆ Sperms are the male sex cells.
- ◆ Testosterone is the major male hormone responsible for the development of sperm and secondary male sex characteristics.
- ◆ Normal sperm analysis: count, 60 million/mL; motility, 60%; morphology, 30% or more of normal morphology; volume, 1 mL to 6 mL per ejaculation; pH, 7.2 to 7.8; liquefaction, less than 20 minutes.
- ◆ Once sperms are produced, they travel to the epididymis, where they start to mature. The epididymis is a small tube at the base of the testes.
- ◆ When a man ejaculates, sperms leave the epididymis and travel through a pair of tubes called the vas deferens, also known as sperm ducts.
- ◆ The vas deferens enables the passage of sperm to the seminal vesicles, the glands that

produce a fluid that enters the vas deferens to nourish the sperm.

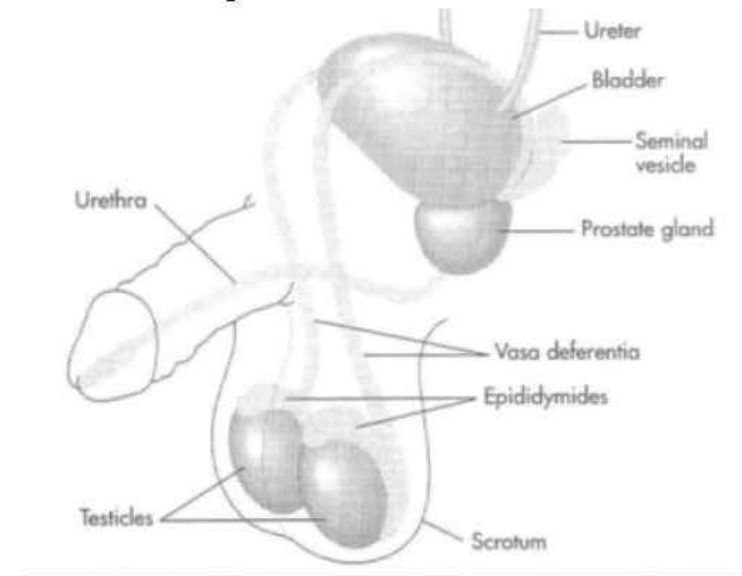
- ◆ The vasa deferentia are the tubes that are cut during vasectomy.
- ◆ After the fluid from the seminal vesicles mixes with the sperm, this mixture continues to travel through the vas deferens to the prostate gland, which is situated at the base of the urinary bladder and surrounds part of the urethra. This gland produces a thin, milky, and alkaline fluid that forms part of the semen.
- ◆ Semen with sperms travels out of the man's body through the urethra, the tube that runs through the center of the penis. In males, the passageway for urine and that for sperm are the same. A man cannot urinate and release semen simultaneously.
- ◆ Before the semen leaves the man's reproductive system, the Cowper's gland releases a small amount of fluid. This fluid further makes the seminal fluid alkaline so that sperms are not destroyed as they pass through urethra during ejaculation.

Figure 1-1. External Male Organs



INTERNAL ORGANS OF THE MALE GENITO-URINARY SYSTEM

Figure 1-2. Internal Male Organs



As shown in Figure 1-2, the male internal reproductive organs are made up of three groups: **the testes, the ducts, and the accessory glands.**

The testes (also called testicles or male gonads) produce sperm and the male sex hormone testosterone. After vasectomy, the testes continue to produce both sperms and hormones.

The second group of organs is a series of connected ducts: the **epididymides**, the **vasa deferentia** (vas deferens), and the **urethra**. The two epididymides (which begin at and are connected to the testes) are each connected to one of the vasa deferentia. At the prostate, the epididymides come together and are connected to the urethra and the accessory glands. The epididymides and vasa deferentia carry sperm to mix with secretions from the accessory glands. The urethra carries the sperm and seminal fluid out of the body during ejaculation. The urethra also carries urine.

The vas begins at the epididymis and ends at the base of the prostate, where it is joined by the **seminal vesicle**. The vas and seminal vesicle ducts form the ejaculatory duct. The ejaculatory duct opens into the urethra to enable the passage of sperm and seminal fluid during ejaculation. When using the three-finger technique of the NSV procedure, the vas can be easily felt by rolling the spermatic cord between the thumb and the third finger.

The third group of internal organs is called the accessory glands, which includes the **seminal vesicles**, the **prostate**, and the **bulbo-urethral glands** (not shown in Figure 1-2). These glands secrete the seminal fluid that carries the sperm through the urethra during ejaculation.

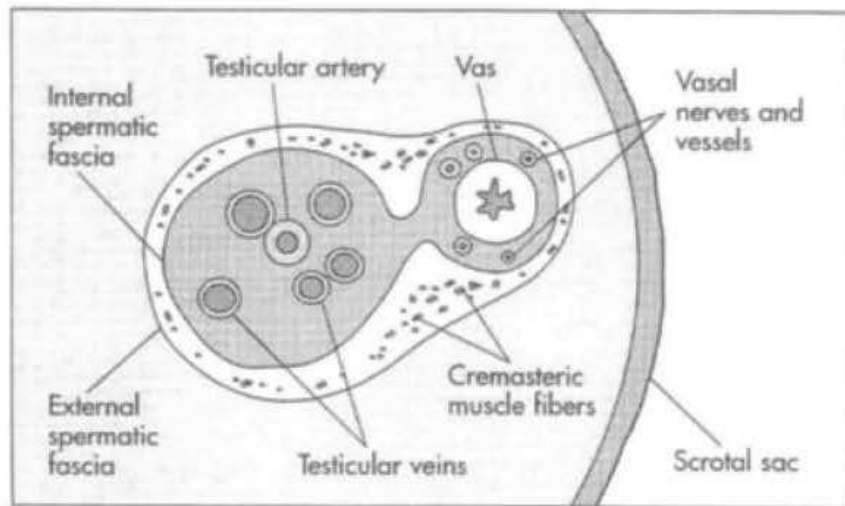
SPERMATIC CORD

One of the first steps in vasectomy is to identify the vas deferens so that it can be anesthetized and occluded. During NSV and during the injection of a local anesthetic, care should be taken to avoid the testicular artery and veins located within the internal spermatic fascia (see Figure 1-3).

The vas deferens is located within the spermatic cord. It can easily be palpated and differentiated from other structures in the cord (spermatic fascia, arteries, and veins), as it is a firm, thick structure within the spermatic cord.

The vas is approximately 35 cm long and 2 mm to 3 mm in diameter. The small diameter of the lumen of the vas presents the main challenge to vasectomy reversal. Without microsurgical techniques, the success of vasectomy reversal is low (pregnancy rates range from 15% to 30%). Even when microsurgical techniques are used, success is limited (the success rate of microsurgical techniques is between 50% and 60%).

Figure 1-3. Cross Section of the Spermatic Cord



PHYSIOLOGICAL CHANGES AFTER VASECTOMY

Aside from achieving the desired change in fertility, the male sexual and reproductive physiology remains unaffected after vasectomy. The nerves involved in erection are not involved in vasectomy. Seminal fluid, which forms the largest part of the ejaculatory fluid, continues to be produced. The client will not notice any reduction in the amount of ejaculatory fluid.

Sperm production continues despite the blockage of the passage of sperm through the reproductive system. These sperms are absorbed into the tissue and tubes of the epididymis. Sometimes, sperm blockage causes pressure to build up in the epididymis and its tubes, causing these structures to distend and eventually rupture. Ruptures are usually asymptomatic and not problematic. The sperm granulomas that can form at the site of the rupture do not usually require treatment. Although some vasectomists believe that this build-up can be avoided by leaving the testicular end of the vas open, the effect of this open-ended technique on failure rates has not been adequately studied.

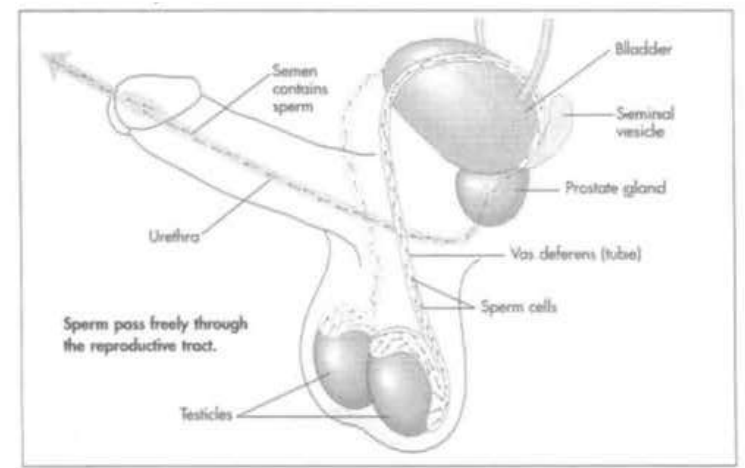
Vasectomy causes a breakdown in the blood-testes barrier that results in increased levels of serum antisperm antibodies in most men who have had a vasectomy. If a man has a vasectomy reversal, the presence of these antibodies can make pregnancy impossible, even if the vasa are successfully reconnected. However, sperm antibodies have no known effect on general health.

EXPLAINING THE EFFECTS OF VASECTOMY TO CLIENTS

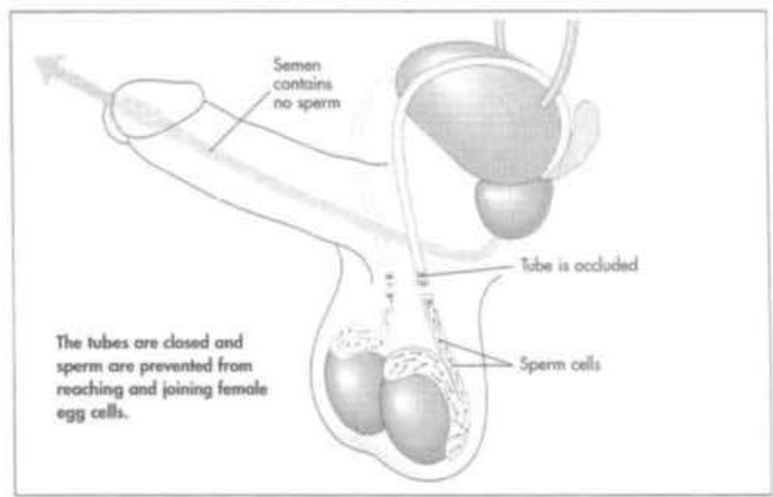
During prevasectomy counseling, vasectomy must be explained to the client using a language that he can easily understand. Diagrams like those in Figure 1-4 should be used as an aid to the explanation. Clients should be shown where the small opening for NSV will be made, explaining that the puncture is not into the penis or testes. The location of sperm production must be pointed out, and the cutting of the tube that carries the sperm (the vas deferens) for sperm blockage must be explained. The client must be assured that his sexual desire will not be affected, and that he will still be able to have an erection. The client should also be shown that seminal fluid will still pass through the urethra, and that he will still be able to ejaculate normally. The change is that the seminal fluid ejaculated will have no sperms because of the vasectomy.

Figure 1-4. Effects of Vasectomy on the Male Anatomy

a. Before Vasectomy



b. After Vasectomy



LONG-TERM HEALTH EFFECTS

To date, no studies indicate that vasectomy causes any long-term health problems. Studies that raised concerns about the relationship between vasectomy and cardiovascular disease, testicular cancer, and prostate cancer have not been substantiated by recent published studies.

Some health personnel and clients may have been misinformed about the long-term health effects of vasectomy. FP providers must therefore correct myths and rumors held by colleagues and clients.

CONCEPT OF FERTILITY AND JOINT FERTILITY

Fertility is the capacity of the woman to conceive and bear a child and the capacity of a man to have a woman conceive.

When we refer to joint fertility, we focus on both male and female fertility not separately but in a joint or combined perspective. Joint fertility involves contributions from both the male (sperm) and the female (egg), resulting in the conception of a child.

Male Fertility

- ◆ After reaching puberty, males are always fertile and are able to make females pregnant at any time.
- ◆ Male fertility ends at death.

Female Fertility

- ◆ Unlike males, female fertility is very limited.
- ◆ After puberty, females are fertile only on one day within a menstrual cycle, which is during ovulation. On other days, females are infertile.

- ◆ Fertilization occurs when sperm cells are available to fertilize the ovum at the time of ovulation.
- ◆ Female fertility ends at menopause, which occurs at 50 years of age (on average).

Joint or Combined fertility

- ◆ This perspective highlights the united and equal contribution of the male and female in the decision and ability to have a child.

PUBERTY

Puberty refers to the process of physical changes by which a child's body becomes an adult body capable of reproduction. In a strict sense, this process refers to the bodily changes induced by sexual maturation. Puberty is initiated by hormone signals from the brain to the gonads (the ovaries and testes). In response, the gonads produce a variety of hormones that stimulate the growth, function, or transformation of brain, bones, muscle, skin, breasts, and reproductive organs. During puberty, major differences in size, shape, composition, and function develop in many body structures and systems. The most obvious changes are referred to as secondary sex characteristics.

Signs of Puberty

In Females

Girls begin the process of puberty approximately one to two years earlier than boys do. The process begins at the age of 9 to 14 years.

◆ Breast Development

The first physical sign of puberty in females is usually a firm, tender lump under the center of the areola(e) of one or both breasts, occurring on average at approximately 10.5 years of age. Within 6 to 12 months, the swelling begins on both sides, softens, and can be felt and seen extending beyond the edges of the areolae. By another 12 months, the breasts approach a mature size and shape, with the areolae and papillae forming a secondary mound. In most young women, this mound disappears into the contour of the mature breast.

◆ Pubic Hair

Pubic hair is often the second obvious change in female puberty. Pubic hairs are usually visible first along the labia. Within another 6 to 12 months, the hairs become too numerous to count and appear on the pubic mound as well. Later, the pubic hairs densely fill the "pubic triangle" and spread to the thighs and sometimes upward toward the navel as abdominal hair.

◆ Vagina, Uterus, Ovaries

The mucosal surface of the vagina also changes in response to increasing levels of estrogen; it becomes thick and dull pink in color (in contrast to the brighter red of the pre-pubertal vaginal mucosa). Whitish secretions (physiologic leukorrhea) are a normal effect of estrogen as well. In the two years following the development of the breast, the uterus and ovaries increase in size, and follicles in the ovaries reach large sizes. The ovaries usually contain small follicular cysts visible by ultrasound.

◆ Menstruation and Fertility

The first menstrual bleeding is referred to as menarche, and it typically occurs approximately two years after the first signs of breast development. The average age of menarche is

approximately 11.75 years. Menses (menstrual periods) are not always regular and monthly in the first two years after menarche. Ovulation is necessary for fertility but may or may not accompany the earliest menses. In post-menarchal girls, approximately 80% of the cycles are anovulatory in the first year after menarche (approximately 13 years), 50% in the third (approximately 15 years), and 10% in the sixth year (approximately 18 years).

During this period, the lower half of the pelvis and the hips widen (providing a large birth canal) also because of the rising levels of estrogen. Fat tissue increases to a greater percentage of the body composition of females than of males, especially in the typical female distribution of breasts, hips, buttocks, thighs, upper arms, and pubis.

Progressive differences in fat distribution as well as sex differences in local skeletal growth contribute to the typical female body shape by the end of puberty. At age 10, the average girl has 6% more body fat than the average boy, but by the end of puberty, the average difference is nearly 50%.

- ◆ **Body Odor and Acne**

Rising levels of androgens can change the fatty acid composition of perspiration, resulting in an "adult" body odor. This condition often precedes breast and pubic hair development by one or more years. Another androgen effect is increased secretion of oil (sebum) from the skin. This change increases the susceptibility to acne, a characteristic affliction of puberty that greatly varies in severity.

In Males

Boys begin the process of puberty at approximately 10 to 17 years old. The following are the physical changes during puberty:

- ◆ **Testicular size, Function, and Fertility**

These factors are the first physical manifestations of puberty in males. The testes start producing testosterone and sperms. Sperm can be detected in the morning urine of most boys after the first year of pubertal changes (and occasionally earlier). Potential fertility is reached at approximately 13 years of age in boys, but full fertility will not be gained until 14 to 16 years of age, although some go through the process very quickly, reaching full fertility only one year later.

- ◆ **Pubic Hair**

For boys, pubic hair often appears shortly after the genitalia begin to grow. The pubic hairs are usually first visible at the dorsal (abdominal) base of the penis. After another 6 to 12 months, the hairs become too many to count; they become dense to fill the "pubic triangle" and spread to the thighs and upward toward the navel as part of the developing abdominal hair.

- ◆ **Body and Facial Hair**

In the months and years following the appearance of pubic hair, other areas of the skin that respond to androgens (testosterone) undergo heavy hair growth in roughly the following sequence: underarm (axillary) hair, peri-anal hair, upper lip hair, sideburn (pre-auricular) hair, peri-areolar hair, and the rest of the beard area. Arm, leg, chest, abdominal, and back hair become heavy very gradually. The amount of body hair among adult men is wide ranging, and significant differences in timing and quantity of hair growth are observed among different ethnic groups. Chest hair may appear during puberty or years after. Not all men have chest hair.

- ◆ **Voice Change**

Under the influence of androgens, the voice box or larynx grows in both sexes. This growth is far more prominent in boys than in girls. It causes the male voice to drop and deepen, sometimes abruptly but rarely "overnight," by approximately one octave. Full adult pitch is attained at an average age of approximately 15 years.

- ◆ **Male Musculature and Body Shape**

By the end of puberty, adult men have heavier bones and nearly twice as much skeletal muscle.

- ◆ **Body Odor and Acne**

Rising levels of androgens can change the fatty acid composition of perspiration, resulting in an "adult" body odor. Another androgen effect is the increased secretion of oil (sebum) from the skin and the resultant variable amounts of acne. Acne cannot be prevented or diminished easily, but it typically fully diminishes at the end of puberty.

SESSION III

COUNSELING AND INFORMED CONSENT

OVERVIEW

Counseling serves an important function in providing quality FP services. Through counseling, providers help clients make and implement their own decisions or choices about reproductive health and FP.

Good counseling minimizes the risk of regret or dissatisfaction from vasectomy and therefore facilitates great client satisfaction. This consideration is particularly important for clients choosing a permanent method of contraception.

This session provides an overview of counseling so that service providers become aware of its importance and provision.

OBJECTIVES

At the end of the session, the participants will be able to:

1. Explain FP counseling
2. Enumerate the rights of clients
3. Discuss FP counseling for vasectomy
4. Describe the steps in counseling clients for vasectomy
5. Explain “informed consent”
6. Identify clients at risk for regretting vasectomy
7. Demonstrate proper use of the guide for “Verifying Informed Consent”
8. Instruct clients on the use of the condom

NARRATIVE

DEFINITION AND RATIONALE

FP Counseling

- ◆ Involves two-way communication between counselors and clients
- ◆ Provides clients with their rights
- ◆ Helps clients make voluntary, informed decisions and actions made by couples/individuals regarding fertility and contraception
- ◆ Provides information that clients can apply to their individual needs and circumstances
- ◆ Helps clients use the contraceptive method of their choice

The purpose of FP counseling is to ensure that clients make a free and informed decision about reproduction and contraception. The client makes the decision after receiving unbiased, complete information about the available choices and after considering how such choices relate to his needs and circumstances.

Figure 3–1. Rights of the Client

All clients have the right to:

- ◆ Clear information
- ◆ Access to services
- ◆ Their choice of family planning method
- ◆ Safe services
- ◆ Privacy and confidentiality
- ◆ Dignity, comfort, and free expression of opinion
- ◆ Continuity of service

Adapted from: “The Rights of the Client,” a poster created by the International Planned Parenthood Federation.

BENEFITS OF COUNSELING

- ◆ Helps ensure informed, voluntary, and well-considered decisions
- ◆ Increases client satisfaction
- ◆ Contributes to higher rates of contraceptive continuation
- ◆ Increases the likelihood that the client will use the method correctly
- ◆ Improves the quality of the FP program
- ◆ Enhances the reputation of the FP program and its staff

COUNSELING POTENTIAL VASECTOMY CLIENTS

Vasectomy counseling is particularly critical for the following reasons:

- ◆ Vasectomy is a surgical method.
- ◆ Vasectomy is intended to be a permanent method.

RESPONSIBILITIES OF THE FP COUNSELOR

Considering the permanence of the effects of vasectomy and the need to minimize regret and dissatisfaction, the counselor is responsible for the following:

- ◆ To assess the client's knowledge of FP alternatives and to provide any missing information
- ◆ To help the client arrive at an understanding of his needs and circumstances as they relate to children and FP
- ◆ To help the client come to an independent decision about which choice is right for him

While performing these responsibilities, the counselor treats the client respectfully and encourages him to talk about his worries, fears, interests, and needs. The counselor spends as much time listening to clients as talking to them. The counselor remains neutral about the client's choice. Each client has the right to choose whether to use a contraceptive method. A decision to have another child, after having considered all the possible choices, is as valid an outcome of counseling as a decision to have a vasectomy.

Regardless of whether the vasectomist or another staff member is responsible for counseling vasectomy clients, a number of steps must be followed to help ensure the most appropriate and effective counseling session possible. These steps are discussed in detail on the following pages.

Table 3-1. Steps in Providing Counseling for Family Planning Clients including Vasectomy Clients

STEP 1	Preparation for Counseling. A respectful counselor, an appropriate setting, and adequate supplies are the basics needed for a successful counseling session.
STEP 2	Beginning of Counseling Session. The counselor puts the client at ease, treats him with respect, and makes him feel welcome at the health facility.
STEP 3	Providing Information to the Client. The client should know that he is free to choose a different contraceptive method and to decide against having a vasectomy at any time before the procedure.

STEP 4	Assessing the Client's Decision to Have a Vasectomy. As vasectomy is intended to be a permanent method, the counselor must determine whether a client's decision to have a vasectomy is a sound one.
STEP 5	Counseling the Client about the Vasectomy Procedure. The counselor ensures that the client has and understands all the basic information about the procedure.

STEPS IN PROVIDING COUNSELING FOR FAMILY PLANNING CLIENTS INCLUDING VASECTOMY CLIENTS

Step 1: Preparation for Counseling

Ask yourself the following questions:

Emotional Climate

- Can I give the client my full attention without being interrupted?
- Can I provide a comfortable atmosphere for the client?

Setting

- Does the setting encourage discussion and provide privacy?
- Is the counseling area tidy and free of distraction?
- Are there comfortable chairs for the client or couple and for me?

Materials

- Do I have the necessary forms (client record, informed consent)?
- Do I have visual aids (flipcharts, brochures, posters, samples of methods, etc.)?
- Do I have materials that remind me of the characteristics, benefits, and risks of the various methods?

Step 2: Start of Counseling Session

Getting started

- Begin by putting the client at ease. Introduce yourself.
- Ask the client why he has come to see you: For information about vasectomy? For vasectomy services? To discuss a problem with his vasectomy? To discuss other contraceptive methods?
- If you scheduled the counseling appointment, explain why. Explain the purpose of the counseling session.

Gathering information from the client

- Personal data (age, marital status, and the age, number, and gender of his children)
- Previous experience with contraceptive methods
- Health status

Assess what the client knows about:

- The human reproductive system
- The availability of temporary contraceptive methods
- The benefits, risks, and side effects of temporary and permanent contraceptive methods

Step 3: Providing Information to the Client

- Tailor information to suit the client’s knowledge and family planning goals.
- Provide accurate, unbiased information.
- Correct misunderstandings.
- Fill in gaps in the client’s knowledge of:
 - The human reproductive system
 - The benefits, risks, and side effects of temporary and permanent methods
 - The benefits and risks of not using contraception
- Encourage the client to ask questions and to provide feedback to ensure that he and his partner understand all the information.
- If appropriate, explain what the client can do to prevent the transmission of sexually transmitted diseases, including AIDS.
- Discuss fees the client may have to pay for the various methods.

Step 4: Assessing the Client’s Decision to Have a Vasectomy

When a client expresses an interest in vasectomy:

- Ensure that the client understands that the method involves surgery and is intended to be permanent.
- Assess the client’s decision and feelings. Psychologically prepare the client for ending his fertility. Use probing questions such as:
 - When did you decide to have no more children?
 - Why do you want to end your fertility (completed family size, economic reasons, health reasons, etc.)?
 - How did you first learn about vasectomy (partner, nurse, doctor, friend, field worker, etc.)?
 - How long have you been considering vasectomy?
 - What does your partner think?
 - Do you know anyone who has had a vasectomy?
 - How would you feel if your circumstances changed after the vasectomy (divorce, remarriage, death of child or partner, etc.)?
-
- Ask yourself: “Is the client making a well-considered decision?”

If the client decides not to use contraception:

- Ensure that the client understands the risk of pregnancy to his partner. The client should also understand the health risks associated with pregnancy.
- Tell the client to return if he or his partner has a change of mind.
- Advise the client about other services, such as prenatal and maternity care.

If the client decides to use a temporary method:

- Screen for appropriateness (health precautions, ability to use the method effectively, etc.).
- Explain and demonstrate the method in detail: how to use it; the risks, benefits, danger signals; what to do if a problem arises; and whom to contact to discontinue the method.
- Prepare the client and his partner for any inconveniences and any common side effects of the method.
- Explain how to obtain the supplies needed for the method.
- Tell the client and his partner about any fees they are expected to pay for the method.
- Provide the method, or refer the client or his partner to an appropriate provider.
- Schedule a follow-up visit if appropriate.

Figure 3–2. Assessing the Client’s Decision to Have a Vasectomy

Client is Making a Sound Decision:	Warning Signals:
<ul style="list-style-type: none"> ◆ Client is a mature individual. ◆ Client has achieved or exceeded desired family size. ◆ Client has support from partner. ◆ Client has stable marriage. ◆ Client has realistic expectations. ◆ Client is free from stress. ◆ Client is confident on the decision. ◆ Client has well-established desire to end fertility. ◆ Client is well informed. 	<ul style="list-style-type: none"> ◆ Client is young. ◆ Client has few children. ◆ Client is feeling pressured in the decision. ◆ Client has an unstable marriage. ◆ Client has unrealistic expectations. ◆ Client’s partner does not agree. ◆ Client is under temporary stress. ◆ Client has unresolved conflicts. ◆ Client decision is based on economic inducement. ◆ Client has excessive interest for reversal.

If the client’s partner has not accompanied him to the counseling session, briefly cover the information noted here, and schedule an appointment for the client and his partner to receive counseling together.

If you believe the client is at risk of dissatisfaction or regret after vasectomy:

- ◆ Explain that the client has characteristics that make dissatisfaction or regret likely.
- ◆ Discuss these characteristics with the client. For instance: "We've learned that men in your situation who have had a vasectomy sometimes change their minds about the choice after the operation is done. This is because..."
- ◆ Ask the client to spend more time considering the decision. Discuss the temporary methods he can use in the meantime.

Possible Outcomes

- The client agrees to reconsider and may or may not use temporary contraception in the meantime. Schedule another appointment.
- The client may change his mind and decide to use a temporary method or no method.
- The client may persist in the request. If so, consult your colleagues or supervisor.
- Consider referring the client to a more knowledgeable or experienced counselor.

Step 5: Counseling the Client about the Vasectomy Procedure

If you believe that the client's decision for vasectomy is informed, voluntary, and well considered, follow these eight steps:

1. Using simple language, explain in detail the benefits, risks, and side effects of vasectomy. Ensure that the client also understands that vasectomy does not provide protection against STDs, including HIV infection.
2. Psychologically prepare the client for surgery by describing what to expect during the procedure and possible postoperative effects. Use diagrams to describe the surgical procedure (see Figure 3-4).
3. Ensure that the client has been provided with oral and written preoperative instructions. Tell the client about any fees he is expected to pay.
4. Advise the client to use temporary contraception before and after surgery. If needed, provide condom instructions (see Figure 4-4).
5. Ask the client if he has any questions.
6. Complete informed consent procedures. Ensure that the client understands the six points of informed consent listed below and knows what he is signing. Encourage the client to ask questions. The six points of informed consent are:
 - The knowledge of the availability of temporary methods
 - The understanding that vasectomy is a surgical procedure
 - An understanding of the benefits and risks of vasectomy, including the small risk of failure
 - The understanding that vasectomy is intended to be permanent
 - The understanding that if the vasectomy is successful, the client will have no more children
 - Knowledge of the option to decide against the procedure at any time before the operation

7. Obtain the client's signature or mark. If the client is illiterate, obtain a witness's signature attesting that the client has signed the informed consent form.
8. Schedule an appointment for medical screening and surgery.

Remember: The goal of counseling is for a client to make an informed, voluntary, well-considered decision.

INFORMED CONSENT

Informed consent is a client's agreement to use a contraceptive method or to undergo a medical procedure voluntarily and in full possession and understanding of the relevant benefits and risks. For vasectomy, the client gives informed consent after being counseled and signs a consent form before the procedure is performed.

Consent is voluntary when it is given of the client's own free will and is not obtained by means of special inducement, force, fraud, deceit, duress, or other forms of coercion or misrepresentation. The fact that a client has signed an informed consent form does not guarantee informed consent.

Model Informed Consent Form for Vasectomy*

I, _____, the undersigned, request that a vasectomy be performed on my person. I make this request of my own free will, without having been forced or given any special inducement. I understand the following:

1. There are temporary contraceptive methods available to me and my partner.
2. The procedure to be performed on me is a surgical procedure, the details of which have been explained to me.
3. This surgical procedure involves risks in addition to benefits, all of which have
4. been explained to me. Among the risks is the possibility that the procedure may fail.
5. If the procedure is successful, I will be unable to have any more children.
6. The effect of the procedure should be considered permanent.
7. The procedure does not protect me or my partner from infection with sexually transmitted infections, including HIV/AIDS.
8. I can decide against the procedure at any time before the operation is performed (without losing the right to medical, health, or other services or benefits).

-

(Signature or mark of client)

(Date)

(Signature of attending doctor or delegated assistant)

(Date)

If the client cannot read, a witness of the client's choosing (male or female) and who speaks the same language as the client must sign the following declaration:

I, the undersigned, attest that the client has affixed his thumbprint or mark in my presence.

(Signature or mark of witness)

(Date)

* Adapt this form for use in your facility.

VERIFYING INFORMED CONSENT

Figure 3-3. Assessing a Client's Decision for Vasectomy

A Surgeon's Guide for Final Assessment

Note: Ensure that the client has signed an informed consent form before conducting this assessment.

Ask the client these questions:	STOP	CAUTION	GO
WHO made the decision for sterilization?	<i>Should not have surgery now</i> Someone else	<i>Needs more counseling</i> Client decided, but partner objects	<i>Signs of a sound decision</i> Client and partner (or client, if single)
WHEN did the client decide not to have more children?	Now	Recently	Some time ago
WHY did the client choose permanent contraception?	Pressure from someone else	Has heard permanent method can be reversed	Wants no more children
HOW did the client decide?	While upset or under stress	Without enough consideration or information	After consideration and full information
WHAT does the client know about vasectomy?	Does not know that it: - Is permanent - Is a surgical method - Will mean that he cannot have more children	Has misunderstandings about contraceptive methods	Understands that it: - Is permanent - Is a surgical method - Will mean that he cannot have more children
WHAT does the client know about other contraceptive methods?	Would prefer another method if available	Has little knowledge of other methods or their availability	Knows of other methods, but prefers permanent contraception

How to Use This Guide

Part of the surgeon's responsibility for clients about to undergo surgery for permanent contraception is to verify that the client has made an informed and voluntary decision for the procedure. This simple aid can help the surgeon verify a client's readiness for permanent contraception before the operation. The assessment should be made before starting any part of the procedure.

Use of this guide does not substitute for client counseling, which should come much earlier. Furthermore, good judgment is needed when using this guide (or any other) and when interpreting the results. For example, if all of the client's answers fall in the GO category, but he is unduly nervous, and his agitation does not appear to be related to a fear of surgery, the surgeon or another staff member should take time to determine what is causing his anxiety before performing the procedure.

CONDOM INSTRUCTIONS

The infertility effect of vasectomy does not happen immediately after the procedure. The client or his partner needs to use another effective contraceptive for at least three months and after a sperm-free semen examination. A common choice of back-up method is the condom. For this reason, all vasectomy clients should be provided with instructions and practice on the correct use of condoms for use immediately after the vasectomy. Although providers often mistakenly assume that all men know how to use condoms correctly, incorrect use is common and is a major cause of condom failure.

Figure 3-4. Instructions for Condom Use

A. Before Intercourse



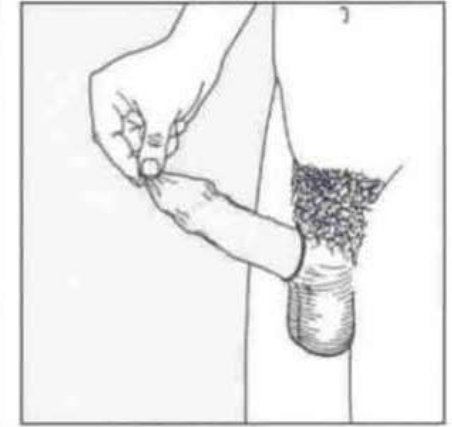
1. Carefully open the package so the condom does not tear. (Do not use teeth or a sharp object to open the package). Do not unroll the condom before putting it on.



2. If you are not circumcised, pull back the foreskin. Put the condom on the end of the hard penis. Note: If the condom is initially placed on the penis backwards, do not turn it around. Throw it away, and start with a new one.



3. While pinching the tip of the condom to squeeze out air, roll on the condom until it reaches the base of the penis.



4. Check to make sure there is space at the tip, and that the condom is not broken. With the condom on, insert the penis for intercourse.

B. After Intercourse



5. After ejaculation, hold onto the condom at the base of the penis. Keeping the condom on, pull the penis out before it gets soft.



6. Slide the condom off without spilling the liquid (semen) inside. Dispose of the used condom.

Remember:

- ◆ Do not use grease, oils, lotions, or petroleum jelly (Vaseline) to make the condom slippery. These substances can make the condom break. Use only jelly or cream that does not contain oil.
- ◆ Use a new condom each time you have sex.
- ◆ Use a condom only once.
- ◆ Store condoms in a cool, dry place.
- ◆ Do not use a condom that may be old or damaged.
- ◆ Do not use a condom if
 - The package is broken
 - The condom is brittle or dried out
 - The color is uneven or has changed
 - The condom is unusually sticky

SESSION IV

PREVASECTOMY EVALUATION

OVERVIEW

Assessing a client's suitability to undergo vasectomy is another component of quality care. Careful prevasectomy evaluation reduces the risk of complications, which will adversely affect the acceptability of the procedure.

This module provides the information necessary for service providers to physically evaluate whether a client is a good candidate for vasectomy.

OBJECTIVES

At the end of the session, the participants will be able to:

1. Explain prevasectomy assessment in terms of its rationale, timing, and components
2. Describe the elements of medical history that should be part of a prevasectomy assessment
3. Discuss the steps in performing genital examination and the potential abnormalities that may be detected during the examination
4. Explain the reasons behind recommendations for categorizing certain conditions as precautions for vasectomy

NARRATIVE

PREVASECTOMY ASSESSMENT

Rationale

- ◆ Determine the client's fitness for vasectomy.
- ◆ Determine the existence of any conditions that are precautions to vasectomy.
- ◆ Evaluate whether the client has made an informed choice.

Timing

Prevasectomy assessment can be done:

- ◆ The day the vasectomy is to be performed
- ◆ A few days before vasectomy
- ◆ On the same day as prevasectomy counseling

Components

The prevasectomy medical history and physical examination are discussed in detail in Table 4-1. The essential components of the examination are:

- ◆ Medical history
- ◆ Genital examination

Medical History and Physical Examination

The following table lists the required and recommended components of a pre-vasectomy medical history and physical examination and explains the reason why each component is included.

	COMPONENT	REASON
M E D I C A L H I S T O R Y	Existence of bleeding disorders	Could indicate the potential for hemorrhage
	Previous scrotal or inguinal surgery or trauma	Scarring or adhesions that could complicate a vasectomy procedure may exist.
	Current or past genito-urinary infections, including STIs	Past infections could have caused scarring and adhesions. Current infection could lead to acute postvasectomy infection.
	History of sexual impairment	Could indicate pre-existing psychological or physiological problems that could later be incorrectly attributed to the vasectomy.
	Current and recent medications	Could indicate medical problems that the vasectomist should be aware of before surgery
	Allergy to medications	Can help prevent complications by determining whether the client has ever had an allergic reaction to any of the medications or antiseptics used before, during, or after surgery
P H Y S I C A L E X A M	Heart* (auscultation, pulse, and blood pressure)	Can rule out hypertension, heart murmurs, and other cardiovascular diseases that the vasectomist should be aware of before surgery
	Lungs* (auscultation and respiratory rate)	Can rule out infections and other lung disease that the vasectomist should be aware of before surgery
	Abdomen* (palpation)	Can rule out the presence of infections, organ enlargements, or masses that the vasectomist should be aware of before surgery
	Genitals	Can rule out the presence of infections or masses that the vasectomist should be aware of before surgery

* Recommended but not essential

Genital Examination

After examining the client’s heart, lungs, and abdomen, a genital examination must be performed. Before beginning the examination, tell the client about what you are going to do and why you will be doing it. Assure him that he would not feel any pain. During the genital examination, you will conduct a penile and scrotal examination.

Unless you observe lesions, gloves are unnecessary during a genital examination, but you should wash your hands thoroughly before and after the examination.

Penile Examination

Visual inspection

Visually inspect the penis. Note any lesions or scarring. Gently lift the penis and examine the underside as well. Examine the urethral opening. Note and assess any abnormalities, such as discharge, reddening, or irritation.

Potential abnormalities include rash, cyst, discharge, and skin cancer (rare).

Scrotal Examination

Visual inspection

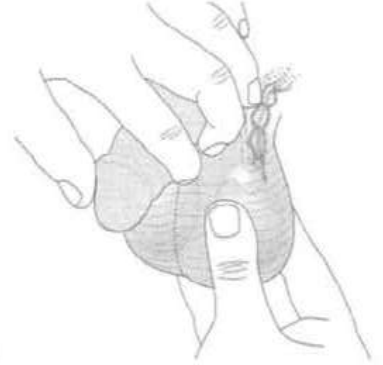
Visually inspect the scrotal skin. Lift the scrotum to examine the posterior side. Observe the color, size, and contour. Note and assess any swelling or masses.


Potential abnormalities include rash, cyst, poorly developed scrotum (possible cryptorchidism), and swelling (possible inguinal hernia, torsion of spermatic cord, strangulated inguinal hernia).

Palpation

Palpate the scrotum to examine the testes, epididymis, spermatic cord, and the vas deferens.

Potential abnormalities include varicocele, epididymitis, and undescended testis.

<p>1. Palpation of the Testes and Epididymis</p> <p>First, between your thumb and first two fingers, palpate each testis and epididymis (see Figure 4-1). Avoid putting pressure on the testis, as this would be painful. Note the size, shape, and consistency of each testis and epididymis. Note any nodules or tenderness.</p> <p>Potential abnormalities include painless nodules in the testes, which may indicate testicular cancer. Nodules in the epididymis may indicate an epididymal cyst (seminoma).</p>	 <p>Figure 4-1 Palpation of the Testes and Epididymis</p>
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<p>2. Palpation of the Spermatic Cord and Vas Deferens</p> <p>Using the three-finger technique (see No-Scalpel Vasectomy: An Illustrated Guide for Surgeons, page 19), palpate each spermatic cord and its vas deferens (see Figure 5-2). Move your thumb and fingers along its length. Note any nodules or swellings.</p> <p>Potential abnormalities include thickened vas (suggests chronic infection), tortuous veins (suggests varicocele), and cyst in cord (suggests hydrocele).</p>	 <p>Figure 4-2 Palpation of the Spermatic Cord and Vas Deferens</p>
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VASECTOMY PRECAUTIONS

Table 4-2 lists the physical conditions that indicate a precaution to performing a vasectomy. If you do not have sufficient clinical experience in diagnosing these conditions, refer the client to a more experienced physician. For a more comprehensive list of conditions with WHO recommendations, a summarized list of the WHO MEC is included in this module.

Table 4-2. Vasectomy Precautions

Precaution	Reason	Recommendation
Local infection: • Scrotal skin infection • Balanitis • Active STI	Increases the risk of postoperative infection. In addition, surgery at or near the site of an infected lesion can result in wound infection, epididymitis, testicular infection, or sepsis if the organisms gain entry to other tissues or to the bloodstream during surgery.	Treat the infection. Delay the vasectomy until the infection is resolved. Counsel the client about the interim methods of contraception. Counsel clients with STIs about the risk of transmission to others and about preventing future infections. Counsel clients about the need to use condoms.
Systemic infection (including bacteremia, malaria, or yellow fever) or gastroenteritis	Increases the risk of postoperative infection	Treat the infection, or refer the client and delay the procedure. Counsel the client about interim methods of contraception.

Previous scrotal surgery	Possible adhesions to cord structures make it difficult to separate structures. NSV may be difficult to perform if skin is thickened from previous surgery.	Assess the extent of adhesions; if the adhesions will not interfere with vasectomy, perform the procedure. Take additional care when infiltrating the local anesthetic, and pay careful attention to hemostasis.
Intrascrotal mass	May indicate an underlying disease that could affect the health of the client or complicate the procedure	Diagnose the mass, treat abnormal findings, or refer the client for treatment. If findings do not interfere with vasectomy, perform the procedure. If unable to perform vasectomy, counsel about interim contraceptive methods.
Inability to locate, isolate, or move the vas	May make it difficult to access the vas through the puncture site	If the vas cannot be accessed through the puncture site, the client will need to have an incision over the vas.
Large varicocele	Vas may be difficult or impossible to locate. Repairing the varicocele and performing vasectomy in a single procedure may decrease the risk of complications.	If you are experienced in concurrent procedure, repair the varicocele, and perform the vasectomy through the varicocele repair incision. Otherwise, delay the vasectomy, refer the client to a facility with appropriate staff, and counsel the client about interim methods of contraception. If small, a varicocele can usually be isolated from the vas and will not interfere with NSV.
Large hydrocele	Vas may be difficult or impossible to locate. Repairing the hydrocele and performing vasectomy in a single procedure may decrease the risk of complications.	If you are experienced in concurrent procedure, repair the hydrocele and perform the vasectomy through the hydrocele repair incision. If not, delay the vasectomy, refer the client to a facility with appropriate staff, and counsel the client about interim methods of contraception. If small, a hydrocele usually does not interfere with NSV.

Precaution	Reason	Recommendation
Cryptorchidism	When cryptorchidism persists into adulthood, the risk of infertility is very high if the disease is bilateral. Unless fertility has been demonstrated (by pregnancy in the partner or by semen analysis), vasectomy is not needed. If the cryptorchidism is unilateral, the undescended testicle is likely to be nonfunctioning.	If the client has bilateral cryptorchidism and fertility has been demonstrated, extensive surgery will be required to locate the vas. If the cryptorchidism is unilateral and fertility has been demonstrated, you can perform vasectomy on the normal side. If semen examination shows a persistent presence of sperm, more extensive surgery may be required to locate the other vas. Counsel the client on interim methods of contraception until further surgery can be performed.
Inguinal hernia	During herniorrhaphy, the vas is exposed in the inguinal canal and can be ligated.	An experienced surgeon can perform vasectomy concurrently with hernia repair. Counsel the client about interim methods of contraception until treatment is possible.
Coagulation disorders: hemophilia	Bleeding disorders increase the risk of postoperative hematoma formation, which consequently increases the risk of infection. A severe bleeding disorder could result in hemorrhage.	Evaluate before performing vasectomy. If the client has a significant bleeding disorder that cannot be corrected before surgery, do not perform the procedure. If the procedure cannot be performed because of an irresolvable bleeding disorder, counsel the client about alternative contraceptive methods.
Diabetes	Diabetics have an increased likelihood of acquiring post-operative wound infections. If signs of infection appear, treat aggressively with antibiotics.	Correct hyperglycemia before vasectomy, and perform vasectomy only with local anesthesia. Monitor the client closely postoperatively for signs of infection.

World Health Organization (WHO) Eligibility Criteria for Vasectomy Procedures*

Introduction

Considering the irreversibility or permanence of sterilization procedures, special care must be taken to assure a voluntary informed choice of the method by the client. Particular attention must also be given in the case of young people, men who have not yet been fathers, and clients with mental health problems, including depressive conditions. The national laws and existing norms for the delivery of sterilization procedures must be considered in the decision process.

There is no medical condition that would absolutely restrict a person's eligibility for sterilization. Some conditions and circumstances indicate that certain precautions should be taken.

The classification of the conditions into the different categories is based on an in-depth review of the epidemiological and clinical evidence relevant to medical eligibility. The programmatic implications of these updated medical criteria are still to be addressed, taking into account the various levels of service delivery. However, for the particular case of sterilization procedures, the following category definitions were developed.

Definitions

- A (Accept):** There is no medical reason to deny sterilization to a person with this condition.
- C (Caution):** The procedure is normally conducted in a routine setting, but with extra preparation and precautions.
- D (Delay):** The procedure is delayed until the condition is evaluated and/or corrected. Alternative temporary methods of contraception should be provided.
- S (Special):** The procedure should be undertaken in a setting with an experienced surgeon and staff, equipment needed to provide general anesthesia, and other back-up medical support. For these conditions, the capacity to decide on the most appropriate procedure and anesthesia regimen is also needed. Alternative temporary methods of contraception should be provided if referral is required or there is otherwise any delay.

*Adapted from: WHO, 2000.

Sterilization does not protect against sexually transmitted infections (STIs) or HIV. If there is risk of STIs/HIV, the correct and consistent use of condoms is recommended, either alone or with another contraceptive method. Male latex condoms are proven to protect against STIs/HIV.

Male Sterilization

Condition	Category	Rationale/Comments
Local infections		There is an increased risk of postoperative infection (Gohn & Bornside, 1989).
Scrotal skin infection	D	
Active STI	D	
Balanitis	D	
Epididymitis or orchitis	D	
Previous scrotal injury	C	
Systemic infection or gastroenteritis	D	There is an increased risk of postoperative infection (Gohn & Bornside, 1989).
Large varicocele	C	The vas may be difficult or impossible to locate; a single procedure to repair varicocele and perform a vasectomy decreases the risk of complications.
Large hydrocele	C	The vas may be difficult or impossible to locate; a single procedure decreases the risk of complications.
Filariasis; elephantiasis	D	The scrotum may be involved in severe elephantiasis, making it impossible to palpate the cord structure and testis.
Intrascrotal mass	D	This may indicate an underlying disease.

SESSION V

INFECTION PREVENTION

OVERVIEW

The use of appropriate infection prevention techniques during the provision of vasectomy services is crucial to the safety of both clients and service providers. This session provides the information necessary for participants to perform or supervise the infection prevention procedures used in providing NSV services.

LEARNING OBJECTIVES

At the end of the session, the participants will be able to:

1. Identify who are at risk of infections in the health care facility
2. Explain how infections are transmitted among clients, health care workers, and the community via the health care setting
3. Discuss standard precautions and the recommended practices to ensure infection prevention
4. Demonstrate the appropriate infection prevention procedures to follow before, during, and after vasectomy

NARRATIVE

IMPORTANCE OF INFECTION PREVENTION

Without proper precautions, health facilities can cause the spread of infections and diseases. When providing health services, the transmission of infections must be prevented at all times. Over the past few decades, the world has seen increased outbreaks of diseases that were once better controlled. Moreover, previously unidentified infectious agents that can cause incurable diseases, such as HIV and hepatitis C, have become a significant cause of illness and death in many parts of the world.

Although we do not often think about this issue, health care facilities are ideal settings for transmission of disease because of the following reasons:

- ◆ Invasive procedures, which have the potential to introduce microorganisms into parts of the body where they can cause infections, are performed routinely.
- ◆ Service providers and other staff are constantly exposed to potentially infectious materials as part of their work.
- ◆ Many people seeking health care services are already sick and may be more susceptible to infections.
- ◆ Some of the people seeking services have infections that can be transmitted to others.
- ◆ Services are sometimes provided to many clients in a limited physical space, often within a short period.

With appropriate infection prevention practices, the following can be achieved:

- ◆ Prevent postprocedure infection, including surgical-site infections
- ◆ Provide high-quality, safe services
- ◆ Prevent infections in service providers and other staff
- ◆ Protect the community from infections that originate in health care facilities
- ◆ Prevent the spread of antibiotic-resistant microorganisms
- ◆ Reduce the costs of health care services because prevention is cheaper than treatment

Infection prevention practices protect not only clients but also clinic staff and the community. We must remember that all clinic staff who have contact with blood and body fluids—from the physicians to the cleaners—are at risk of infection. Most infections can be prevented if infection prevention procedures are followed.

HOW INFECTIONS ARE TRANSMITTED

Infections are caused by microorganisms. Microorganisms are everywhere—on the skin, in the air, and in people, animals, plants, soil, and water.

Some microorganisms are normally present on the skin and the respiratory, intestinal, and genital tracts. These microorganisms are called normal flora. Other microorganisms are normally not found on or in the human body and are usually associated with disease. These microorganisms are known as pathogens. All microorganisms, including normal flora, can cause infection or disease.

Infections are transmitted when normal flora are introduced into an area of the body where they are not normally found or when pathogens are introduced into the body. The infectious agent survives, grows, and/or multiplies in the reservoir and then leaves the reservoir through a place of exit by a mode of transmission. The infectious agent then enters the susceptible host through a place of entry. The components of the disease transmission cycle are shown in Figure 5-1 and are discussed as follows:

- ◆ **Infectious agent:** Microorganisms that can cause infection or disease. The infectious agent can be bacteria, viruses, fungi, or parasites.
- ◆ **Reservoir:** The place where the agent survives, grows, and/or multiplies. People, animal, plants, soil, air, water, solution, instruments, and other items used in clinic procedure can serve as reservoirs for potentially infectious microorganisms.
- ◆ **Place of exit:** The route by which the infectious agent leaves the reservoir. The infectious agent can leave the reservoir through the blood stream, broken skin, mucous membrane, gastrointestinal tract, or placenta by means of blood, excretion, secretion, or droplets that come from other places.
- ◆ **Mode of transmission:** Infections are transmitted in four ways:
 - **Contact:** Direct transfer of microorganisms through touch (staphylococcus), sexual intercourse (gonorrhea, HIV), fecal/oral transmission (hepatitis A, shigella), or droplets (Influenza, TB)
 - **Vehicle:** Material that serves as a means of transfer of the microorganisms. The vehicle can be food (salmonella), blood (HIV, HBV), water (cholera, shigella), or instruments and other items used during clinical procedures (HBV, HIV, pseudomonas).
 - **Airborne:** Some microorganisms can be carried by air currents (measles, TB).
 - **Vector:** Invertebrate animals can transmit the microorganisms (mosquito: malaria and yellow fever; flea: plague).
- ◆ **Place of entry:** The route through which the infectious agent moves into the susceptible host. The infectious agent can enter the susceptible host through the blood stream, broken skin, mucous membranes, respiratory tract, genitourinary tract, and gastrointestinal tract.
- ◆ **Susceptible host:** A person who can become infected by the infectious agent. For the purpose of this training, the susceptible host includes clients, service providers, and members of the community.

We must remember that the mode of transmission is the easiest point at which to break the disease–transmission cycle in a health care facility. This goal can be accomplished by following appropriate infection prevention practices, such as handwashing, practicing correct aseptic techniques, correctly processing instruments and other items for reuse, and correctly disposing of medical waste.

Figure 5-1. Disease Transmission Cycle

RISKS OF INFECTION

Infection prevention is everybody's business. Just as everyone who works at a health care facility is at risk of infection, every health care worker has a role to play in practicing appropriate infection prevention. For infection prevention to be effective, each staff member must do his or her part.

Infection transmission can be transmitted among clients, staff, and the community as follows:

Risk to Staff

Service providers are at significant risk of infection because they are exposed to potentially infectious blood and other body fluids on a daily basis. Staff members who process instruments and other items, clean up after procedures, clean operating theaters and procedure rooms, and dispose of waste are particularly at risk. Client-to-health care worker transmission can occur through exposure to infectious blood and other body fluids. This exposure can occur in the following instances:

- ◆ When a health care worker's skin is pierced or cut by contaminated needles or sharp instruments
- ◆ When fluids are splashed on the mucous membranes of the health care worker (e.g., eyes, nose, or mouth)
- ◆ Through broken skin attributed to cuts, scratches, rashes, acne, chapped skin, or fungal infections

Risk to Clients

Clients are at risk of postprocedure infection when, for example, service providers do not wash their hands between clients and procedures, when they do not adequately prepare clients before a clinical procedure, and when used instruments and other items are not cleaned and processed correctly.

Risks to the Community

The community is also at risk of infection in the following instances:

- ◆ Medical waste, including contaminated dressings, tissue, needles, syringes, and sharps (needles and scalpel blades), is improperly discarded.
- ◆ Health care workers do not wash their hands before leaving the facility and then touch family members or household items.
- ◆ Health care workers wear contaminated clothing from the facility to their home. Some infections can be spread by the staff to their family members or others in the community.

POTENTIAL INFECTIONS ASSOCIATED WITH VASECTOMY

Some of the more serious infections that could be associated with vasectomy are tetanus, gangrene, scrotal sepsis, intra-abdominal sepsis, HIV infection, and HBV infection.

Stopping Transmission of Infections

As health professionals, we cannot provide health care services without conducting procedures that put clients and staff at some risk of exposure to potentially infectious materials, but we can prevent transmission in many cases. The only way to prevent infections is to stop the transmission of microorganisms.

Standard precautions are based on the assumption that every person in the facility is potentially infectious. As many people with blood-borne viral infections (e.g., hepatitis B [HBV] or C [HCV], HIV) do not feel or look ill, we must consistently apply standard precautions regardless of the (known or unknown) health status of those who are providing or receiving care.

When applied consistently, standard precautions act as protective barriers between microorganisms and individuals and are considered as a highly effective means of preventing the spread of infection.

The following actions help to form such barriers, as well as provide the means for implementing the standard precautions:

- ◆ Washing of hands is the most important procedure for preventing cross-contamination (person to person or contaminated object to person).

- ◆ Wear gloves (on both hands) before touching anything, e.g., wet broken skin, mucous membranes, blood or other body fluids (secretions and excretions), soiled instruments, and contaminated waste materials, and before performing invasive procedures.
- ◆ Use physical barriers (protective goggles, face masks, and aprons) if splashes and spills of blood or other body fluids are possible (e.g., when cleaning instruments and other items).
- ◆ Use antiseptic agents for cleansing skin or mucous membranes before surgery, cleaning wounds, or for hand rubs or surgical hand scrubs with an alcohol-based antiseptic product.
- ◆ Use safe work practices such as not recapping or bending needles, safely passing sharp instruments, and suturing (when appropriate) with blunt needles.
- ◆ Process instruments, gloves, and other items after use by first decontaminating and thoroughly cleaning them and then either sterilizing or high-level disinfecting them using recommended procedures. Again, in the context of IUD services, HLD is the recommended method of final processing.
- ◆ Safely dispose infectious waste materials to protect those who handle them and prevent injury or spread of infection to the community.

Wash Hands

Handwashing is one of the most important infection prevention measures.

When to Wash Hands:

- ◆ Immediately after arrival at work
- ◆ Before examining a client
- ◆ After examining a client
- ◆ Before putting on gloves for clinical procedures
- ◆ After touching any object that might be contaminated with blood or other body fluids
- ◆ After removing gloves (gloves may contain small holes or tears)
- ◆ After using the toilet or latrine
- ◆ Before leaving work at the end of the day

Things to Use When Washing:

- ◆ Regular soap; antimicrobial soap can be used, but is not necessary for routine handwashing.
- ◆ Running water
- ◆ Clean towel

Do Not Use:

- ◆ Shared towels (can easily be contaminated)
- ◆ A basin of standing water; microorganisms can multiply in standing water, even if an antiseptic is added.

Three Kinds of Handwashing

Figure 5–2. Routine Handwashing

Three kinds of handwashing are used in clinical settings.

1. Routine Handwashing (handwashing with plain soap and running water; Figure 5–2)

- Removes transient microorganisms and soil.
- Is appropriate in most situations when hands should be washed, including immediately after arrival at service site, before and after contact with a client, after handling specimens or potentially contaminated items, after using the toilet or latrine, and before leaving service site.
- For most activities, routine handwashing for 10 to 15 seconds is sufficient. Antiseptic is not necessary.

2. Surgical Hand Scrub (handwashing with an antiseptic and running water)

- Removes transient microorganisms and soil and kills or inhibits the growth of resident microorganisms. Some antiseptics continue to kill and inhibit the growth of resident microorganisms for several hours after hands are washed.

When performing surgical hand scrub, use the following:

- Antiseptic agents (chlorhexidine gluconate, an iodophor, or hexachlorophene). If antiseptics are unavailable, use soap and water, then rinse with an ethyl or isopropyl alcohol and glycerine solution (2 mL glycerine in 100 mL of 60% to 90% alcohol); rub hands until dry.
- A small stick or a brush for cleaning under the nails.
- A soft brush, cloth, or sponge on all surfaces of the hands and forearms.

Perform hand scrub in the following instances:

- Before NSV
- Between each NSV

In high-volume settings, skin may become irritated from frequent scrubbing. To prevent skin irritation while reducing the number of microorganisms on the hands, use 3 mL to 5 mL of alcohol-glycerine solution between clients, then scrub every hour or after every four clients (whichever comes first).

The following are the steps in performing a hand scrub:

- a. Put on a clean short-sleeved shirt or a scrub shirt.
- b. Ensure that fingernails are short and clean.
- c. Begin scrubbing at the fingertips and work down to the elbow.
- d. While washing, keep hands up above elbows.
- e. Dry hands and forearms with a sterile towel or air-dry.

3. Alcohol Hand Rub

- Kills or inhibits the growth of both transient and resident microorganisms but does not remove microorganisms or soil.
- Can be used when handwashing with soap and when running water is not possible or practical (such as when running water is not available).
- Rinse hands twice with 3% to 5% alcohol glycerine solution (use 100 mL of 60% to 90% ethyl or isopropyl alcohol mixed with 2 mL to 3 mL glycerine); rub hands until dry.

Remember to use soap or detergent when washing hands; water alone does not effectively remove protein, oil, grease, and dirt. After handwashing, rinse hand under running water to wash away microorganisms and soil.

Microorganisms grow and multiply in moisture and standing water. Therefore,

- ◆ Keep bar soap on a soap rack or in a dish that allows drainage. Leaving soap in a pool of water will result in the increased growth of microorganisms.
- ◆ Avoid dipping or washing hands in a basin containing standing water, even if an antiseptic solution is added. Microorganisms and soil will not be washed away, and the water can easily become contaminated from repeated use.
- ◆ Use small bars of soap, if available, or cut large ones into small pieces to reduce the likelihood of contamination.
- ◆ After handwashing, dry hands with a clean towel or air-dry; use an individual towel or handkerchief to dry hands because shared towels can become contaminated quickly.

Use of Gloves

Gloves provide a barrier against potentially infectious microorganisms in blood, other body fluids, and medical waste, thus lowering the risk of transmitting infection to both health care workers and clients. Just as hands must be washed before and after contact with each client, a separate pair of gloves must be used for each client.

Three Kinds of Gloves

Gloves come in three kinds:

1. Surgical gloves

- Sterile or high-level disinfected surgical gloves should be worn during the vasectomy procedure.
- Disposable, sterile surgical gloves are recommended for use whenever possible because of the difficulty in properly processing reusable gloves.

2. Single-use examination gloves

- These gloves should be worn for all procedures in which contact with mucous membrane occurs. The purpose of wearing gloves is to reduce the risk of exposing the service provider to blood or other body fluids (such as when drawing blood or working in a laboratory).
- These latex or vinyl gloves are clean but not sterile.
- These gloves should be discarded after use.

3. Utility gloves

- These thick rubber gloves should be worn for handling contaminated instruments and other items, handling medical or hazardous chemical wastes and linen, performing housekeeping activities, and cleaning contaminated surfaces.
- These gloves are reusable after cleaning.

How to Wear Surgical Gloves

Prior to putting on gloves, the vasectomist and his or her assistant must thoroughly scrub their hands with soap and water or antiseptic agents, such as hexachlorophene, chlorhexidine, gluconate, or an iodophor. A small stick or a brush should be used to clean under the fingernails, and a soft brush, cloth, or sponge should be used on all surfaces of the hands and forearms. For facilities where surgical scrubbing is accomplished with soap and water only, ethyl alcohol and glycerin rinse (2 mL glycerin in 100 mL alcohol) should then be used, rubbing the hands together until dry.

Ideally, the vasectomist and his or her assistant should scrub thoroughly between procedures. In high-volume settings, this practice may not be feasible because the skin cannot tolerate the irritation caused by frequent scrubbing. In such settings, surgical staff should do a three-minute scrub every hour or after every four or five cases (whichever comes first) to prevent recolonization of the skin by microorganisms. Using 3 mL to 5 mL of the alcohol-glycerin mixture and rubbing the hands together until dry is an effective way of reducing the number of bacteria on the hands between every case. Gloves must be changed between cases and when they are torn. Staff should wash their hands after removing their torn gloves.

Figure 5-3 illustrates the steps for wearing surgical gloves, whereas Figure 5-4 shows the procedure for removing gloves.

Figure 5-3. Steps for Wearing Surgical Gloves

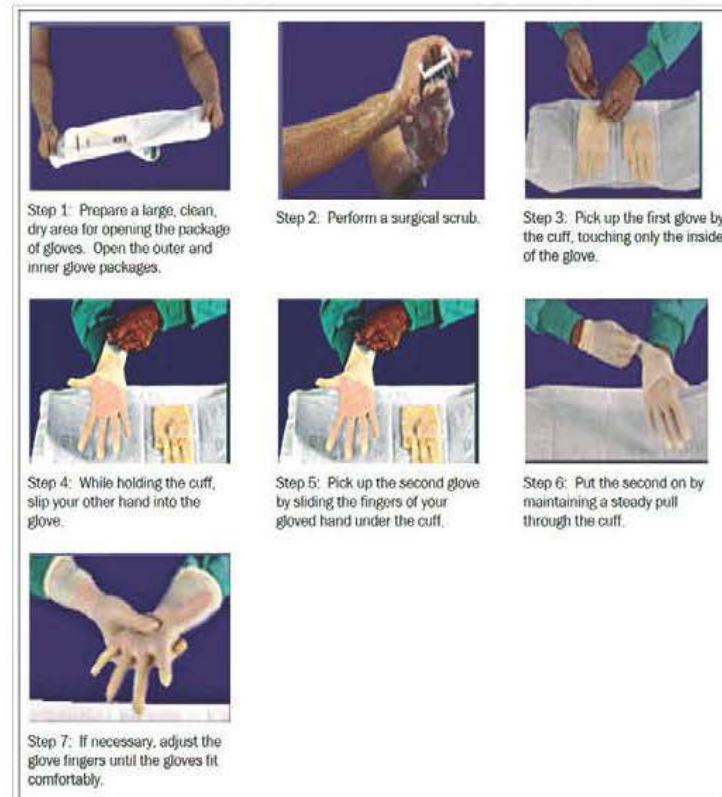
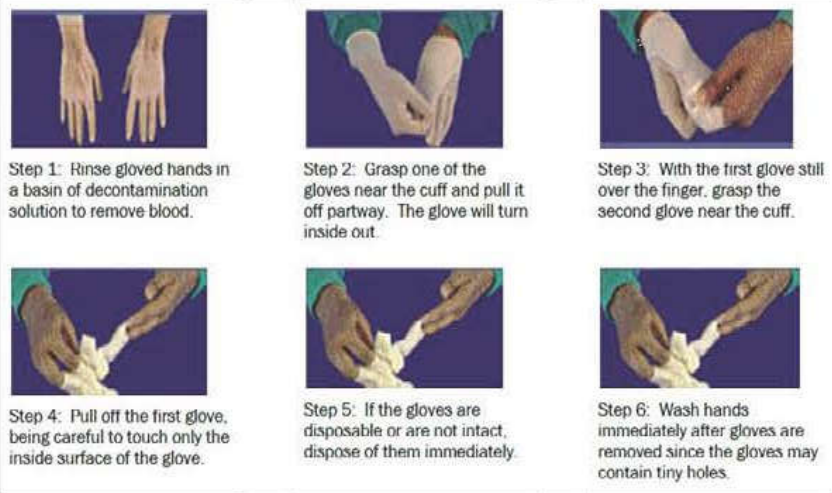


Figure 5-4 Steps for Removing Surgical Gloves



Remember the following:

- ◆ As you remove the gloves, avoid allowing the outside surface of gloves to come in contact with your skin because the outer surface will have been contaminated with blood and other body fluids.
- ◆ Remove used gloves before touching anything. Countertops, pens, and pencils are frequently contaminated because health care workers touch them while wearing used gloves.

Surgical Attire for Vasectomy

- ◆ Sterile or high-level disinfected gloves must be used for vasectomy.
- ◆ Cap, eye wear, mask, and gown should be worn, if available, but vasectomy can be performed safely without wearing a cap, mask, and sterile gown.

Proper Use of Antiseptics and Disinfectants

Antiseptics vs. Disinfectants

Antiseptics are chemical agents used to reduce the number of microorganisms on skin and mucous membranes without causing damage or irritation. In addition to removing or killing microorganisms, antiseptics may also prevent the growth and development of microorganisms, depending on the type of antiseptic and microorganism. Antiseptics are not meant to be used on inanimate objects, such as instruments and surfaces. In addition, items such as pickup forceps, scissors, scalpel blades, and suture needles should never be left soaking in an antiseptic solution.

Disinfectants are chemical agents used to kill microorganisms on inanimate objects, such as instruments and surfaces. Disinfectants are not meant to be used on skin or mucous membranes.

Antiseptics

Antiseptics are used for the following:

- ◆ Surgical hand scrub

- ◆ Skin, cervical, or vaginal preparation prior to a clinical procedure
- ◆ Handwashing in high-risk situations, such as prior to an invasive procedure or contact with a client with high risk of infection (e.g., newborns or immunosuppressed clients)

The following are some common antiseptics:

1. Alcohol (60% to 90% ethyl or isopropyl)
 - *Antimicrobial spectrum:* good broad-spectrum activity
 - *Advantages:* moderate inactivation by blood or other organic material
 - *Disadvantages:* has a drying effect on skin; cannot be used on mucous membranes; not good for use as a cleaning agent; not for use on broken skin
2. Chlorhexidine gluconate with cetrimide (Savlon®)
 - *Antimicrobial spectrum:* good broad-spectrum activity but minimal effect on tuberculosis and fungi
 - *Advantages:* has good, persistent effect, i.e., remains active for at least six hours; activity not affected by blood or other organic material
 - *Disadvantages:* activity can be reduced by hard water, hand creams, and natural soaps
 - *Comments:* recommended antiseptic for surgical hand scrubbing and client preparation in reproductive healthcare services; may cause irritation if used in the genital area, vagina, or cervix.
 - *Caution:* The concentration of chlorhexidine in products with the name Savlon may vary from one country to another. Savlon products containing at least 4% chlorhexidine are appropriate for use as antiseptics.
3. Aqueous iodine preparations or iodine and alcohol (e.g., tincture of iodine)
 - *Antimicrobial spectrum:* good broad-spectrum activity
 - *Advantages:* fast-acting
 - *Disadvantages:* can cause skin irritation; activity markedly affected by blood or other organic material
 - *Comments:* too irritating for routine use in surgical hand scrub or for use on mucous membranes; must be allowed to dry then removed from the skin without alcohol because of the potential to cause skin irritation
4. Iodophors (solutions that contain iodine in a complex form; povidone iodine, Betadine®)
 - *Antimicrobial spectrum:* good broad-spectrum activity
 - *Advantages:* less irritating than iodine; can be used on mucous membranes
 - *Disadvantages:* activity moderately affected by blood or other organic materials
 - *Comments:* recommended antiseptic for surgical hand scrubbing and client preparation in reproductive health care services; effective 1 minute to 2 minutes after application; use of full strength for most preparations; not to be diluted prior to use

Note that mercury-containing compounds should NOT be used because they are highly toxic, cause blisters, and cause central nervous system disturbances, such as numbness, speech impairment, and deafness, or death when inhaled. Such compounds can also be absorbed through the skin and can cause birth defects if a pregnant woman is exposed to small doses.

Table 5-1 presents a comparison of the efficacy of commonly used antiseptics that can be used for NSV.

Table 5-1. Antiseptics for Use in NSV

ANTISEPTIC	USE			COMMENTS
	Surgical Hand Scrub	Skin reparations	Mucous embranes	
Alcohols (60% to 90% ethyl or isopropyl)	yes	yes	no	Must dry completely to be effective
Chlorhexidine gluconate* (4%) (Hibitane, Hibiscrub)	yes	yes	yes	Has good persistent effect
Hexachlorophene (3%) (pHisoHex)	yes	no	no	Rebound growth of bacteria may occur.
Aqueous iodine preparations (3%) or iodine and alcohol	no	yes	no	Allow to dry, then remove with alcohol.
Iodophors* (1:2,500) (Betadine)	yes	yes	yes	Effective 1 minute to 2 minutes after application
Chlorhexidine with cetrimide (4%) (Savlon)	yes	yes	yes	Do not use to store instruments or other items.
Alcohols (60 to 90% ethyl or isopropyl)	yes	yes	no	Must dry completely to be effective
Chlorhexidine gluconate* (4%) (Hibitane, Hibiscrub)	yes	yes	yes	Has good persistent effect

* These agents are recommended for use in surgical scrubs and as client prep solutions before NSV. Iodophors (e.g., Betadine should be the first choice if available.)

ADAPTED FROM: World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception, 1995, *Safe and Voluntary Surgical Contraception*, New York: AVSC International.

Disinfectants

1. High-level disinfectants – kill almost all bacteria, viruses, and fungi, except bacterial endospores that cause gangrene and tetanus. Some high-level disinfectants are also chemical sterilants and will destroy endospores given sufficient time. Examples include Cidex® and chlorine solution.

High-level disinfectants are used for the following:

- Processing instruments and other items that come in contact with broken skin or intact mucous membranes
- When sterilization is unavailable, used for processing instruments and other items that come in contact with the bloodstream or tissues under the skin

Only two solutions are available in most low-resource settings that are suitable for the high-level disinfection of instruments and other items:

a. Chlorine Solution

- Cheapest effective disinfectant
- Fast-acting and effective against a broad range of microorganisms
- Usually used in concentrations of 0.5% solution
- Can be used for decontamination (10 minutes) and HLD (20 minutes) of instruments and other items, as well as disinfection of surfaces
- Available in liquid (sodium hypochlorite), powder (calcium hypochlorite), and tablet (sodium dichloroisocyanurate) form

Precautions:

- Can be corrosive to metals with prolonged contact (more than 20 minutes) and irritating to the skin, eyes, and respiratory tract
- Should be changed daily or more frequently because potency can be lost rapidly over time or after exposure to sunlight.
- Must be discarded after 24 hours

b. Glutaraldehyde – Cidex®

- The most commonly used disinfectant for processing medical equipment such as laparoscopes, which cannot be heat sterilized
- Dilution varies; follow manufacturer's instructions for dilution.
- Can be used for HLD by soaking for 20 minutes or for sterilization by soaking for 10 hours (follow manufacturer's instructions)
- Not corrosive to instruments and other items

Precautions:

- Leaves a residue, so instruments and other items must be rinsed thoroughly with boiled water after HLD and with sterile water after sterilization.
- Solution should be changed every 14 or 28 days (may vary depending on product; follow manufacturer's instructions). The solution should be changed even before the recommended time if cloudy or visibly dirty.
- Irritating to the skin, eyes, and respiratory tract. Wear gloves, prepare in a well-ventilated space, and limit exposure to the chemical when handling glutaraldehyde.

1. Low-level disinfectants – kill most bacteria and some viruses and fungi but do not kill tuberculosis-causing organisms and bacterial endospores, which cause such diseases as tetanus and gangrene. Examples of these are Phenyl and Lysol.

Low-level disinfectants are used to clean surfaces (such as floors and countertops). They should not be used to process instruments and other items.

Low-level disinfectants, such as phenols or carbolic acid (Phenol®, Lysol®), and quaternary ammonium compounds, such as benzalkonium chloride (Zephiran®), are suitable for use in disinfecting walls, floors, and furnishings. However, most products have few (if any) advantages over using chlorine/detergent solutions, which are less expensive and often more readily available. These low-level disinfectants should be used when chlorine compounds are unavailable.

Remember that disinfectants are harsh chemicals that can damage tissues; they kill a broader range of microorganisms more effectively than antiseptics. Considering the potential for tissue damage, disinfectants should never be used on skin or mucous membranes.

Protecting Antiseptics and Disinfectants from Contamination

Although antiseptics and disinfectants are effective in killing microorganisms, their abilities are limited. As a result, antiseptics and disinfectants can easily become contaminated. Using contaminated antiseptics and disinfectants can cause infections.

Antiseptics and disinfectants can become contaminated when:

- ◆ Left for several days in an open container for repeated use
- ◆ Water used to dilute the solution is contaminated
- ◆ Containers in which antiseptics or disinfectants are placed are contaminated
- ◆ Microorganisms from the provider's skin or a contaminated instrument or other items come in contact with the solutions during use, such as when removing cotton balls from a solution for skin preparation
- ◆ The area where solutions are prepared or used is unclean

To prevent contamination, perform the following:

- ◆ Pour solutions into smaller containers for use during service delivery to avoid contaminating the stock container.
- ◆ Pour the amount of antiseptic needed for one client into a small bowl prior to the start of the procedure. Discard any remaining solution at the end of the procedure.
- ◆ Avoid soaking gauze, cotton wool, or cotton balls in solutions.
- ◆ Always pour solutions out of the container without touching the rim or the solution itself with your hand, a cotton swab, or gauze because the entire bottle of solution can be contaminated in such cases.
- ◆ Store antiseptics and disinfectants in a cool, dark area. Avoid storing antiseptics and disinfectants in direct sunlight or in excessive heat, as this may reduce their strength.

SURGICAL SITE PREPARATION

- ◆ Clean the operative site with soap and water if the client has not already done so that day.
- ◆ Trim hair at the operative site, if necessary. Avoid shaving the client, as this increases the risk of postoperative infection.
- ◆ If shaving of the surgical site is a must,
 - use antimicrobial soap and water or shave dry or

- shave immediately before the procedure in the operating theatre or in the procedure room.

- ◆ Use dry, high-level disinfected or sterile forceps to hold antiseptic-soaked cotton. The antiseptic should be at room temperature. Do not leave cotton soaking in antiseptic for prolonged periods of time or for use on multiple clients.
- ◆ Apply solution in a circular motion starting from the incision site and working outward.
- ◆ Do not permit excess antiseptic to pool underneath the client.
- ◆ After preparing the surgical site, cover the area with a sterile surgical drape.

USING SAFE WORK PRACTICES

Multidose Vials

Local anesthetic is often available in multidose vials. If used incorrectly, these vials can be a source of cross-infection between clients.

- ◆ Never use a needle that has been used on a client to draw up solution from a multidose vial (unless the entire contents of vial will be used on the same client).
- ◆ Changing the needle but using the same syringe is not a safe practice.
- ◆ Do not leave a needle in a multidose vial between uses.

Figure 5-5. Multidose Vial - do not leave needle in the rubber stopper of the vial



Maintaining a Safe Environment in the Vasectomy Procedure Room

- ◆ Limit entry of unauthorized individuals to surgical room.
- ◆ Close doors and curtains during the procedure.
- ◆ Each day, clean the floor with a damp mop (water only) and wipe counters and table tops with a damp rag (water only) before any procedures begin.
- ◆ After each case, wipe down the procedure table, the floor around the table, the instrument stands, and other potentially contaminated areas (such as light switches and counter tops) with 0.5% chlorine solution.
- ◆ At the end of the day, repeat the above procedure with a disinfectant cleaning solution that contains both a disinfectant (chlorine) and a detergent (soap).
- ◆ Thoroughly clean the procedure room at least once a week. Use a disinfectant cleaning solution to scrub the walls, floors, and equipment. Wash from the top to bottom so that debris that falls on the floor will be cleaned up last.

Handling Sharps

In health care settings, injuries from needles and other sharp items are the most common cause of infections from blood-borne pathogens. Therefore, sharps must be handled with care and disposed properly after use. Below is the list of instances when health care providers can be injured by sharps:

- ◆ When health care workers recap, bend, or break hypodermic needles
- ◆ When health care workers are struck by a person carrying unprotected sharps
- ◆ When sharps show up in unexpected places, such as between linens
- ◆ During procedures in which health care workers use many sharps, cannot see their hands, or are working in a small, confined space (such as during gynecologic procedures)
- ◆ When health care providers handle and dispose waste that contains used sharps
- ◆ When clients move suddenly during injections

Giving Injections

- ◆ To prevent injuries when giving injections, the following recommendations are considered:
- ◆ Always warn the client before giving an injection.
- ◆ Always use new or properly processed needle and syringe for every injection.
- ◆ Follow the following steps for giving injections:
 - a. Wash injection site with soap and water if the area is visibly dirty.
 - b. Swab the area with antiseptic (alcohol solution) in circular motion starting from the intended injection site going outward.
 - c. Allow the alcohol to dry for better efficacy.
 - d. Inform client that you are about to inject.

Recapping Needles

- ◆ Whenever possible, dispose needles immediately without recapping them
- ◆ If recapping is necessary, follow the “one-hand technique.”
 - a. Place the cap on a flat surface and remove hand from the cap.
 - b. With one hand, hold the syringe and use the needle to scoop up the cap.
 - c. When the cap covers the needle completely, use the other hand to secure the cap on the needle hub. Be careful to hold the cap at the bottom only (near the hub).

Processing of Instruments and Other Items Used in Vasectomy

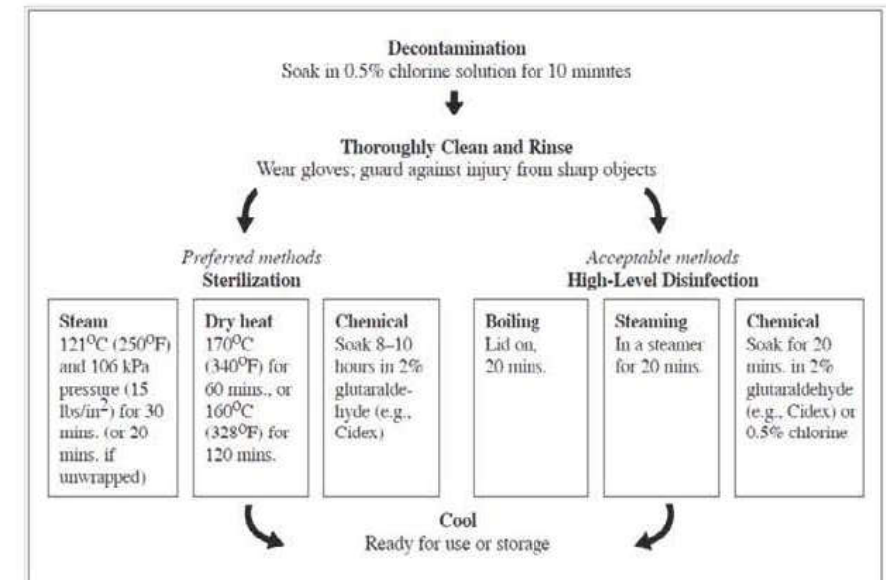
The pages that follow give detailed information on the three steps for processing instruments and reusable supplies used in NSV.

- Step 1. **Decontamination.** Reduces the risk of hepatitis B (HBV) and HIV transmission to staff and makes instruments and supplies safer for handling during cleaning.
- Step 2. **Cleaning.** Cleaning with detergent and water removes blood and tissue and improves the quality of subsequent HLD or sterilization.
- Step 3. **Sterilization.** Sterilization using dry heat, steam, or chemical solutions destroys all microorganisms, including endospores.
- OR

HLD. HLD through boiling or using chemicals destroys all microorganisms, with the exception of some endospores.

- Step 4. **Storage of processed items.** Proper storage of processed items maintains sterility/disinfection until it is ready for use.

Figure 5–6. Steps of Instrument Processing



ADAPTED FROM: Tietjen, L., Cronin, W., and McIntosh N. 1992. *Infection Prevention for Family Planning Service Programs*, A Problem-Solving Reference Manual. Durant, OK: Essential Medical Information Systems, Inc.

Step 1: Decontamination

The first step in handling dirty instruments, decontamination using a 0.5% chlorine solution, reduces the risk of HBV and HIV infection. Chlorine rapidly inactivates both HBV and HIV, making the instruments safer for staff to handle during cleaning.

Note: Wear utility gloves when handling chlorine, used surgical instruments, and other items for decontamination.

- a. Immediately after use, decontaminate surgical instruments, reusable gloves, and other items by placing them in a plastic bucket containing a solution of 0.5% chlorine for 10 minutes. A bucket containing this solution should be kept in the procedure room so that used items can be placed directly into the bucket.
- b. After 10 minutes, remove items from the chlorine solution and rinse with water or clean immediately. Excessive soaking in the solution can damage instruments.
- c. Prepare a new chlorine solution at the beginning of each day.

Figure 5–7. Preparing a 0.5% Chlorine Solution

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Step 2: Cleaning

Cleaning by scrubbing with detergent and water is a crucial step in processing instruments and other items. Cleaning significantly reduces the number of microorganisms and endospores on instruments and equipment.

Before equipment is sterilized or high-level disinfected, a thorough mechanical cleaning is necessary to remove blood and organic materials. HLD and sterilization are ineffective unless instruments have first been cleaned.

Remember the following:

- ◆ Wear utility gloves when cleaning instruments.
- ◆ Scrub instruments vigorously with a soft brush in detergent and water to remove all blood, tissue, and other residue completely.
- ◆ Rinse instruments thoroughly with water after scrubbing. Detergent may interfere with further processing.
- ◆ Allow items to air-dry (items to be high-level disinfected by boiling can be directly placed in the water).

Step 3: Sterilization or HLD

Sterilization

To be effective, sterilization must be preceded by careful cleaning and thorough rinsing. Sterilization eliminates all microorganisms (bacteria, viruses, fungi, and parasites), including bacterial endospores, from instruments and other items.

- ◆ Sterilization is the method recommended for items that come in contact with the bloodstream or tissues beneath the skin (such as reusable needles, syringes, and surgical instruments).
- ◆ Jointed instruments, such as ringed clamps and dissecting forceps, should be opened or unlocked during sterilization.
- ◆ Sterilization uses steam (autoclaving), dry heat (oven), or chemical solutions.

Steam Sterilization

- If items are to be wrapped before steam sterilization, use two layers of paper wrap or two layers of cotton fabric (do not use canvas).
- Items or packs should be arranged to allow free circulation of steam.
- Sterilize items at 121 °C (250 °F) and 106 kPa pressure (15 lbs/in²). Duration should be 30 minutes for wrapped items and 20 minutes for unwrapped items.

Note: Do not begin timing until the steam sterilizer reaches the desired temperature and pressure.

- Allow packs or items to dry before removing them from the steam sterilizer. Allow items to cool before storage or use.
- The steam sterilizer itself should be checked with each use to ensure that it is functioning properly. If repairs are necessary (for example, if gauges and seals are broken), repairs should be made before the machine is used for sterilization.

Dry-Heat Sterilization

- Items can be wrapped in foil or double-layered cotton fabric before dry-heat sterilization.
- Sterilize items at 170 °C (340 °F) for 60 minutes, 160 °C (320 °F) for 120 minutes, or at 150 °C for 2½ hours or at 140 °C for 3 hours.

Note: Do not begin timing until the oven reaches the desired temperature.

- Dry heat can dull sharp instruments and needles. These items should not be sterilized at temperatures higher than 160 °C.
- Items should be allowed to cool before they are removed from the oven.
- Items should then be used immediately or stored in a sterile covered container.

Chemical Sterilization

Soak items in a 2% glutaraldehyde solution (Cidex) for 8 to 10 hours.

- All items must be completely submerged.

- Do not add or remove any items once timing has begun.
- Rinse with sterile water. Do not use boiled water; boiling does not reliably inactivate spores.
- Place instruments on a sterile surface, and air-dry before use or storage.
- Use items immediately, wrap items in sterile paper or cloth, or place items in a covered sterile container.

HLD

If sterilization is unavailable, HLD is the only acceptable alternative for preparing instruments for use in vasectomy. HLD is effective in eliminating all microorganisms, except for some bacterial endospores. HLD should always be preceded by decontamination. To be effective, HLD must be preceded by careful cleaning and thorough rinsing.

- HLD has three methods: boiling, steaming, and chemical HLD.
- After either HLD procedure, items that are not used immediately should be air-dried and stored in a covered, washable high-level disinfected container (for up to one week).
- Jointed instruments, such as ringed clamps and dissecting forceps, should be opened or unlocked during HLD.

Boiling

- Completely immerse items in water. Cover and boil for 20 minutes (start timing when the water begins to boil).
- All items must be completely covered during boiling (place items that float in a weighted, porous bag). Do not add anything to the pot after the water begins to boil.
- Place instruments on a sterile surface and air-dry before use or storage.

Steaming

- This process can be performed together with HLD by boiling or by placing water in the bottom tray of the steamer.
- Place gloves and instruments in tray(s) with holes (up to three trays) and stack them on top of the bottom tray.
- Place the lid on the top tray, and bring the water to boil.
- When steam comes out between the trays, the water is boiling. Reduce the heat, but maintain water at a rolling boil.
- Steam the gloves or instruments for 20 minutes.
- Remove each tray of gloves or instruments, shake off excess water, and place the tray on a second tray that does not have holes.
- Use the gloves or instruments immediately or dry and store in a HLD container.

Chemical HLD

Cover all items with correct dilution of disinfectant [2% glutaraldehyde (Cidex) solution or a 0.5% chlorine solution].

- Soak items for 20 minutes or as per manufacturer's instructions.
- Nothing should be added to or removed from the chemical solution once timing has begun. After soaking items, rinse them with boiled water.

- Place instruments in a high-level disinfected container and air-dry before use or storage.

Step 4: Storage of Processed Items

Proper storage of HLD or sterilized items is as important as the HLD or sterilization process itself.

- ◆ Items should be stored dry.
- ◆ Do not store pick-up forceps in a bottle filled with antiseptic solution; microorganisms will multiply in standing water even if an antiseptic has been added.
- ◆ HLD or sterilize used pick-up forceps each day and store them dry in a high-level disinfected or sterile bottle.
- ◆ Wrapped items must be considered contaminated when:
 - The package is torn or damaged
 - The wrapping is wet
 - The expiration date is exceeded
- ◆ Wrapped items can be used for up to one week. Wrapped items sealed in plastic can be used for up to one month.
- ◆ Unwrapped items must be used immediately or stored in a covered sterile or HLD container (for up to one week).
- ◆ If possible, store processed items in an enclosed cabinet.

Table 5–2. Processing of Vasectomy Instruments

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* To reduce the risk of exposure to infectious material, machine washing is recommended, if possible.

Table 5–2. Continued

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WASTE DISPOSAL

If not disposed properly, contaminated waste is a potential source of infection for both staff and the local community.

- ◆ Always wear utility gloves when handling and transporting waste, and wash both the gloves and your hands afterwards.
- ◆ Always dispose contaminated waste properly; never simply throw waste outside or leave it in an open pit.
- ◆ Always keep a container close to any area where needles or other sharps are used (so that staff would not have to carry these items a long distance before disposal).
- ◆ Always keep waste containers in the operating and cleaning areas.

Waste Containers

- ◆ Use washable, leak-proof containers.
- ◆ For needles and other sharps, use a puncture resistant, lidded container made of metal, heavy cardboard or heavy, rigid plastic. Plastic bottles, emptied of antiseptics or other solutions, can be used for this purpose if they are clearly labeled.
- ◆ If a container is reusable, disinfect it with a 0.5% chlorine solution after each use.

Liquid Waste

- ◆ If possible, pour waste down a utility drain or into a flushable toilet or a latrine.
- ◆ If you cannot pour waste down a drain, latrine, or toilet, bury it in a pit.
- ◆ Always be careful when disposing of liquid waste. Do not allow the liquid to splash while you are pouring it.

Solid Waste

- ◆ Burn contaminated solid waste. Burning kills microorganisms and is therefore the best method for disposing contaminated solids.
- ◆ Burn waste in an incinerator or steel drum as opposed to “open burning.”
- ◆ If you cannot burn it, bury solid waste in a pit.

Needles and Other Sharps

- ◆ Do not bend, break, or clip needles before disposal.
- ◆ If possible, do not recap used needles. Most needle–stick injuries occur while replacing needle caps. If recapping is necessary, use the “one–handed” method as follows:
 - a. Place the cap on a hard, flat surface. Do not hold it.
 - b. Hold the syringe and use the needle to “scoop up” the cap.
 - c. When the cap covers the needle completely, carefully secure it on the needle.

Unless you are using a large industrial incinerator, burying containers for needles and other sharps is best. In a drum or small incinerator, burning may not destroy these items, and they may later cause injuries that could lead to serious infections. However, if no other options are available, burning needles and plastic syringes in a drum or small incinerator by themselves (without paper or other waste) will destroy HIV and HBV and will result in a mass of melted plastic that hardens with the needles and other sharps inside.

SESSION VI

SURGICAL PROCEDURE OF NO-SCALPEL VASECTOMY

OVERVIEW

Vasectomy has always been considered a safe and effective easy-to-perform method of contraception for men. Over the years, experts have found ways to make the procedure simpler and more effective than the traditional form. In 1974, Dr. Li Shunqiang developed the NSV technique. NSV is a refined approach for isolating and delivering the vas that requires unique surgical skills. This session provides a detailed description of each step of the approach that will enable the physician to perform NSV.

LEARNING OBJECTIVES

At the end of the session, the participants will be able to:

1. Describe the requirements on facility, instruments, and supplies for the provision of vasectomy services
2. Enumerate chronologically the steps for performing NSV
3. Explain the rationale of each step for performing NSV
4. Perform NSV in accordance with DOH standards

NARRATIVE

FACILITY REQUIREMENTS FOR VASECTOMY SERVICES

Vasectomy can be performed in almost any facility. It is an outpatient procedure that can be performed in an office or clinic. Providing high-quality services involves a few minimum requirements:

- ◆ A waiting area with a toilet. The waiting area may also serve as a recovery area after surgery.
- ◆ A private space for counseling.
- ◆ An examination room for preoperative assessment and follow-up examination.
- ◆ A clean room for surgery equipped with a comfortable, clean table for the client and a good light source.

The temperature of the room is critical because it affects the cremasteric and dartos muscles. The room must be warm, even though a cooler temperature may be more comfortable for the surgeon. A warm room facilitates the following by relaxing the scrotum:

- ◆ Manipulation of the vas
- ◆ Fixation of the vas under the median raphe of the scrotum
- ◆ Isolation of the vas from the relaxed spermatic cord
- ◆ Reduction of operating time
- ◆ Reduction of complications

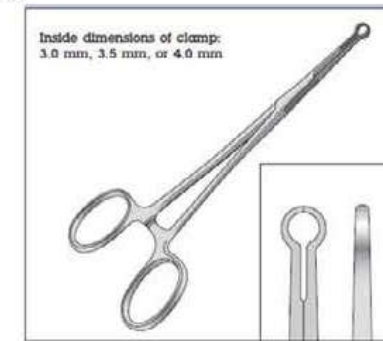
The temperature of the operating room should be at least 20 °C to 25 °C. If additional warmth is needed to relax the scrotum, a heat lamp or warm towels may be used.

INSTRUMENTS AND SUPPLIES

NSV requires two instruments designed by Dr. Li Sunqiang: the ringed clamp and the dissecting forceps.

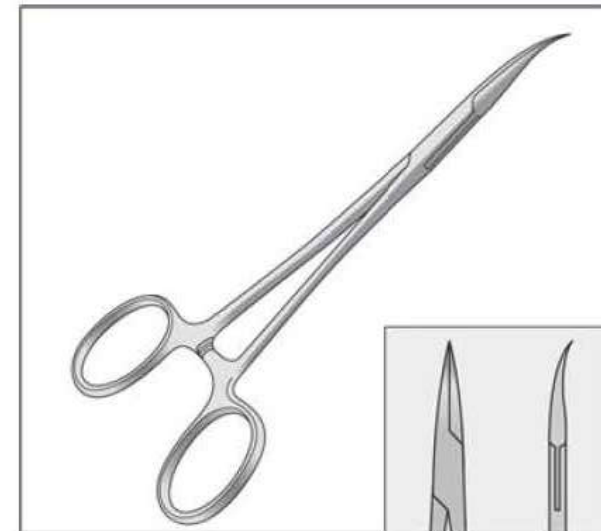
Commonly called the ringed clamp, the extracutaneous ringed forcep (Figure 6-1) is a type of clamp used to fix the vas deferens. The ringed tip of this instrument is used to encircle and grasp the vas without injuring the skin. The clamp grasps the vas extracutaneously and directly.

Figure 6-1. Ringed Clamp



The *dissecting forceps* (Figure 6-2) is similar to a curved mosquito hemostat, except that the tips are sharply pointed. This tool is used to puncture the scrotal skin, to spread the tissues, to dissect the sheath, and to deliver the vas deferens. The dissecting forceps can also be used to grasp the vas while a ligature or cautery is applied for occlusion. As the instrument is a modified hemostat, it can be used to control bleeding.

Figure 6-2. Dissecting Forceps



Additional instruments and supplies needed for NSV are the following:

- ◆ A 10 cc syringe with a 1 1/2-inch, 25- or 27-gauge needle (U.S. system). These tools are used to infiltrate the local anesthetic, both for the skin wheal and the vasa block anesthesia.
- ◆ Straight scissors, to cut the vasa deferentia and ligatures.
- ◆ Supplies for vasa occlusion (e.g., ligature material).

Table 6-1 presents a complete list of instruments and supplies needed for NSV.

Table 6-1. Instruments and supplies needed for NSV

Instruments
<ul style="list-style-type: none"> • Ringed clamp • Dissecting forceps • Straight scissors
Supplies
<ul style="list-style-type: none"> • Adhesive tape and gauze for positioning the penis away from the surgical field (optional) • Scissors for clipping any scrotal hair that would interfere with the procedure • Soap and water or antiseptic agents for the surgical scrub (<i>see page 13</i>) • Alcohol rinse (recommended if plain soap is used for the surgical scrub) • Sterile gloves • Nonirritating antiseptic solution for cleaning the operative area (<i>see page 12</i>) • Sterile drapes • 10-cc syringe with a 1½-inch, 25- or 27-gauge needle (U.S. system) • 1% or 2% lidocaine without epinephrine^a • Supplies for vasal occlusion according to the surgeon's preference (examples: a cautery unit; chromic catgut or nonabsorbable silk or cotton for ligation) • Sterile gauze • Adhesive tape or Band-Aid for dressing the wound • Scrotal support for the man to wear after the procedure (optional)

ANESTHESIA

Lidocaine (10 cc 1% or 5 cc 2%) without epinephrine is the anesthesia of choice for NSV. Epinephrine is not recommended because it contracts the blood vessels and results in less apparent bleeding during the surgery. All bleeding during surgery must be detected and controlled to prevent hematomas from forming after the client leaves the facility. If the lidocaine does not contain epinephrine, small bleeding sites are more likely to be detected and controlled during surgery.

The maximum individual dose of lidocaine without epinephrine should not exceed 4.5 mg/kg of body weight. This amount equates to 30 cc 1% or 15 cc 2% lidocaine without epinephrine.

PERFORMING NO-SCALPEL VASECTOMY

Verifying Informed Consent

Before any vasectomy is performed, the client must receive appropriate information and counseling and give his informed consent. Before performing the procedure, check again with the client to be sure he wants no more children and wishes to proceed with the sterilization procedure.

Reviewing Client's History and Physical Examination Findings

The preoperative history and examination may be done on the day of surgery or a few days before. A medical history should be taken. The preoperative physical examination includes examination of the local operative area and other examinations and tests as indicated. Laboratory tests are usually not necessary, but if any clinical abnormality is suspected, laboratory facilities must be accessed. In this case, a referral may be necessary if such examination is not available in the facility. Local skin infections or reproductive tract infections must be treated before vasectomy is performed.

The following are conditions requiring delay or special precautions:

- ◆ Local infection (e.g., scrotal skin infection, active STI, balanitis, epididymitis, or orchitis)
- ◆ Previous scrotal surgery
- ◆ Large varicocele or hydrocele
- ◆ Filariasis; elephantiasis
- ◆ Local pathological conditions (e.g., intrascrotal mass, cryptorchidism, or inguinal hernia)
- ◆ Bleeding disorders
- ◆ Diabetes
- ◆ AIDS (HIV-positive status without AIDS is not a concern.)

Check the WHO MEC for Male Sterilization on Session 4.

Preparing the Client for Surgery

Before surgery, instruct the client to wash his genital area thoroughly with soap and water. During surgery, he wears clean clothing or a surgical gown. The client lies comfortably in a supine position on the table, possibly with a small pillow under his head.

Securing the Penis

To make the operation easier, position the penis away from the operative field. The surgical drape is usually adequate for securing the penis and keeping it away from the operative field.

Cleaning the Surgical Site

Shaving the surgical site is not recommended, as doing so produces small nicks and breaks in the skin where bacteria can grow and multiply and thus increases the risk of postprocedure infection. If the scrotal hair is obstructing the small operative area, clip it while the client lies on the table. However, if the site must be shaved, use antimicrobial soap and water, or shave dry; and shave immediately before the procedure while the client is on the table.

Before cleaning the area, examine the scrotal area. Palpate the scrotum and vas to assess the thickness of the scrotal skin and the diameter of the vas. Gently wash the scrotum with a warm antiseptic solution (either povidone-iodine or chlorhexidine). Be sure to cleanse the area under the scrotum where your fingers will be placed. Scrub the pubic area, the penis, and the upper thighs as well. In hot climates, solutions at room temperature are usually adequate. In cool climates, warming the antiseptic solution may be necessary.

Ensuring Asepsis

NSV is a minor surgical procedure that requires aseptic procedures to prevent infection.

- ◆ Perform hand scrubbing as previously described.
- ◆ Wear a clean shirt or apron. A sterile gown, cap, and mask are optional.
- ◆ Wear sterile surgical gloves. Change gloves between each case. If scrubbing is not feasible between cases, scrub for three minutes every hour or at least after every four or five cases (whichever comes first) to prevent recolonization of the skin.
- ◆ Cover the prepared area with a sterile fenestrated drape, and lift the scrotum through the drape's small window. A set of towels can be used as an alternative to the drape. The window should be small enough to allow only the scrotum to be isolated.
- ◆ Cover a small instrument table with a sterile drape.

Administering the Local Anesthetic

Preparing the Anesthetic

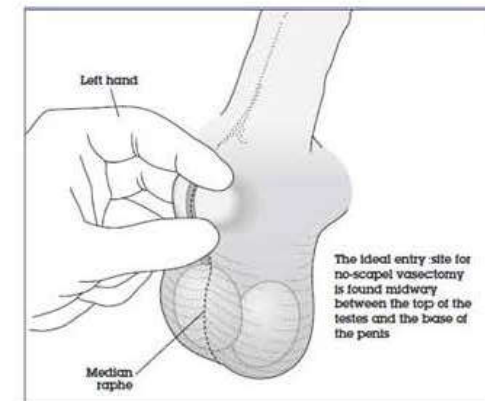
Prepare a syringe with 100 mg (10 cc 1% or 5 cc of 2%) lidocaine without epinephrine.

Isolating the Right Vas: The Three-Finger Technique

- a. If you are right-handed, stand on the client's right side (if you are left-handed, stand on the client's left side).

- b. Place your left thumb approximately midway between the testis and the base of the penis on the median raphe.
- c. With the middle finger of your left hand under the scrotum, palpate the vas and sweep it toward the raphe beneath your thumb.
- d. Hold the vas in position between the thumb and middle finger while placing your index finger on top of the scrotum slightly above the thumb (Figure 6-3). Note that your fingers should be perpendicular to the vas. You will have created a "window" between your thumb and index finger through which you will make the puncture. Upward pressure from the middle finger combined with downward pressure exerted by the index finger creates a bend in the vas for easy entry.
- e. Maintain the three-finger hold as you anesthetize the right side.

Figure 6-3. The Three-finger Technique



Raising the skin wheal

- a. The needle entry site is at the midline, over the vas deferens midway between the thumb and index finger. Use only the tip of the needle to raise a superficial skin wheal, 1 cm to 1 ½ cm in diameter (Figure 6-4).
- b. To raise the skin wheal, hold the syringe at approximately 5- to 15-degree angle (Figure 6-5), with the needle bevel facing up.
- c. Inject lidocaine into the dermis and subcutaneous tissues; 0.5 cc is usually adequate.

Figure 6-4. Raising the Skin Wheal

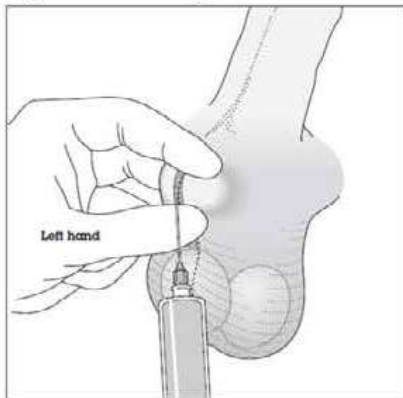
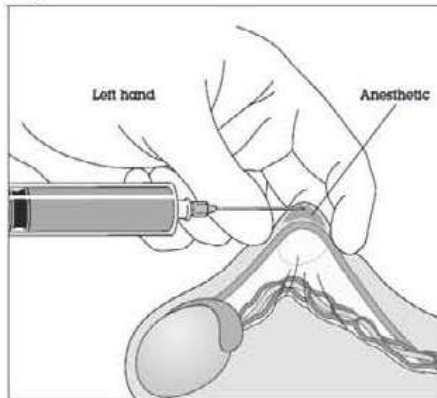


Figure 6-5. Side View of the Skin Wheal



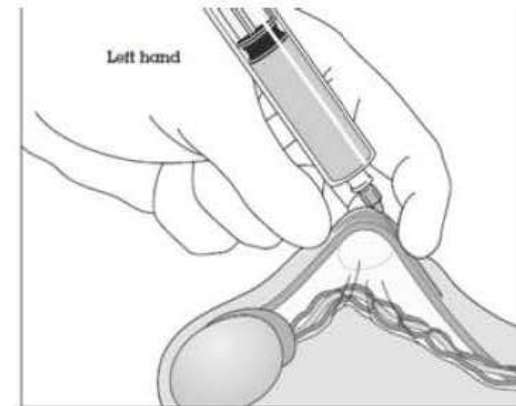
Avoid two pitfalls when raising the skin wheal:

- ◆ Do not inject the lidocaine too deeply. At this point in the procedure, you are anesthetizing the scrotal skin. In the next step, you will create a vasal block that will anesthetize deeper tissues.
- ◆ Do not inject more than 1 cc of lidocaine to avoid swelling around the vas at the puncture site. A persistent wheal will prevent the ringed clamp from closing properly around the vas.

Creating the Vasal Block: Right Vas

- a. After creating the superficial skin wheal, advance the needle parallel to the vas within the external spermatic fascial sheath toward the inguinal ring (Figure 6-6).
- b. Advance the full-length of the needle without releasing any of the anesthetic.
- c. Gently aspirate to ascertain that the needle is not in a blood vessel.
- d. Slowly inject 2 cc to 5 cc (depending on concentration) of lidocaine within the external spermatic fascial sheath around the right vas deferens.
HINT: When the needle is in proper position and the injection is performed inside the external spermatic fascia, no resistance to the injection will occur.
- e. Remove the needle from the right sheath; do not inject lidocaine while withdrawing the needle.

Figure 6-6. Advancing the Needle



Isolating the Left Vas: The Three-Finger Technique

HINT: To hold the client's left vas in the three-finger grip while standing on his right side, you will be more comfortable if you take a step toward the client's head and turn a bit to face his feet. To approach the vas in this lateral position, reach across the client's abdomen with your left hand.

- a. Place your thumb in the upper third of the scrotum while the index finger is in the middle third. This step is different from the three-finger hold on the right side.
- b. As with the right side, position the middle finger beneath the scrotum to identify the vas and sweep it to the puncture site. At this point, the thumb is superior to the index finger (Figure 6-7).

Figure 6-7. Isolating the Left Vas: The Three-Finger Technique

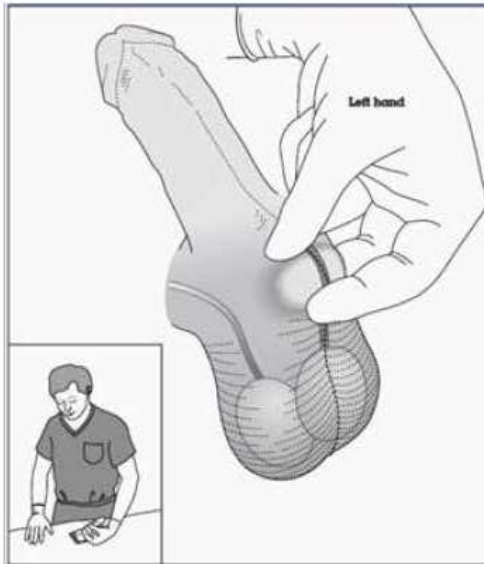
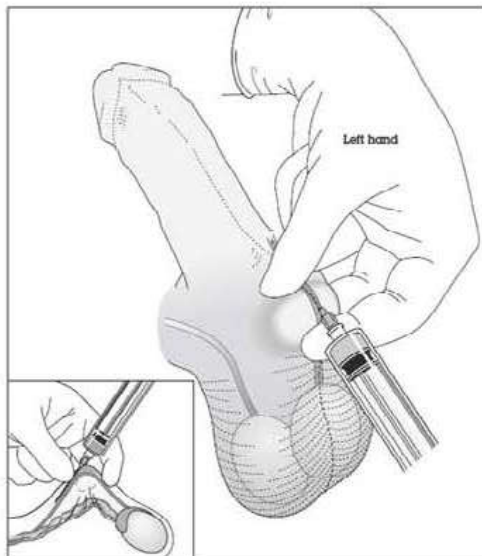


Figure 6-8. Anesthesia Technique: Deep Infiltration



Creating the Vasal Block: Left Vas

- Reintroduce the needle through the same hole previously used; a second skin wheal is not needed.
- Advance the needle parallel to the left vas into the external spermatic fascia (Figure 6-8).
- As with the right vas, inject 2 cc to 5 cc of lidocaine within the external spermatic fascial sheath around the left vas deferens.

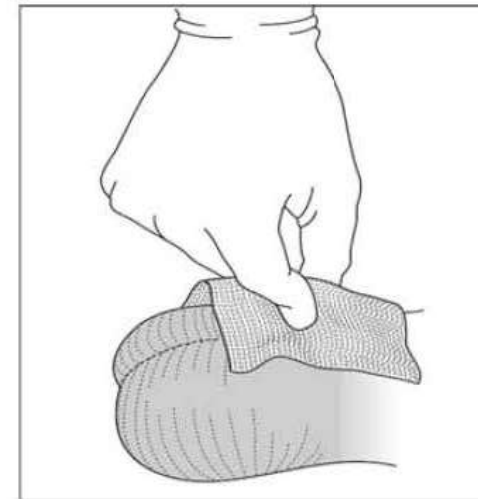
Pinching the Skin Wheal

After removing the needle, gently pinch the skin wheal between the thumb and index finger for a few seconds to reduce its size and to soften and thin the local tissues (Figure 6-9).

Remember a persistent wheal will prevent the ringed clamp from closing properly around the vas; gentle compression will reduce the size of the wheal.

If the client still feels pain when the surgical procedure begins, repeat the vassal block on the painful side. Do not raise another skin wheal.

Figure 6-9. Pinching the Skin Wheal



Surgical Approach and Occlusion of the Vas

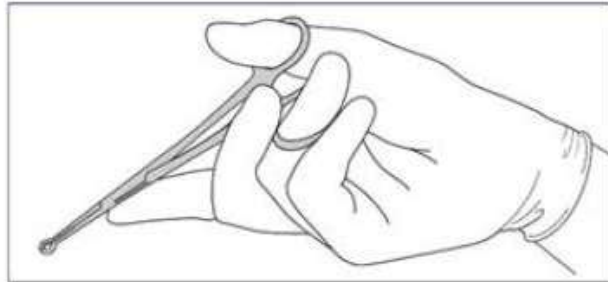
Holding the ringed clamp

The following are important points to remember when holding the ringed clamp:

- ◆ For the greatest control and accuracy, hold the ringed clamp with the palm facing up and the wrist extended (Figure 6-10).
- ◆ Apply the clamp at a 90-degree angle perpendicular to the vas (Figure 6-11 a); the palm-up hand position facilitates this procedure.
- ◆ Hold the shaft of the ringed clamp in line with the axis of the vas, that is, parallel to and directly over the vas (Figure 6-11 c).

Failure to follow these points may result in the clamp not fixing the vas completely or grasping too much skin. The ringed clamp must encircle the entire vas.

Figure 6-10. Holding the Ringed Clamp (Palm Up)



Applying the Ringed Clamp to the Scrotal Skin and Underlying Right Vas: The Tight-Skin Technique

- Using the three-finger technique, tightly stretch the skin overlying the vas where the needle entered for anesthesia infiltration. The skin should be as thin as possible.
- Apply the ringed clamp with the shaft at a 90-degree angle perpendicular to the vas (Figure 6-11a).
- Open the ringed clamp, and press the tips onto the skin immediately overlying the vas (Figure 6-12).
- Apply upward pressure with the middle finger underneath the scrotum to resist the downward push of the ringed clamp and to press the vas from below into the ring.
- Slowly and gently close the clamp around the vas, up to the first click-stop. Note that the cantilevered feature of the ringed clamp that is manufactured in China is specially designed to prevent damage to the scrotal skin even when the clamp is locked tightly.

Avoid two pitfalls when applying the ringed clamp:

- ◆ Be sure to elevate the middle finger underneath the scrotum. Otherwise, the finger will give way under the downward pressure of the ringed clamp, and you will have difficulty stabilizing the vas.
- ◆ Do not grab too much skin with the ringed clamp. If you do, you will have difficulty dissecting and delivering the vas, and slight bleeding may occur. The skin should be stretched out over the vas just before the ringed clamp is applied. If you grab too much skin, stabilize the vas with your left hand, then loosen the clamp slightly without entirely releasing it. Use the fingers of the left hand to ease some of the skin away from the clamp's hold while retaining the clamp's grasp on the vas.

Figure 6-11. Grasping the Vas with the Ringed Clamp (extracutaneously)

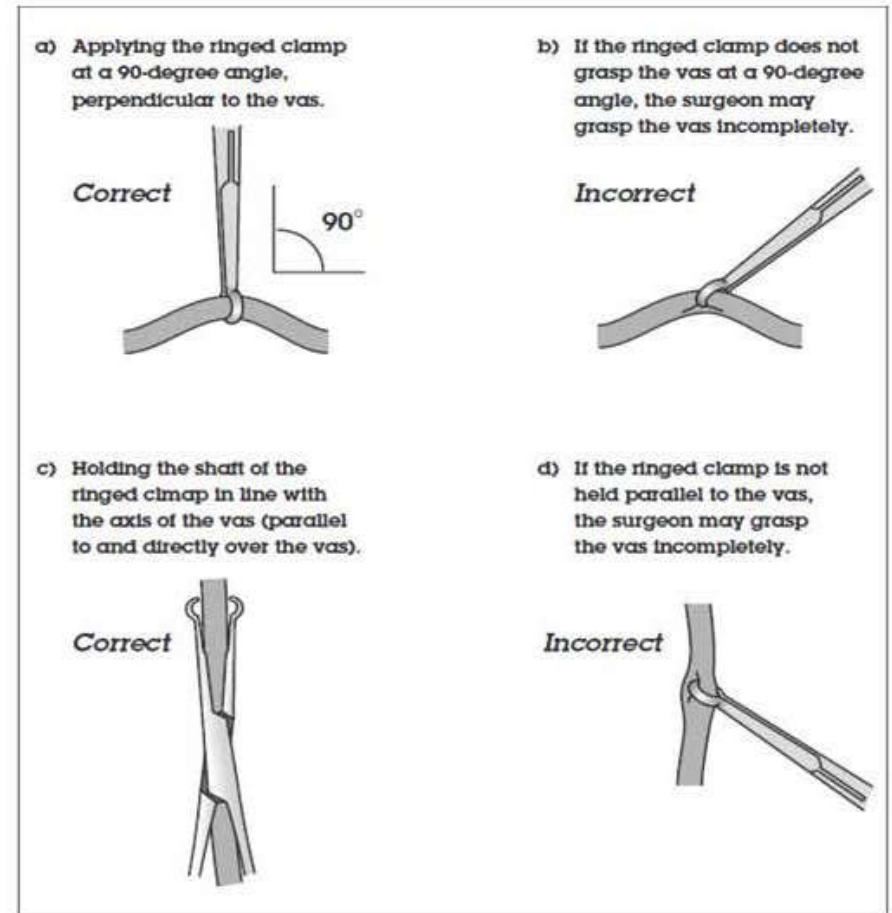
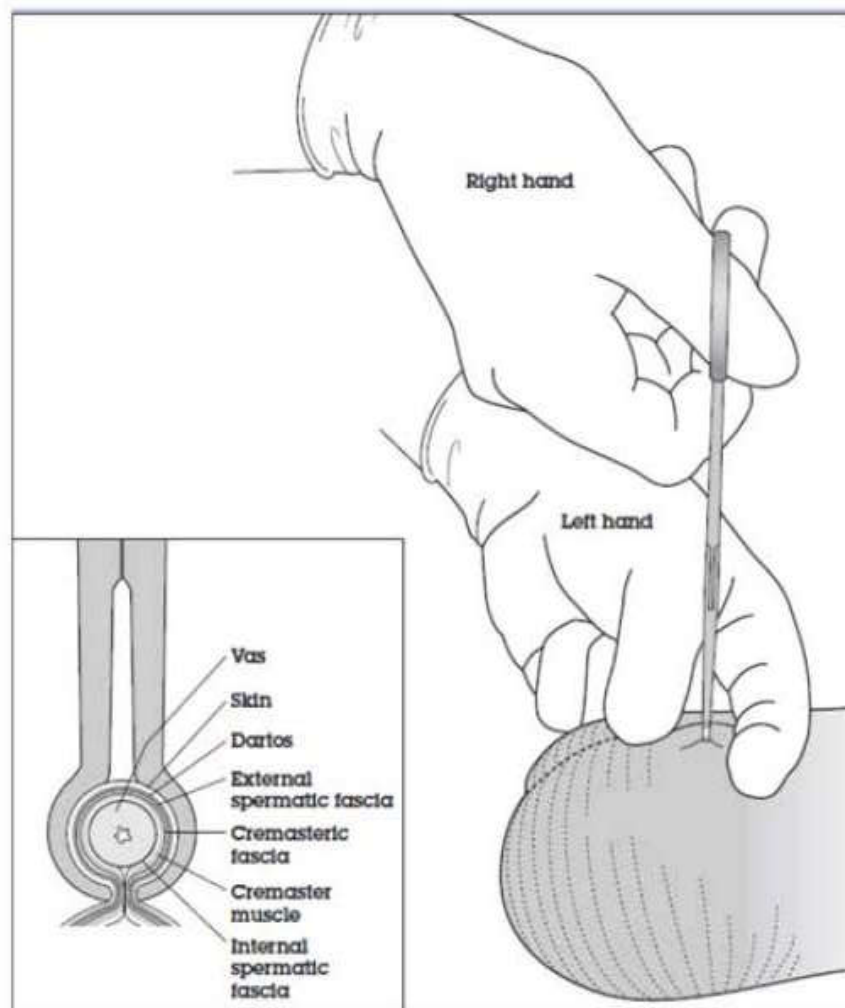


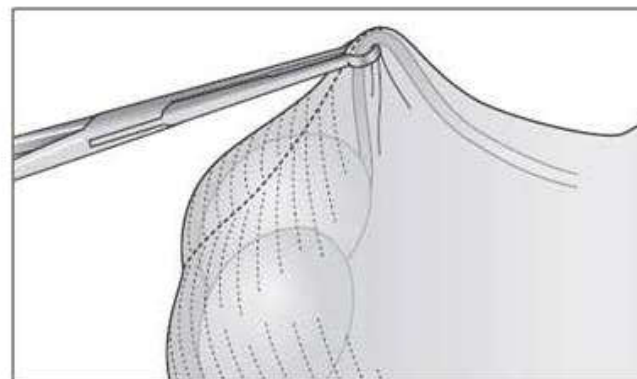
Figure 6-12. Pressing the Tips of the Ringed Clamp onto the Scrotal Skin Overlying the Right Vas



Elevating the Underlying Right Vas

- While the ringed clamp is still grasping the scrotal skin and the underlying right vas, transfer the instrument to your left hand.
- Then, lower the handles of the ringed clamp, causing a bend in the vas (Figure 6-13). This motion elevates the vas.
- Continue to keep the shaft of the clamp in line with the longitudinal axis of the vas.

Figure 6-13. Lowering the Handles of the Ringed Clamp to Elevate the Vas



Puncturing the Scrotal Skin

- The skin should be punctured in the previously anesthetized spot, midway between the top of the testes and the base of the penis. With the left index finger, press downward lightly to tighten the scrotal skin just ahead of the tips of the ringed clamp and over the anesthetized area (Figure 6-14).
- Hold the dissecting forceps in the right hand, points curved downward, in preparation for puncturing the vas. Hold the instrument so that the closed tips of the forceps and the vas are at a 45-degree angle.
- Open the dissecting forceps and using the medial blade of the forceps, pierce the scrotal skin just superior to the upper edge of the ringed clamp where the vas is most prominent (Figure 6-15). The result should be a puncture of the midline of the vas, preferably at the point where the needle entered for anesthetic infiltration. When making the puncture, do not slowly push the dissecting forceps forward. Instead, use a quick, sharp, single movement to make a clear puncture of the skin down into the vas. Advance the medial blade of the forceps into the vas lumen.

The following pitfalls must be avoided when puncturing the scrotal skin:

- ◆ Be sure to penetrate the anterior wall of the vas with the dissecting forceps. Intact overlying fascia will prevent elevation of the vas out of the puncture wound.
- ◆ If puncturing is too deep, transection of the vas might occur, and the vas artery may be transected; bleeding will follow.
- ◆ Be sure to puncture the vas just superior to the upper edge of the ringed clamp. If the puncture is made in the tissue that is grasped by the ringed clamp, you will not be able to spread the tissues adequately.