NO-SCALPEL VASECTOMY

REFERENCE MANUAL

Government of Nepal
Ministry of Health
National Health Training Center
May 2016

USAID
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INTRODUCTION

BACKGROUND

Worldwide, voluntary sterilization (VS) is the most popular and most effective method of contraception. Of the approximately 251 million couples who rely on sterilization for contraception, 223 million use female sterilization and about 28 million of these couples use vasectomy[1]. In addition to being permanent, VS is safe and relatively free of side effects. The most important aspect of the procedure, however, relates to its permanence. Clients must understand that sterilization is permanent contraception, and counselors must be able to communicate this idea effectively.

Female sterilization is the most common form of contraception globally; the 2013 UN report on contraceptive patterns found that female sterilization is the most common method of contraception, used by 19% cent of women aged 15 to 49.

Table 1. Sterilization rates around the world[2]

Country/Region	**Female (%)**	**Male (%)**
World	18.9	2.4
Developed regions	8.4	5.3
Developing regions	20.6	1.9
Africa	1.7	0.1
Asia	23.4	2.2
Europe	3.8	2.7
Latin America and the Caribbean	26.2	2.3
Northern America	20.8	11.9
Oceania	11.0	11.2

VSC trend in Nepal shows a decline in the use of female sterilization while the use of male sterilization has increased slightly.

Trends (percent distribution) in VSC service use in Nepal by year

Methods	1996 NFHS	2001 NDHS	**2006 NDHS**	**2011 NDHS**
Any Method	28.5	39.3	48.0	49.7
Any Modern Method	26.0	35.4	44.2	43.2*
Female Sterilization	12.1	15.0	18.0	15.2
Male Sterilization	5.4	6.3	6.3	7.8

Source: MICS, 2014: MCPR is 49.7

1 Source: Compiled by Earth Policy Institute (EPI) from UN Population Division, World Contraceptive Use, 2011

2 Source: World Contraceptive Patterns 2013, United Nations, 2013.

HISTORY OF NSV

Historically, Sir Astley Cooper was the first to perform vasectomy on a dog in 1823, while Reginald Harrison performed the first vasectomy, in 1924, in a man for the treatment of benign prostatic hypertrophy[3].

The No-Scalpel Vasectomy (NSV), also called keyhole vasectomy or vasectomy without knife, was introduced in 1974 in China (of the Chongqing Family Planning Scientific Research Institute, located in Sichuan Province) by Dr. Shunqiang Li with the aim of reducing men's fear related to the incision and increasing vasectomy use in China. At that time, vasectomy was unpopular with Chinese men, and tubal occlusion was the predominant method of voluntary sterilization. Today in Sichuan, vasectomies out number tubal ligation by a ratio of four to one; in the rest of China, tubal occlusion is still a popular method with the ratio of five to one. Subsequently an international team of experts visited Dr. Li Shunqiang in 1985 and observed his refined vasectomy technique and were convinced that the technique should become the standard approach for vasectomy. One of the team members, Dr. Phaitun Gojaseni, introduced the No Scalpel technique in Thailand and Dr. Marc Goldstein, performed the first NSV in the United States. NSV technique then slowly spread to European, African and Asian countries. Over time, the technique gained popularity and it is now a preferred method of male sterilization in many countries.

In Nepal, since early 1990s, providers began using the NSV technique, and in 1994, the NSV technique was formally incorporated into to the Nepal FP program. The pioneering work to popularize vasectomy in Nepal was done by Dr. Tika Man Vaidya.

The procedure is done under local anesthesia. It is a safe and minimally invasive procedure with a much lower complication rate than that of the conventional vasectomy..It is estimated that since 1974 NSV has been accepted by over 15 million men worldwide (10 million Chinese[4]). Of the approximately half a million vasectomies performed in the United States in 2002 were No-Scalpel Vasectomy[5]. NSV is believed to decrease apprehension towards vasectomy among men as incision is not performed (Antarsh, 1988). Over the years clinical reports have also documented the safety, efficiency and convenience to clients of the NSV procedure. **Table 1-1** describes the low complication rates of NSV compared to relatively higher complication rates seen among acceptors of conventional vasectomy.

Table 1-1. Incidences of Complications, Hematoma and Infection after NSV and Conventional Vasectomy, in China and US

Data Source	Number of Cases	Hematoma (per 100 cases)	Infection (per 100 cases)
Li et al. (1991)	179,741 (NSV)	0.09	0.91
Kendrick et al. (1987)	65,155 (Conventional)	1.95	3.48

3 Source: Leavesley, JH (1980). "Brief history of vasectomy". Family planning information service 1 (5): 2–3 accessed fromhttp://www.vasectomy-information.com/history-of-vasectomy

4 Source: Xiaozhang L. Scalpel versus no scalpel incision for vasectomy. RHL commentary. Geneva: The WHO Reproductive Health Library, WHO; 2009. accessed from http://apps.who.int/rhl/fertility/contraception/lxhcom/en/

5 Source: Vasectomy in the United States, 2002, article in The Journal of Urology, Vol. 176, 232-236, July 2006

The family planning (FP) program started in Nepal with the establishment of Family Planning Association of Nepal (FPAN) in 1959. Subsequently, the program has been taken up by the Government of Nepal as a national program. The program intends to provide safe and dependable FP methods to the country with special emphasis to the rural population. The program's goals are not only to control population, but also to help people plan their families so that they are a part of the national development process.

Vasectomy was the first sterilization program to be introduced in Nepal. Recorded cases of VS took place in 1967/68 when 179 cases of vasectomy were performed by the Family Health Division, MOH[6] and 873 cases by FPAN[7]. Since then, the VS program has formed an important component of the national FP program. Most training in NSV was done using a group-based training approach. NSV trainers, however, had difficulty accommodating group-based training demands because of their competing responsibilities as Family Planning healthcare providers at their respective sites. In addition, because of the limited vasectomy caseload during training, a training site can only have one to two participants at a time for NSV training. To address these challenges, in 1999 JHPIEGO and the National Health Training Center (NHTC) introduced a self-paced learning package for NSV designed to lessen the amount of time NSV trainers needed to conduct training so they could maintain their clinical responsibilities. The self-paced learning package consists of a guide, self-paced training module with manual and associated audiovisual aids.

DESCRIPTION

Male voluntary sterilization is called vasectomy. Vasectomy involves accessing the vas deferens of each testis through the scrotal skin puncture under local anesthesia. Once the vasa are exposed, occlusion is accomplished by ligation and excision (LE) with fascial interposition (FI) using silk suture or by cauterization. Depending on the technique, skin closure is completed by pressure and (suturing if necessary) dressing.

In vasectomy the technique of gaining access to the vas deferens differentiate the conventional from the no-scalpel techniques. The difference between the two techniques is detailed in **Table 1-2**. Once access to the vas deferens is accomplished, the method of occlusion is essentially similar.

Table 1-2. Differences between Incision and No-Scalpel Vasectomy Techniques

	INCISIONAL VASECTOMY	NSV
Anesthetic method	Localized infiltration, 2 or more	Skin infiltration Peri vasal block, needs only one needle puncture
Instrument used for entry	Scalpel, Craft Forceps, Artery Forceps	Dissecting forceps Ringed Clamp
Entry technique	1 or 2 scalpel incisions in the scrotum, blunt dissection	One small skin puncture Blunt Dissection
Skin closure	Sutures/stitches required to close the skin	Closure using suture not necessary

NSV is both safe and effective. It requires specially adapted but simple instruments and specific skills to perform. It is appropriate for most settings where the instruments and trained staff are available.

6 *Source: Family Health Division data.*

7 *FPAN: Annual Report 1974.*

The advantages of NSV over Incisional Vasectomy include:

Step/Method	Advantages of NSV
Instruments	Vas fixation forceps secures the vas externally and assists in scrotal entry
Anaesthetic method	Perivasal block: Both vasa are anaesthetized from single site. Does not cause swelling at the injection and puncture site Reduces client discomfort due to the perivasal block
Entry technique	Single step puncture dissection technique reduces trauma, risk of bleeding and haematoma formation as compared to multiple steps of incisional procedure. Vas is secured under direct vision
Skin closure	No need for skin closure using suture
Pain	Less pain and bruising and quicker recovery
Duration of procedure	Procedure takes less time when skilled provider uses the no-scalpel approach
Chances of Complications	Less damage to the tissue Fewer surgical complications Reduction of risk of bleeding and hematoma
Others (Post-operative)	May decrease men's fear of vasectomy Able to resume sexual activity earlier No need to come for suture removal

WHY THE UNDERUTILIZATION OF VASECTOMY?

"A GREAT METHOD THAT IS NOT BEING USED"

Vasectomies, or male sterilization, are a highly underutilized method of family planning, although they are safer, simpler, less expensive and equally as effective as female sterilization.

Within the family planning program, vasectomy is very often ignored and vasectomy remains the family planning's least known method[8], understood, or used, a fact confirmed in Demographic and Health Survey (DHS) studies conducted in many developing countries over the past five years. For example, in Sub-Saharan Africa, except for Ghana, Kenya, Malawi, and Uganda, the majority of men had not heard of vasectomy. The number of female sterilizations exceeds the number of male sterilization in a 5 to 1 ratio.

Worldwide, approximately 2% to 3% of couples are using vasectomy as a method of contraception. Overall the prevalence of vasectomies is lower in developing countries and in Asia, with the exception of Bhutan, Iran, and the Republic of Korea, the occurrences of vasectomy has gradually declined over the past 15 years[9].

Vasectomy is more common than female sterilization in only 5 countries. These countries are Bhutan, Denmark, the Netherlands, New Zealand and Great Britain. In 8 countries: Australia, Bhutan, Canada, the Netherlands, New Zealand, the Republic of Korea, Great Britain and the United States, the prevalence of vasectomy use exceed 10%. New Zealand has the highest occurrence of vasectomy at 19.3%[10]. The use of vasectomy in the world varies significantly by region and country. Almost three-fourths of the 28 million couples who use vasectomy live in Asia, with China and India alone accounting for more than two-thirds of this total.

8 Source: Jacobstein, Roy, and John Pile. "Vasectomy: The Unfinished Agenda." ACQUIRE Project Working Paper. Aug. 2007. Web. 21 Nov. 2009

9 Source: Corey L:Vasectomy use worldwide as of 2009 review.Rollins School of Public Health at Emory2009

10 Source: Barone Mark, John Pile:"Demographics of Vasectomy-USA and International.". EngenderHealth2009, Web. 21 Nov. 2009

So if vasectomy is such a good method, why is its use so low?

Client level:

- Sociocultural and gender influences: In many cultures, men are the main decision makers regarding the choice and use of family planning methods but take little responsibility for contraception themselves, often believing that this is the woman's role. In some societies, family planning in general and/or sterilization in particular may be (or is believed to be) prohibited by religion.
- Lack of information, knowledge (awareness): Vasectomy is the least-known of all modern family planning methods. Men and women are less aware of vasectomy than they are of other family planning methods. Even when they know of vasectomy, the information they have frequently is incomplete or incorrect. Men are also not aware of the importance healthy spacing of births.
- Myths and misconceptions: Myths about vasectomy are widespread in many communities. The beliefs that the procedure equals castration, that it negatively affects men's sexual function, it diminishes men's physical strength and ability to perform manual labor are widely held by both men and women, across all geographic regions.
- Incomplete, incorrect (mis) information: Clients obtain much of the information on which they base their family planning decisions from sources within the community, such as family members and friends, whose knowledge may not be accurate and complete. Even when men and women are aware of vasectomy, the information they have frequently is incomplete or incorrect.
- Anxiety about undergoing a surgical procedure: Men often fear and harbor anxiety from the surgical procedure even though vasectomies are minor outpatient procedures.

The vasectomy is underutilized because of various service-delivery and cultural and community barriers.

Table 1-3. Men's and Women's Misconceptions about Vasectomy

• Vasectomy is like castration • A man cannot have sex or ejaculate after vasectomy • A man becomes fat after the operation • Vasectomy makes men weak and less productive • Vasectomy demands rest for several days • Female sterilization is easier to perform and has fewer side effects

Role of male participation

For many years the blame for the underutilization of vasectomy has been placed on men–that they do not want to take responsibility for family planning evidence however suggests men are going to accept more responsibility for family planning and become active participants in avoiding unintended pregnancies[11]. Vasectomy use should be promoted because it is one of the most cost-effective contraceptive methods and it is low-cost for clients over time. Due to the relative simplicity of performing a vasectomy it can be offered in a wide variety of settings including primary health care clinics and private physicians' offices.

Evidence suggests that a principal reason for the low (or declining) use of vasectomy is not men's resistance to the method or not wanting to take responsibility but rather the failure of health professionals to make information and services available and accessible to men. This failure was often a result of health professionals' lack of knowledge, misinformation, personal dislike of vasectomy or untested presumptions about what men thought and wanted (Jezowski et al. 1995). Because men lack full access to both information and services they cannot make informed decisions nor take the active part in family planning that their attitudes indicate they may be willing to take.

Program level:

- Provider indifference to or bias against vasectomy: Some health care providers actually discourage clients from considering vasectomy due to personal bias, either because they believe family planning is a woman's responsibility or because they have misgivings about the method.

- Shortage of committed and competent service providers (no provider no program): There may be too few vasectomy providers with requisite clinical and counseling skills are actively providing services. This is a key perennial human sources problem in the context of Nepal.

- Inadequate and ineffective client counseling: There are evidences that only a small percentage of clients in many countries including Nepal receive complete and correct information about vasectomy, even though they express a desire to limit subsequent births.

- Poor infrastructure and facilities: Many facilities lack space for counseling and surgical procedures, utilities, and adequate or well-maintained equipment needed for safe vasectomy provision.

- Poor location and organization of vasectomy services: Vasectomy services are often not convenient to potential clients and not male-friendly. Services are also made available only on 'seasonal' basis and only limited health facilities provide year round vasectomy services.

- Inadequate training capacity and approaches: Low client caseload is a constraint in vasectomy training settings. Traditional group based training approaches often tend to be inefficient and not strategic, a large pool of trainees who may or may not be interested in becoming (or able to become) active vasectomy providers.

- Gaps in the vasectomy equipment and instruments: Vasectomy requires specialized instruments that are often supplied in limited quantity and with poor quality which often results provider dissatisfaction and reluctance to provide services.

11 Source: Comparing Muslim Countries' Policies on Contraception and Abortion: Global Public Health through a Feminist Lens.2010

Providers' Indifference

Even if vasectomy services are available, health care providers may devote little or no attention to vasectomy when discussing family planning options with clients. Providers of family planning and reproductive health services are accustomed to working with women and may not be comfortable with or know how to talk to men or provide them with care. Clinic staff may hold prejudices against men and may even discourage them from seeking family planning information and services. The failure of health professionals to make information and services available and accessible to men is often a result of health professionals' lack of knowledge, misinformation, personal dislike of vasectomy, or untested presumptions about what men thought and wanted.

Men in every part of the world and every cultural, religious or socioeconomic setting have demonstrated interest in or acceptance of vasectomy, despite commonly held assumptions about male attitudes or societal prohibitions. When program managers and providers take an active role in addressing men's needs, rather than simply making vasectomy services available, men will respond and more vasectomies will be requested.

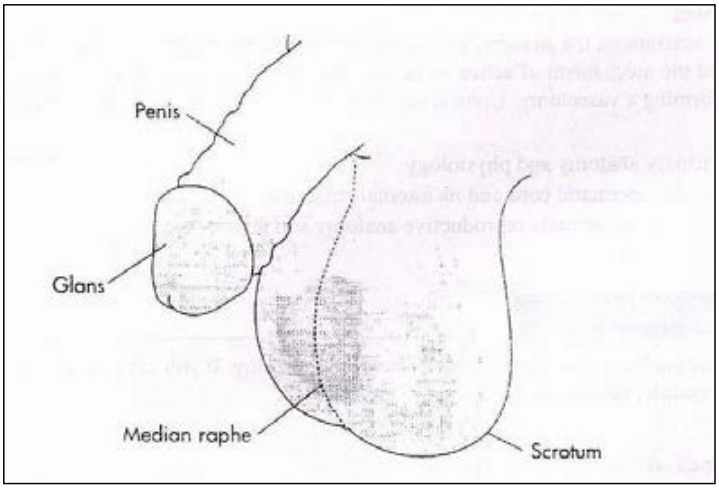
ANATOMY AND PHYSIOLOGY

External Organs of the Male Genito-urinery System

Figure 1-1 shows the external male organs. The penis contains the urethra and specialized highly vascular tissue necessary for achieving erection. 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 (1) there is easy access to the vasa through the scrotal sac, and (2) it avoids risk of injury to the epididymides and the testicles.

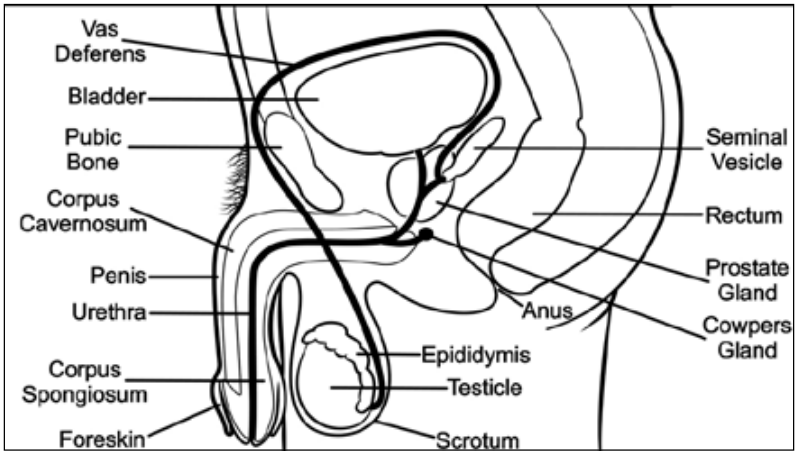
Figure 1-1. External Male Organs



Internal Organs of the Male Genito-urinary System

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

Figure 1-2. Internal Male Organs



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.

Table 1-4. Normal Values for a Semen Analysis

Normal Seminal Parameters (Source: WHO)

SN	Semen Parameter	WHO 1999	WHO 2010
1	Volume (mL)	≥2	≥ 1.5
2	Count (x10^6/mL)	≥ 20	≥ 15
3	Total sperm number/ejaculate (10^6)	≥ 40	≥ 39
4	Total sperm motility (%)	≥ 50	≥ 40
5	Morphology (%)	(14)	≥ 4
6	Leukocyte count (10^6/mL)	≤ 1.0	≤ 1.0

The second group of organs is a series of connected ducts: the ***epididymides***, the ***vasa deferentia***, 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***, they 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***. Together, the vas and seminal vesicle ducts form the ejaculatory duct. The ejaculatory duct opens into the urethra to allow the passage of sperm and seminal fluid during ejaculation. When using the three-finger technique, you can easily feel the vas by rolling the spermatic cord between your thumb and third finger.

The third group of internal organs is called the ***accessory glands***. These include: the seminal vesicles, the prostate, and the bulbourethral glands (**Figure 1-2**). These glands secrete the seminal fluid that carries sperm through the urethra during ejaculation.

The Spermatic Cord

The spermatic cord is composed of arteries, veins, lymphatics, nerves, and the excretory duct of the testis. The spermatic cord is ensheathed in three layers of tissue- (1) external spermatic fascia, (2) cremasteric muscle and (3) internal spermatic fascia (Fig. xxx).

Internal Spermatic Fascia (Transversalis/Endoabdominal Fascia): Internal Spermatic Fascia is a thin layer, which loosely invests the cord; it is a continuation downward of the transversalis fascia.

Cremasteric Fascia (Fascia of Internal Oblique Muscle) : The Cremaster consists of scattered bundles of muscular fibers connected together into a continuous covering by intermediate areolar tissue The cremasteric fascia contains loops of cremasteric muscle, which draws the testis superiorly in the scrotum when it is cold.

External Spermatic Fascia (Aponeurosis of the External Oblique Muscle): The external spermatic fascia (intercrural or intercolumnar fascia) is a thin membrane, prolonged downward around the surface of the cord and testis. It is separated from the dartos by loose areolar tissue.

Step in vasectomy is to identify the vas deferens so that it can be anesthetisized and occluded. During the injection of local anesthetic and during NSV, care should be taken to avoid the testicular artery and veins located within the internal spermatic fascia (see **Figure 8-11** in Chapter 8). The internal spermatic fascia is used for fascial interposition.

The vas deferens is located within the spermatic cord. It can be easily 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 2-3 mm in diameter. The small diameter of the lumen of the vas presents the main challenge to vasectomy reversal and needs microsurgical techniques. The success of vasectomy reversal is low (pregnancy rates range from 35-57 percent). Even when microsurgical techniques are used, success is often limited (the success rate of microsurgical techniques is between 38 and 82 percent).

Figure 1-3. Cross Section of the Spermatic Cord

Fig. 1-3 (a)

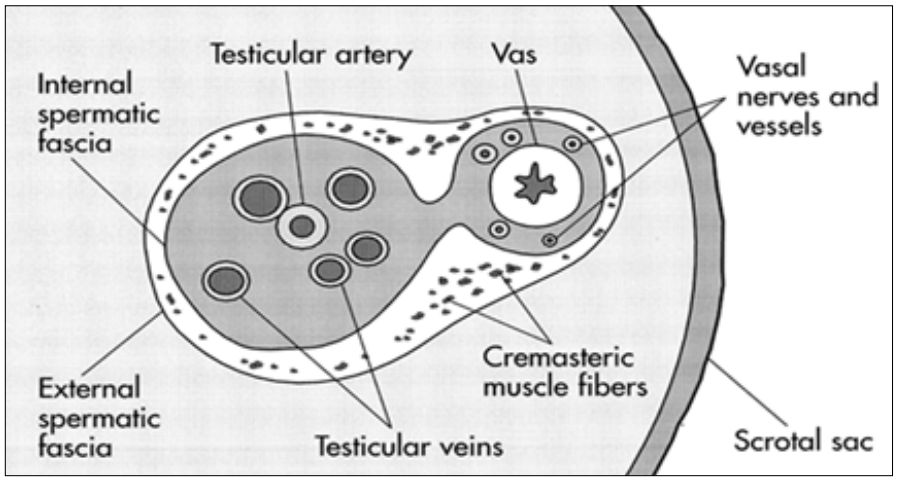


Fig. 1-3 (b)

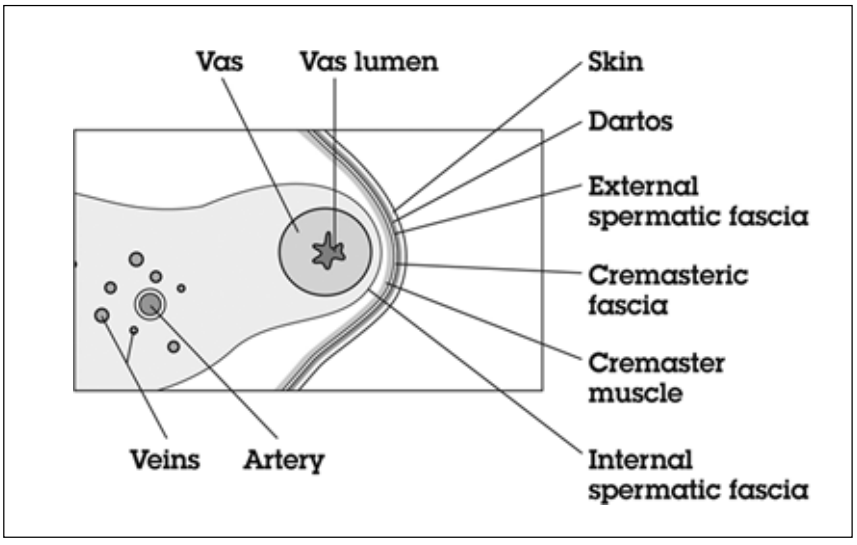
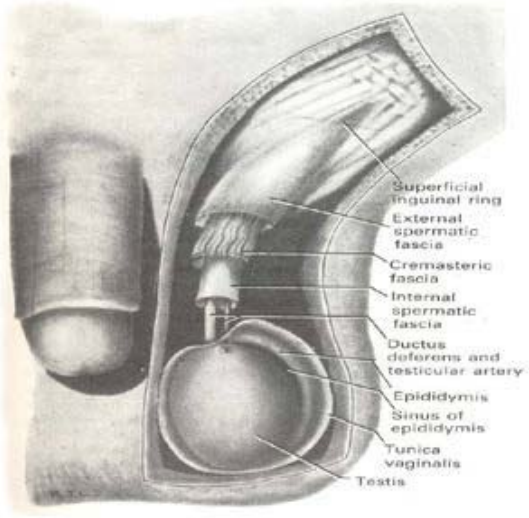


Fig. 1-3 (c)



Physiological changes after vasectomy

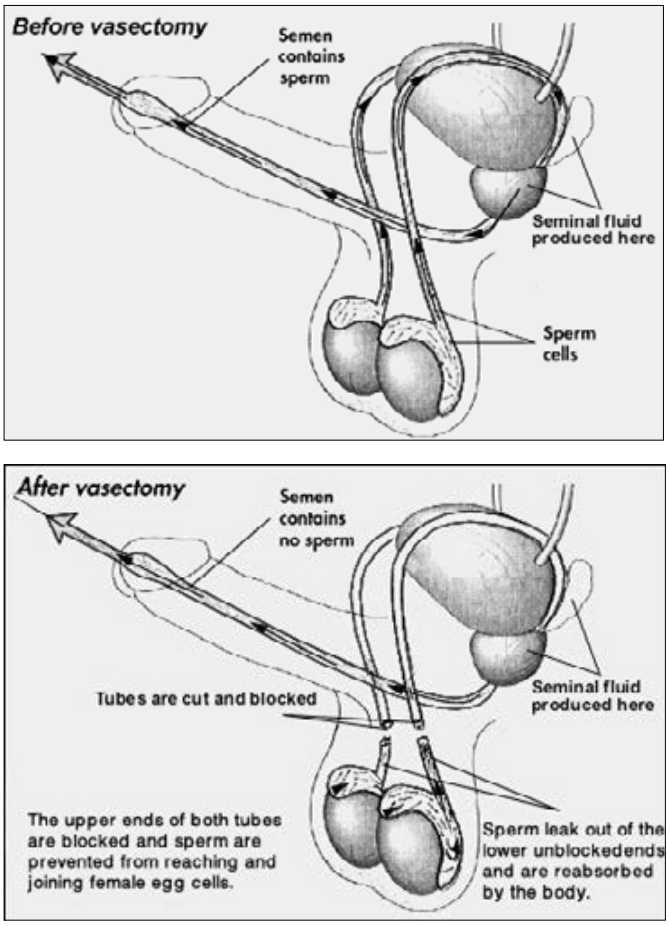
After vasectomy, the male sexual and reproductive physiology remains unaffected, aside from the desired change in fertility. The nerves involved in erection are not endangered during the procedure so after NSV there is no effect on erection. Seminal fluid, which forms the largest part of ejaculatory fluid, continues to be produced. The client will not notice any reduction in the amount of ejaculatory fluid.

Sperm production continues, even though the sperm's passage through the reproductive system has been blocked. These sperm 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, in time, 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 buildup 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 leads to increased levels of serum antisperm antibodies in most men who have had a vasectomy. If a man has vasectomy reversal, the presence of these antibodies can inhibit pregnancy, even if the vasa are successfully reconnected. However, sperm antibodies have no known impact on general health and sexual performance.

Figure 1-4. Male internal reproductive organ before and after vasectomy



MECHANISM OF ACTION

The male internal reproductive organs are composed of the testes, the ducts and the accessory glands (see **Figure 1-2**). The testes produce the sperm cells and the male sex hormone testosterone. The connection between the testis and the urethra is through a series of duct system. Through the duct system, sperm cells from the testis are transported for release. The duct system includes the epididymis and the vasa deferentia. The vas ends at the base of the prostrate where it is joined by the seminal vesicle to form the ejaculatory duct where sperm cells and seminal fluid mixes prior to ejaculation. The accessory glands composed of the seminal vesicles, the prostate and the bulbourethral glands contributes to the production of the seminal fluid.

Vasectomy is a simple operation in which the vas deferens that carry the sperm cells from the testes to the penis are occluded. After this minor operation, the sperm cannot reach beyond the occluded ends of the vas. Because vasectomy does not affect the function of the accessory glands men still produces the seminal fluid that is ejaculated without the sperm cells. The testis is also unaffected and remains fully functional such that men should have the same sexual feelings, desires and capabilities as before vasectomy.

SURGICAL APPROACH

NSV is a minor procedure and is usually performed on an outpatient basis. Local anesthesia is the method of choice for management of pain. The vas is isolated through a "three-finger technique" for positioning the vas into a subcutaneous position. Vas is then grasped with the ringed clamp and scrotal skin is punctured using the sharp dissecting forceps. To isolate and deliver vas, ligation with excision (LE) and fascial interposition (FI) is the usual method of occlusion. Cauterization is another method of occlusion. After both vasa have been occluded and returned to the scrotum, puncture site is pinched tightly for a minute, a sterile gauge dressing is done with a tape or a band-aid. Scrotal support is optional.

TIMING OF PROCEDURE

NSV can be done at any convenient time on healthy and eligible clients.

FACILITIES AND PERSONNEL

NSV can be performed in hospitals, primary health care centers (PHCC), health post (HP), integrated family planning service centers (IFPSC), single purpose clinics, doctors' clinics, and temporary or mobile facilities. There are certain minimum requirements, including running or potable water; adequate light source; toilet facilities and trimming areas; separate reception, counseling, examination and postoperative areas; auxiliary facilities such as instrument processing and storage area; and a clean, screened surgical room, isolated from the other facilities. In addition, certain equipment and instruments should be available for use in the operating room and staff should be trained in its use (see **Appendix B** for more information on emergency preparedness; **Appendix D** for list of NSV instruments).

The NSV procedure must be performed by a doctor who has been specially trained to provide the service. Although vasectomies have been successfully provided by non-physician cadre of health care providers (task sifting/task sharing) in other countries, Nepal has yet to initiate this approach. An assistant, a nurse or an auxiliary health worker, usually assist the surgeon in the operation.

PERMANENCY

NSV should be considered permanent (irreversible). Vasectomy should not be offered or promoted as a reversible method. In Nepal, where a few microsurgical facilities are available, it is possible in some cases to reverse the procedure, that is, rejoin the ligated vas deferens. Even when such services are available, however, the clients may not be able to afford it, may not be a proper surgical candidate or the reversal attempt may not be successful. Therefore, couples who are considering NSV should be certain that they do not wish to have anymore children.

Because NSV should be considered a permanent procedure, men requesting it should be well counseled and have sufficient time to think about their decision. Some requests will come from highly motivated clients (e.g. from men whose wives may have medical conditions, those who have repeated cesarean sections, those with completed family size). Generally, these self-motivated clients need little more than a review of the information and verification that the decision was made after careful thought. In a few instances, requests may come from men who do not have a clear idea about the procedure. In this situation, great care should be taken with counseling, including exploring the client's motive which may not be clear initially. All clients should give their informed consent only

after careful exploration of the matter so that no person makes the decision for voluntary sterilization without fully comprehending that it is permanent (i.e., it is not reversible).

EFFECTIVENESS

The effectiveness of a contraceptive method usually is the most important factor, both for the individual (or couple) trying to choose a method and for the service provider. For valid comparison of effectiveness to be made among the most commonly used methods, failure rates must be presented not only for individuals using the methods consistently and correctly, but also for typical users. Vasectomy is one of the most effective methods of contraception. Various studies show variation in effectiveness. Further studies a Global Hand Book 2011 explain effectiveness as below.

One of the most effective methods but carries a small risk of failure:

- Where men cannot have their semen examined 3 months after the procedure to see if it still contains sperm, pregnancy rates are about 2 to 3 per 100 women over the first year after their partners have had a vasectomy. This means that 97 to 98 of every 100 women whose partners have had vasectomies will not become pregnant.

- Where men can have their semen examined after vasectomy, less than 1 pregnancy per 100 women over the first year after their partners have had vasectomies (2 per 1,000). This means that 998 of every 1,000 women whose partners have had vasectomies will not become pregnant.

Vasectomy is not fully effective for 3 months after the procedure.

- Some pregnancies occur within the first year because the couple does not use condoms or another effective method consistently and correctly in the first 3 months, before the vasectomy is fully effective.

A small risk of pregnancy remains beyond the first year after the vasectomy and until the man's partner reaches menopause.

- Over 3 years of use: About 4 pregnancies per 100 women

If the partner of a man who has had a vasectomy becomes pregnant, it may be because:

- The couple did not always use another method during the first 3 months after the procedure
- The provider made a mistake
- The cut ends of the vas deferens grew back together

Fertility does not return because vasectomy generally cannot be stopped or reversed. The procedure is intended to be permanent. Reversal surgery is difficult, expensive, and not available in most areas. When performed, reversal surgery often does not lead to pregnancy.

Evidence also shows that combined ligation and excision (LE) with fascial interposition (FI) increases the efficiency than simply with ligation and excision. Ligation and excision without fascial interposition is no longer recommended (Sokal et al., 2004a). There is consensus in the literature that cauterization is an effective vasectomy method[12] which was found to significantly reduce failures

12 Source: Sharlip ID, Belker AM, Honig S, Labrecque M, Marmar JL, Ross LS, et al. Vasectomy: AUA guideline. J Urol 2012; 188 (6 Suppl.): 2482–2491

compared with ligation and excision with fascial interposition. The studies reported that the risk of early recanalisation was lowest when cauterisation was used[13].

SAFETY

NSV in the hands of a well-trained clinician is a safe, highly effective approach for voluntary sterilization. Because it is usually done under local anesthesia and the ready accessibility of the vas, it is much safer procedure than female sterilization techniques. Less than 0.4 % of men (Nirapathpongporn et al., 1990) experience the complication of either infection or hematoma formation.

Client assessment before the procedure also reduces the likelihood of complications. Factors that may complicate NSV include previous genital tract surgeries/injuries and congenital disorders.

The NSV approach to the vas resulted in less bleeding, hematoma, infection, and pain as well as a shorter operation time and had a quicker resumption of sexual activity than with the traditional incision technique[14].

SIDE EFFECTS

There are few side effects associated with NSV. Initial pain or discomfort associated with the surgery generally ends within a few days. Granuloma formation is relatively rare and a self-limiting complaint. For long term effects of NSV see **Appendix E.**

Long-Term Health Effects

Over the years, there have been concerns about possible negative health consequences resulting from vasectomy. However, results of large, well-designed studies have consistently shown no adverse effects of vasectomy on the risks of heart disease, testicular or prostate cancer, immune system disorders, and a host of other conditions. Men requesting the procedure can thus be reassured that there is no long-term healthrisk associated with the procedure.

13 Source: Labrecque M, Hays M, Chen-Mok M, Barone MA, Sokal D. Frequency and patterns of early recanalization after vasectomy. BMC Urol 2006; 6: 25

14 Source: Scalpel versus no-scalpel incision for vasectomy (Cochrane review, 2014, Issue 3), Cook LA, Pun A, Gallo MF, Lopez LM, Van Vliet HAAM

TWO

COUNSELING AND DECISION MAKING FOR NSV

BACKGROUND

Counseling is of particular importance in programs providing voluntary sterilization (VS) services because the method involves surgery and is intended to be permanent. Voluntary sterilization involves consequences, risks and fears that need to be discussed with each client. Providers have an obligation to ensure that the client understands the benefits, risks, implications of, and alternatives to VS, and that those who choose it do so voluntarily. The counselor should discuss each client's feelings about ending fertility and assess the client's psychological readiness for the procedure and its consequences. Counselors should listen to clients carefully to determine if there are signs of doubt, conflict, misunderstanding or unrealistic expectations about the procedure. In view of the critical and sensitive nature of this decision, it is essential that the counselor collect information from the client about his personal circumstances and feelings about voluntary sterilization (World Federation 1988).

Remember: Counseling is a critical checkpoint between the client's intention to seek voluntary sterilization and the steps that follow, leading to surgery.

One of the principal aims of VS counseling is to identify clients who are likely to adjust poorly or change their minds after undergoing VS. Although regret is uncommon among VS clients, a few characteristics have been identified which, if not addressed during counseling, may increase the likelihood of regret following surgery (**Table 2-1**). These factors should **not** be used as arbitrary ground for denying sterilization to a client. Rather, they are signals to the counselor to devote special time and care to the client, being sure he carefully weighs the choice of voluntary sterilization and its alternatives. In such cases, it may be appropriate to encourage these individuals to take more time to consider their request for VS and to accept a temporary method in the interim.

In addition, counselinghelpsclients who aregoodcandidates for VS bypreparingthempsychologically, both for what it will mean not to be able to have any more children and for the experience of surgery. By guiding clients to consider the implications of their choice and helping them address whatever doubts or anxieties they may have before surgery, counselors enhance the chances that those who choose VS will be satisfied with their decision. In general, clients are likely to adjust well and be satisfied with their decision after surgery **if** service providers have told them what to expect and **if** they take responsibility for the decision to end their fertility.

Finally, as an on-going process, integrated into all aspects of family planning service provision, counseling enables the client to make a voluntary informed choice.

WHAT IS INFORMED CHOICE

Informed choice is the process used by an individual to make his/her own decision about family planning methods. Informed choice is based on fully understanding the necessary and complete information including risks/benefits, potential side effects, mode of action, etc. An informed choice must be made in a stress-free environment and without pressure, coercion or incentives from others.

PRINCIPLES OF INFORMED CHOICE

- Clients have the right and ability to make their own decisions
- Clients are individuals with different needs and circumstances
- Decisions should be based on information about the risks and benefits of all available options
- Options must be available
- The informations given must be reliable, timely and understandable
- The decision must be made free of stress, pressure, coercion or incentives

WHY IS INFORMED CHOICE IMPORTANT?

- It is a human right to have the freedom of choice about reproductive health choices.
- It is medically ethical to provide clients with information needed to make an informed choice
- Helping clients to make an informed choice should be a part of reproductive health policies
- Helping clients to make an informed choice is a part of providing quality services
- Informed choice is associated with improved client satisfaction
- Improved client satisfaction associated with more effective use of method (lower discontinue rate)
- Satisfied clients are the best "Promoters"

BARRIERS TO INFORMED CHOICE

Some barriers to informed choice are as follows; when there is limited method choice providers are unable to provide the contraceptive methods chosen by the client; when there is inadequate information or counseling on family planning methods the client will not be able to consider all aspects of certain family planning method and will not be able to decide which method is best for him/her. Sometimes economic and/or population pressures requires that FP programs provide special priority to certain FP methods in order to meet their objectives. This may negatively influence the clients' right to informed choice. At times social or familial pressure or obligations may act as a deciding factor in making a contraceptive choice.

STRATEGIES TO SUPPORT INFORMED CHOICE

It is important to work to provide an environment and situation that makes it possible for the client to make an informed choice based on his/her own goals and wishes. Some of the following are things that are necessary to make this happen:

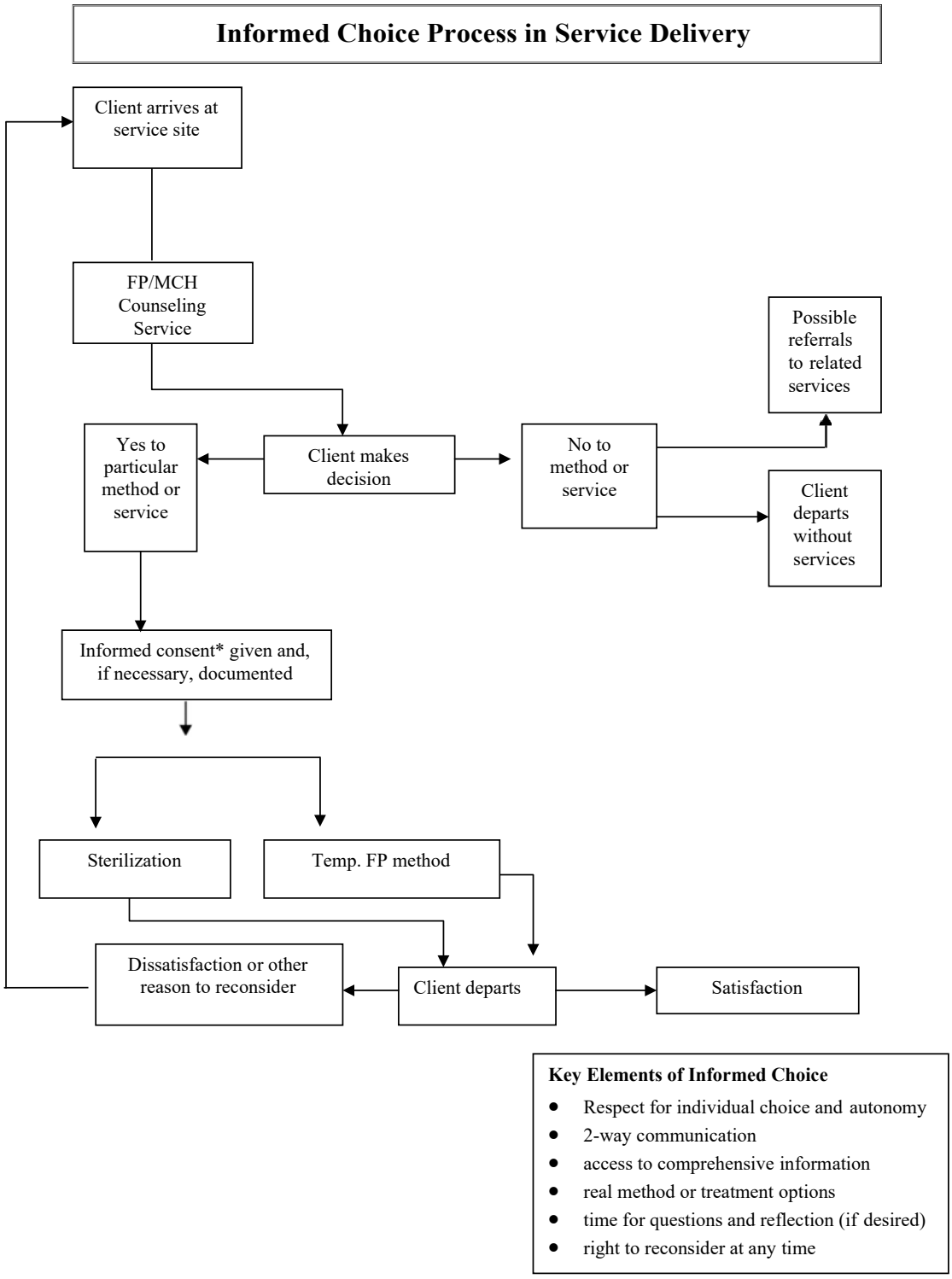
- Providing a variety of methods
- Counseling the client in a private, relaxed atmosphere
- Quality improvement approaches including focus on client's needs
- Research and evaluation of the effectiveness of counseling
- Social change e.g., community and women's education
- Providing an environment of social equality in order to make independent choices

Table 2-1. Client Characteristics Associated with Regret Following Voluntary Sterilization

• Being young
• Having no or few children
• Having children all of the same sex
• Having a child, especially the youngest, in poor health
• Being in an unstable marriage
• Having a spouse who disagrees with the decision for VS
• Being single or widowed
• Being pressured by the spouse or someone else to undergo VS
• Making the decision when under unusual stress (for example, during labor or following an abortion)
• Making the decision quickly without time to reflect and reconsider
• Lacking access to other methods of contraception
• Having unresolved religious or other cultural conflicts
• Making the decision under the influence of payments or other incentives
• Being incompletely or incorrectly informed about VS
• Having VS because of medical indications
• Having unfulfilled maternal desires (an especially important factor if sterilization is medically indicated or where the country policy is to encourage smaller families)
• Having unrealistic expectations about VS and its consequences
• Having a history of psychological problems, including sexual problems
• Having unresolved feelings about the permanence of VS
• Having unresolved feelings about wanting more children if he were to remarry after VS
• Having unresolved feelings about wanting more children if an existing child were to die after the client had been sterilized

Adapted from: World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception. 1988. Safe and Voluntary Surgical Contraception: Guidelines for Service Programs. World Federation: New York.

Figure 2-1. Informed Choice Process in Service Delivery



** "Informed consent" refers to a communication by the client of his or her voluntary decision to obtain a method or service based on information re-risks, befits, side effects, alternatives, and without coercion of any kind.*

CLIENT RIGHTS[1]

The goal of health service delivery is quality of care. Since family planning has been recognized as the rights of individuals and couples, quality of care can be focused on the rights of clients.

Right to Information

Everyone in the community has the right to learn about the benefits of family planning and know how to obtain more information and services. Family planning workers should actively distribute family planning information in the clinic or in the community.

Right to Access

All individuals have the right to receive family planning services regardless of gender, social and economic status, religion, political belief, ethnic origin, color, or location. The role of providers is to make services available to all clients.

Right of Choice

Individuals and couples have the right to decide freely whether or not they will practice family planning and what method they will use. The ability of the client to make a free choice is dependent upon the adequacy and quality of information given to him or her.

Right to Safety

Clients have the right to be able to practice safe and effective family planning. This implies the following:

- Clients have the right to protection against any possible negative effect of a contraceptive method on their physical and mental health.
- Client's right to safety also includes the right to effective contraception.
- Clients have the right to protection against other health risks not related to the use of contraception (i.e., acquiring infection through the use of contaminated instruments).

Right to Privacy

Client's privacy implies the following rights:

- During the Counseling session and physical examination, the client has the right to know the role of each individual in the room. If the presence of trainees in the room is necessary, the permission of the client should be obtained.
- The client has the right to be informed about physical examination(s) she will undergo, and she can even refuse any particular procedure.
- Any case-related discussion should involve and acknowledge the client and be clearly understood by him or her.
- The physical examination should be carried out in an environment in which the client's right to physical privacy is respected.

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1 *Adapted from: Huezo and Briggs 1987.*

Right to Confidentiality

The client should be assured that any personal information will remain confidential. This implies the following for service providers:

- Staff members should refrain from talking about clients by name or in the presence of other clients.
- A client's case should not be discussed at outside service sites.
- A client's records should be kept closed and access to the client's records should be controlled.

Right to Dignity

Clients have the right to be treated with courtesy, consideration, attentiveness, and full respect regardless of their level of education or social status. Service providers must put aside their gender, marital, social, and intellectual prejudices while providing services.

Right to Comfort

The client has the right to feel comfortable when receiving services. This implies the following:

- The right to comfort is dependent upon the adequacy of service facilities and quality of service (i.e. service centers should have proper ventilation, lighting, seating, and functional toilet facilities).
- The service site and environment should not negate cultural values, norms, and demands of the community.

Right to Continuity

The client has the right to receive contraceptive services and supplies as long as needed. Referral and follow-up are other important aspects of a client's right to continuity of services.

Right to Opinion

The client has the right to express views on the services.

The ten basic rights of clients are considered to be essential elements of quality care. It is this quality of care that encourages clients to decide to accept and demand for family planning services; since they feel that they are assured of their safety to accept a method of their choice. Safety is the foremost concern of every client who wishes to practice family planning.

Remember: The client has the right to Quality family planning services. Quality means safe, efficient services that result in client satisfaction.

PRINCIPLES OF COUNSELING

a. Focus on Individual Needs of the Client

Reproductive behavior of each spouse/couple is influenced by various factors such as family, community, family planning programs and centers where family planning services are available. Thus, while counseling is of the utmost important, it is also essential to consider and respect the client's personal needs and desires. Although people are born and bred in the same society each individual has his own norms, beliefs values culture and attitude that direct his behavior. However keep in mind that client's needs for family planning changes with his/her age. Values, beliefs and attitudes must be respected. For this, the counselor must first of all be aware of his own values, beliefs and attitudes.

b. Voluntary choice of Client's Fertility Behavior

To make a voluntary choice, the client will require adequate information about the choices. The counselor, keeping in mind the client's need, will help him/her to reach a decision voluntarily by providing accurate and complete information. It is extremely important to know that the counselor does not make decisions for clients. Telling the client what to do, offering incentives or pressuring the client should not be done.

c. Empowerment

Empowerment helps people to identity their need, to exercise their rights and to make decisions. Providing accurate information is important and helps the person make decisions voluntarily. The counselor must make sure the client's information is correct and give information as needed. This empowers the client.

d. Confidentiality

Because family planning decisions involve sexuality, clients want information to be confidential. The counselor listens and answers the client's questions about sex and fertility. The counselor also keeps the conversation with clients strictly confidential and assures each clients of this confidentiality.

e. Consent

The counselor should inform the client that consent in writing or by thumb print is required for minilaparatomy, laparoscopy and vasectomy. This consent indicates that the client has been fully informed about the surgical contraceptive procedure that they have chosen.

BENEFITS OF COUNSELING

For the Client

- Counseling results in the man arriving at a free and informed decision. He feels in control ofhis choice of NSV and does not feel he has been pressured into accepting a method of contraception with which he does not feel happy.
- The man knows exactly what to expect with NSV. He understands all the benefits it will offer and will also be prepared for any side effects that may develop.
- He knows whom to ask for advice if he feels concerned about anything at any time.
- He knows that the surgery is permanent.

For the Clinician

- Although counseling may appear to be time consuming, it is cost-effective and saves time in the long run.

COUNSELING PROCESS

Good counseling focuses on the individual man's needs and situation, and good counselors are willing to listen to the man's questions and concerns. Counseling must be based on trust and respect between the client and the counselor. Staff must provide a prospective NSV client with all the information necessary to make a reasoned, non-coerced decision to terminate his fertility. The information must be in the language and terminology that the man best understands.

Remember: All information exchanged in the counseling session should be treated confidentially.

Family planning counseling should enable a client to:

- consider his reproductive goals;
- make free, informed and voluntary decisions about fertility and contraception; and
- understand how to use his method of choice safely and effectively.

The elements of the counseling process have been organized into a system which in Nepal is called the "ABHIBADAN" approach (Gallen, Lettenmaier and Green 1987; Lettenmaier and Gallen 1987). This acronym is designed to help counselors remember important points in an effective counseling session.

THE "ABHIBADAN" APPROACH

There are a number of steps to effective family planning counseling. Regardless of whether it is a first time visit or a follow-up visit, the health worker who is providing family planning counseling should follow the basic counseling steps. To help health workers remember these steps, the word "Abhibadan" is used. Each sound of the word "Abhibadan" represents one step in family planning counseling. There are five steps to remember:

Step 1: "A" Refers to "Abhibadan," i.e. To greet

In order to establish a good relationship and environment for counseling, the service provider should greet the client by saying "Namaskar" and "please come in" and by offering the client a place to sit. The provider should introduce her or himself and ask how she/he can help the client. The provider should tell the client that his/her visit to the clinic will be kept confidential. As soon as the provider meets a client, she/he should give them their full attention.

Step 2: "Bhi" Refers to "Bhinna na Thani Sodhpuchh Garne," i.e.Asking Without Discrimination

The provider must speak and listen to the client without discriminating against her or his educational level, economic or social status. The provider must help clients talk about their needs, wants and any doubts, concerns or questions they have about family planning.

On a client's first visit, the provider should ask him:

- age
- marital status
- number of pregnancies
- number of births
- number of living children, their ages and genders
- family planning use now and in the past
- basic medical information: Many people do not know the names of diseases or medical conditions. Ask clients about each part of the body, from the head to the feet. This will help them remember and tell you about conditions

If the client has received family planning counseling in the past, ask her/him about their experience. If the client is not new, ask them if anything has changed since the last visit.

Step 3: "Ba" Refers to "Baadha Hataune," i.e. To Deal with Problems and Concerns

Give the client accurate and complete information about each family planning method to counter rumors and misconceptions and so that the client may make informed decisions about whether or not to use a method and, if so, which method to use. For each method, the following information should be provided:

- How it works
- How it is used
- Advantages and disadvantages
- Possible side effects
- Where and how it is available

Step 4:"D" Refers to "Dutta Chitta Bhai Sahayog Garne," i.e. Help Whole-heartedly

The main responsibility of the counselor is to assist the client to make a decision about her/his family planning needs by providing accurate and complete information about family planning methods. After giving comparative information on the available methods, the counselor should help the client to select the appropriate method. After a method is selected, the service provider will confirm the suitability of the method by conducting the appropriate client assessment.

After the suitability of the method has been confirmed, the counselor should give more in-depth instructions about the method so that the client will use it correctly. The counselor should also make sure that the client understands the information.

Step 5: "N" Refers to "Namaskar Gardai Punnah Auna Anurodh Garne," i.e. Bid Goodbye and Request to Come Again

After having provided the information that the client needs, provide the method if it is available in that facility, or send the client to the family planning service site where the method is available. If the method is provided, give a date for a follow-up visit. Reassure the client that they may return at any time they have a question or problem, regardless of where they received the method. Ask if the client needs any additional information. If so, provide it. Then bid the client goodbye politely, inviting her/him to come again.

RUMORS AND FACTS

Correcting false rumors and misinformation is an important job of family planning providers. When talking to the client about rumors and misinformation, do not just say that what they have heard is not true. Always explain politely or show why it is not true, and **explain what is true**. Be careful not to embarrass the client because s/he has a mistaken idea or belief.

The following are some of the more common mistaken ideas:

False Rumor: No-scalpel vasectomy lessens a man's satisfaction during sexual intercourse.

Response: Explain that a man's sexual desire and physical response to sexual stimulation do not change after NSV. Indeed, sexual satisfaction is often enhanced because he and his wife will not have to worry about pregnancy.

False Rumor: After a no-scalpel vasectomy, a man becomes weak and sickly and can no longer do heavy work.

Response: Explain that NSV has no long-term effect on a man's ability to work, on his strength or energy. A man can resume his normal activities after the NSV procedure (after a short period of rest to recover from the surgery). If the man knows of someone who had health problems after a NSV, these were most probably due to the man's poor health prior to the surgery.

False Rumor: A man becomes promiscuous after having a NSV.

Response: Explain that there is no physical connection between NSV and promiscuity. A responsible man will exercise caution in his sexual activities regardless of whether he has had a NSV.

COUNSELING ON SEXUAL ACTIVITY BEFORE NSV

We know that men coming for vasectomy are sexually active and there is every possibility that they might have had sexual activity without protection before the vasectomy (NSV) causing pregnancy if their wives are in fertile period. If they become pregnant, there is possibility that such incidence gets falsely reported as NSV failure.

Generally, clients who had undergone vasectomy (NSV) receive counseling regarding what they should and should not do after the surgical procedure but not about the sexual activity just before the NSV, which potentially cause pregnancy. Therefore when client visit for NSV services it is important to assess possibility of his wife getting pregnant due to their sexual activity (e.g. having sex with wife/partner within 7 days without use of any contraception and whether it is in fertile period of menstrual cycle or not)

To help the client better understand and remember the most important facts about VS, be sure to explain them to him clearly and simply, and repeat them several times. Important facts about NSV are summarized in **Table 2–2**.

Table 2-2. Important Facts about NSV

WHO CAN HAVE A NO-SCALPEL VASECTOMY?	
No-scalpel vasectomy is appropriate for men who: • Want a convenient, reliable and permanent method of contraception • Are certain they want no more children • Has a spouse who might have a high-risk pregnancy due to their age or health problems	***No-scalpel vasectomy is not appropriate for men who***: • Are considering having more children • Are at high-risk for surgical complications
BENEFITS AND LIMITATIONS OF NO-SCALPEL VASECTOMY	
Benefits: • Reliable, permanent method of protection • Not tied to sexual intercourse • Very effective • No daily action required • Easy to use and requires no further action other than followup visit; does not interfere with normal daily activities • Comfortable—once the incision site has fully healed (about 1 week) • Few side effects	***Limitations***: • No-scalpel vasectomy is a surgical procedure and therefore may be associated with infection, bleeding or bruising. • The man cannot discontinue the method (counseling should, however, prepare him for this). • No-scalpel vasectomy does not protect the man from GTIs and other STDs (e.g., HBV, HIV/AIDS).

TIPS ON GOOD COUNSELING

- Listen attentively.
- Answer questions objectively.
- Reinforce important information on side effects, warning signs, etc.
- Let the client make his own decision.

Remember: Counseling should be part of every interaction with the client

WHAT CLIENTS ARE WORRIED ABOUT

Vasectomy clients often are worried about:

- **Whether sex will be the same as before**. They should be reassured that vasectomy will not affect their sexual performance.
- **Whether ejaculation is the same as before**. They need to be reassured that the semen after a vasectomy appears the same as before in terms of amount, smell, appearance and thickness. The only difference is that the semen does not contain sperm.
- **Whether he will be able to work as before.** They need to be reassured that vasectomy has no long-term effect on a man's ability to work or on his strength. Three days after the vasectomy, the man can return to his normal work routine.

Vasectomy is not castration! With a vasectomy, functioning of the testes (sperm and hormone production) are not affected

THREE

INFORMED CONSENT

BACKGROUND

The process that leads to informed consent is important to clients because it ensures that they receive the information they need to make informed, well-considered decisions regarding their fertility. In addition, the process lessens the possibility of regret after no-scalpel vasectomy, which is more likely to occur when clients are not fully informed or when they do not request the procedure voluntarily. Furthermore, the act of signing an informed consent document in the presence of a witness may impress upon clients that they are making an important and, in most cases, irrevocable decision.

Properly administered informed consent procedures are important to service providers for three reasons:

- They help to assure that NSV clients are satisfied and well informed a goal of all family planning programs.
- They are likely to reduce the incidence of regret, thus enhancing the program's acceptability.
- The signed consent document serves as evidence of the client's request and can provide protection against charges of performing a sterilization procedure against the client's wishes.

INFORMED CONSENT FOR NSV: WHAT IT IS?

Informed consent is a client's agreement to undergo a no-scalpel vasectomy voluntarily, in full possession and understanding of the relevant facts. Consent is voluntary when the client gives it of his own free will and not because of any special inducement (e.g., a cash payment), force, fraud, deceit, duress, bias or other form of coercion or misrepresentation.

Before a client can make an informed choice regarding NSV, a staff member must tell him, and he must understand, the following seven elements;

- Temporary methods of contraception are available to him and his partner.
- No-scalpel vasectomy under local anesthesia is a surgical procedure.
- Certain risks and benefits are associated with the procedure.
- The operation will prevent him from having any more children.
- The procedure is less than 100% effective.
- The effect of this procedure is permanent
- He can decide against the procedure without sacrificing the right to other services.

INFORMED CONSENT: WHAT IT IS NOT?

Documenting informed consent is not a guarantee of voluntarism. A client who signs an informed consent form under duress or without fully understanding the nature of the procedure and its effects has not given informed consent. The fact that the client signs the form does not necessarily mean that he requests the operation willingly or in full knowledge of the facts and options available.

Informed consent is not counseling. Counseling is the process by which the clinic staff helps to ensure that clients make free, informed and well-considered decisions about their fertility (see **Chapter 2** for more detailed information about counseling).

Through counseling, the staff:

- Provides any information the client needs to make a fully informed decision about fertility, including information about NSV, other sterilization or anesthesia techniques and other contraceptive methods.
- Determines whether the client understands the consequences of, and is comfortable with, his decision.
- Determines whether the client's choice is voluntary. Counseling is a process—an informed decision is the intended outcome of counseling. Informed consent for NSV is one of several informed decisions the client may make. The procedure does not protect client or her partner from STIs

Documenting informed consent is one component of the counseling process designed to safeguard the client's right to make a voluntary, informed choice. It also satisfies legal requirements. Documentation takes place after counseling, once the client has made a firm decision to undergo surgery. It also safeguards the service provider against possible lawsuits.

Special Considerations-Mobile and Seasonal VSC Sites

In mobile and seasonal VSC sites, clients frequently arrive at the site already having made a decision for the VSC procedure. At these sites where there are large numbers of clients and time constraints, family planning information can be given to clients together in small groups. After completion of the group session the provider/registrar meets with each client privately to verify that the client's decision is based on accurate and complete understanding of the seven points in the informed consent form. If the client has insufficient knowledge and understanding, then the counsel or/screening nurse must conduct a thorough and private counselling session.

DOCUMENTATION OF INFORMED CONSENT

In Nepal, the client's signature or mark on an informed consent form is the legal authorization for the NSV to be performed. The informed consent form should include a statement that a client is free to change his mind at any time before surgery, without any penalty or loss of services.

The client must always sign or mark the informed consent form. Since voluntarism is ultimately the responsibility of the operating surgeon (see below), the surgeon or his authorized representative may be the individual with primary responsibility for counseling the client.

Illiterate clients should mark the informed consent form with a thumbprint. A witness chosen by the client must also sign or mark the form. Because voluntary sterilization involves sensitive personal issues related to sexuality, it is preferable that the witness be the same sex as the illiterate client.

Consent for NSV should not be obtained when physical or emotional factors may compromise a client's ability to make a carefully considered decision about contraception.

All men requesting NSV must be informed about other methods available, their advantages and side effects in comparison to NSV.

Spouse Consent

There is **no requirement** for a spouse's consent, but because NSV is a permanent procedure, it is advisable to obtain written consent when necessary from both husband and wife before performing the procedure. However, a joint decision usually will mean more satisfied clients and fewer complaints to health workers following the surgery.

Documenting Denial of NSV

When a client is judged unsuitable for NSV for either medical or non-medical reasons, the client record should specify the reasons (e.g., the client has a condition that precludes surgery, client is uncertain about his choice, etc.). The action taken by the provider should be described (e.g., referral, treatment etc.). These records should be kept at the service facility where the client was judged unsuitable for NSV.

RESPONSIBILITY OF THE SURGEON

By the time the client meets the physician who will perform the surgery, he should have:

- been counseled about his contraceptive options.
- made an informed decision to undergo NSV.
- signed a consent form.

It is the responsibility of the operating physician to verify informed consent by talking with the client before the procedure. Before starting any part of the surgery, including administration of local anesthesia, the physician must assure that the client has made a free, informed and well-considered decision to minimize the possibility of regret in the future.

The physician may use a card printed with guidelines for assessing a client's decision to undergo NSV as shown in **Figure 3-1**.

Figure 3-1. Surgeon's Guidelines for Assessing Client's Decision for NSV

How to Assess a Client's Decision for No-scalpel vasectomy under Local Anesthesia: A Surgeon's Guide for Final Assessment

Has the client signed an informed-consent form?	GREEN	YES	RED	NO

STOP	CAUTION	GO
Should not have surgery now	Needs more counseling	Signs of a sound decision
RED	YELLOW	GREEN

Ask the client these questions:			
WHO made the decision for sterilization?	Someone else	Client decided, but partner objects	Client and partner (or client, if single)
WHEN did the client decide to have no more children?	Now	Recently	Some time ago
WHY did the client choose no-scalpel vasectomy under local anesthesia?	Pressure from someone else	Has heard procedure 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 with full information
WHAT does the client know about: - No-scalpel vasectomy under local anesthesia	Does not know that: - The method is permanent - The method involves surgery - He will be awake during the procedure - After surgery he will not be able to have any more children except in rare cases of failure	Has some understandings about the method	Understands that: - The method is permanent - The method involves surgery - He will be awake during the procedure - If the surgery is successful, he will not be able to have any more children
- Other contraceptive methods	Would prefer other method if available	Has little knowledge of other methods or their availability	Knows of other methods, but prefers permanent contraception

Source: Association for Voluntary Surgical Contraception 1989.

The physician should ask the client the questions listed in the left-hand column, rephrasing them as necessary to be sure the client understands.

- If any of the man's responses fall under the STOP category (which could be coded red on the card), the physician should resolve the problem or cancel surgery and offer the man an alternative contraceptive method.

- If any of the man's answers fall into the CAUTION column (which could be coded yellow), he needs further counseling. The physician or another clinic staff member should correct any misunderstandings the client has, provide him with any additional information he needs, explore his reason for choosing permanent contraception and determine if he is still interested in having the surgery. If the man needs more time to think over the decision, the surgery should be postponed.

- If all of the man's answers fall in the GO column (coded green), he probably is an appropriate candidate for permanent contraception, unless the physician finds other evidence to the contrary.

Using such a guide does **not** substitute for client counseling which should occur much earlier. Furthermore, this guide should not serve as an inflexible screening instrument. The physician must exercise good judgment when using this or any other guide for interpreting the results. For example, if a man's answers all fall into the GO category, but he is unduly nervous and his agitation does not appear to be related to the fear of surgery, the physician or other staff member should take time to determine what is causing his anxiety. If only one of the man's responses falls into the CAUTION column, the physician should take some time to counsel the man and examine his reason for requesting NSV, rather than canceling surgery solely on the basis of that response. After counseling, the physician may conclude that the man is well informed and has made a voluntary, carefully considered choice. The surgery may then proceed as planned.

SAMPLE INFORMED CONSENT FORM

I,_____(Client's name), the undersigned, request that a sterilization

Via_____(specify the procedure) 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 methods of contraception 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, discomfort and complication in addition to benefits, both of which have been explained to me.
4. If the procedure is successful, I will be unable to have any more children.
5. The procedure is less than 100% effective.
6. The effect of the procedure is permanent.
7. I can decide against the procedure at any time before the operation is performed (and no medical, health, or other benefits or services will be withheld from me as a result)*.

_____ _____

Signature or thumb print of client Date

_____ _____

Signature of attending physician / counselor Date

or delegated assistant

If the client cannot read, a witness of the client's choosing, of the same sex, and speaking the same language must sign the following declaration:

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

_____ _____

Signature or thumb print of witness/guardian Date

** The clause in parentheses must be included when tubal ligation or vasectomy services are provided concurrently with such other services such as obstetrical, antenatal or neonatal care.*

FOUR

INDICATIONS AND PRECAUTIONS

BACKGROUND

All men can have vasectomy. No medical conditions prevent a man from using vasectomy. However, few medical conditions would absolutely restrict an individual's eligibility for sterilization. Specific precautions may apply in certain circumstances. These precautions are highlighted in the relevant sections of this manual. Advice on precautions is also included in the World Health Organization's Medical Eligibility Criteria for Contraceptive Use (WHO-MEC).

A contraindication is a condition or a disease that makes a drug or treatment unsafe or inadvisable for a client. In the past, to protect clients from contraceptive complications, list of contraindication have been developed for each contraceptive method. Although such lists are produced with the best interest of the client in mind, potentially serious, but often rare, complications are overemphasized. As a consequence, clients sometime are prevented from choosing their preferred contraceptive method rather than guided in their decision making.

Another disadvantage is that while contraindications change over time, the lists tend to become permanent. (The same is true to a certain extent for lists of indications). Moreover, what may be an appropriate contraindication in one country, when applied to another setting with different reproductive health characteristics, may not be appropriate. Finally, in many countries, new information is slow in arriving and the contraindication list remains the standard for many years.

A partial solution to this problem is to require that every list of indications and contraindications be dated, and state clearly the country or setting for which the list was intended. Beyond this, one could consider alternatives to the use of the word contraindication, which carries such dire implications.

In this manual, the term contraindication has been replaced with precautions. Making this change, however, does not solve the problem entirely. Therefore, in addition to listing the indications and those conditions requiring precautions, a brief statement is included explaining the rationale for categorizing the condition as such.

WHO CLASSIFICATION

Given that NSV is a surgical procedure that is intended to be permanent, special care must be taken to assure that every client makes a voluntary, informed choice of the method. Particular attention must be given in the case of young people, men who have not yet been fathers and clients with mental health problems, including depressive conditions. All clients should be carefully counselled about the intended permanence of sterilization and the availability of alternative highly effective methods. This is of extra concern for young people.

There is no medical condition that would make a client ineligible for voluntary sterilization. There are, however, conditions or circumstances which require precaution either for the timing of the procedure or selecting the facility where the procedure should be performed. At the WHO meeting in 1995, a separate system was developed for assessing how, when and where VS procedures should be

performed. While some of the conditions (e.g. acute systematic infection) may necessitate delaying the VS procedure, others which are listed in the WHO document do not require any action.

This chapter describes a number of conditions for which there are precautions. As in the WHO guidelines, where delay is recommended, the VS procedure should not be performed until the condition is evaluated and/or corrected. In addition, those conditions that preclude performing the procedure in the ambulatory setting are listed. For these conditions, referral to an appropriate facility where full backup and/or a more experienced physician is available may be necessary.

There is no medical condition that would absolutely restrict a person's eligibility for NSV although some conditions and circumstances will require that certain precautions are taken, including those where the recommendation is assigned as Category A = accept, C = caution, D = delay, or S = special. Where the risks of sterilization outweigh the benefits, long-term, highly effective contraceptive methods are a preferable alternative. Decisions in this regard will have to be made on an individual basis, considering the risks and benefits of NSV versus the risks of pregnancy, and the availability and acceptability of highly effective, alternative methods. NSV procedures should only be performed by well-trained providers in appropriate clinical settings using proper equipment and supplies.

The WHO document, Medical Eligibility Criteria (MEC) for Contraceptive Use, 5th Edition 2015, contains the WHO's evidence-based guidelines for the safe and effective use of family planning methods.

This guideline, which are updated regularly, reflect the consensus of experts from the world's leading health organizations and are based on the latest clinical and epidemiological data.

MEC for Contraceptive Use guidelines are intended for use by policy-makers, program managers and the scientific community in the preparation of national family planning/sexual and reproductive health program for delivery of contraceptives. They are not intended as a national guideline for family planning, but rather as a reference. The 2015 edition of MEC for Contraceptive Use is now available online at (http://www.who.int/reproductivehealth/publications/family_planning/MEC-5/en/).

MEC for Contraceptive Use includes a comprehensive list of client characteristics and medical conditions and explains how these conditions and characteristics affect medical eligibility for starting or continuing each family planning method.

The Purpose of the WHO MEC:

- Provide guidance on whether a person with a specific health condition can safely start to use a specific contraceptive method or, if she or he develops a health condition, can continue to use the method safely
- Ensure that family planning service provision is based on the best available scientific evidence
- Address and correct misconceptions about who can and cannot safely use contraception
- Reduce medical, policy, and practice barriers to family planning services (i.e., those unjustified by the evidence)
- Improve quality, access, and use of family planning services.

WHO MEC Categories

For most of the contraceptive methods addressed, the WHO Expert Working Group by consensus classified conditions on a scale of 1 to 4. These categories explain whether, in the presence of a given individual characteristic or medical condition, a particular contraceptive method may safely be used. These categories are as follows:

Category 1 Condition for which there is no restriction for use of the contraceptive method

Category 2 Condition where the advantages of using the method generally outweigh the theoretical or proven risks

Category 3 Condition where the theoretical or proven risks usually outweigh the advantages of using the method

Category 4 Condition that present an unacceptable health risk if the contraceptive method is used.

{Annex F: WHO MEC Categories for Male Sterilization}

The four numbered MEC categories above apply to all contraceptive methods except female and male sterilization. For these methods, the WHO Expert Working Group developed a separate ranking system. Recommendations for surgical sterilization are defined according to the categories in the table below.

Category	Definition
Accept (A)	There is no medical reason to deny the method to a person with this condition or in this circumstance.
Caution (B)	Provide the method in a routine setting but with extra preparations and precautions.
Delay (D)	Delay use of the method until the condition is evaluated and/or corrected. Provide alternative, temporary methods of contraception.
Special (S)	The procedure should be performed in a setting with an experienced surgeon and staff, equipment to provide general anaesthesia, and other backup medical support. This condition also requires the capacity to decide on the most appropriate procedure and anaesthesia support. Provide alternative, temporary methods of contraception if referral is required or if there is otherwise any delay.

(adapted from WHO/RHR 2015)

In the case of vasectomy, no medical conditions prevent a man from using this method, although some conditions require caution, delay, or making special arrangements.

INDICATIONS FOR NSV: Men Who Can Have a Vasectomy

Vasectomy is safe for all men. With counselling and informed consent, any man can have a vasectomy safely, including men who:

- Have no children or few children
- Are not married
- Do not have their wife's permission
- Are young
- Have sickle cell disease
- Are at high risk of infection of HIV or another STI
- Are infected with HIV, whether or not on antiretroviral therapy.

In some of these situations, especially careful counselling is important to make sure the man will not regret his decision.

Vasectomy for Men Living with HIV:

- Men who are infected with HIV, have AIDS or are on antiretroviral (ARV) therapy can safely have a vasectomy. Special arrangements are needed to perform vasectomy on a man with AIDS.
- Urge these men to use condoms in addition to vasectomy. Used consistently and correctly, condoms help prevent transmission of HIV and other STIs.
- No one should be coerced or pressured into getting a vasectomy, and that includes men with HIV.

Vasectomy is an appropriate method for a man who has fulfilled following conditions:

Condition	Rationale
Couples who are certain they have achieved their desired family size.	Vasectomy should be considered permanent. Even where microsurgical facilities for a reversal procedure are available, the client may not be able to afford it, may not be the proper surgical candidate or a reversal attempt may not be successful. Therefore, couples who are considering NSV should be certain they do not wish to have any more children.
Whose partners have age, parity or health problems that might pose a serious health risk if they become pregnant.	Vasectomy is highly effective. Failure rate ranges from 0.1% to 0.4% but rates as high as 3% to 5% have been reported. (Please also go through Chapter one page on effectiveness)
Who understands and voluntarily gives informed consent for the procedure	A client who understands and voluntarily gives informed consent for the procedure is less likely to regret the decision and will be more satisfied after the procedure.
Who prefers a method which does not require taking contraceptive action daily or before sexual intercourse	After the procedure, only a followup visit is required. Contraceptive effect is not immediate, it is assured after three months after the vasectomy

PRECAUTIONS FOR USE

The rationales for the precautions listed in this section are based on the most recent epidemiologic and clinical data regarding medical criteria for vasectomy. For men with any of the following conditions, health care workers need to assess the appropriateness of vasectomy for each client, not only in terms of his special needs but also in relation to the health care climate in which he lives.

Condition	Precaution	Rationale
Local skin or scrotal infection	Delay procedure until infection is resolved.	These conditions may increase risk for complications such as post- operative infection.
Acute genital tract infection (e.g. gonorrhea or syphilis)	Delay procedure until infection is resolved.	These conditions may increase risk for complications such as post- operative infection.
Acute systemic infection (e.g.flu) or gastroenteritis	Delay procedure until infection is resolved.	Increased risk of postoperative complications, especially infection.
Symptomatic heart disease or clotting disorders, diabetes	The procedure may need to be done in a high-level facility, and not in an ambulatory facility. Significant medical problems (e.g. diabetes) should be controlled before surgery.	Client with significant medical problems may need special surgical management and followup (e.g. general anesthesia). Medical problems can make the operation more difficult to perform and increase the risk of infection.

Other problems: • Large varicocele • Inguinal hernia • Filariasis • Previous scrotal surgery • Intrascrotal mass (until cause is determined) • Cryptorchidism -undescended testis (if bilateral and proven fertility) • Scar tissue • AIDS-related disease	With any of these conditions, the procedure must be performed by a provider with extensive experience and skill in performing vasectomy	These conditions can make the operation more difficult to perform and increase the risk of complications and infection.

PROBLEMS REQUIRING ACTION

Men with the following conditions may require additional counseling or special surgical and follow up management:

Problem	Action	Rationale
Desire for more children	Further assess concerns and, if appropriate, help client choose another method.	Vasectomy is permanent. Help couples considering more children choose another method.
Excessive interest in reversal	Further assess concerns and, if appropriate, help client choose another method.	Vasectomy is permanent. Help couples considering more children choose another method.
Disagrees with or does not want to sign informed consent form	Determine if concerns represent misunderstanding about method (e.g. rumor, myth). If so, provide additional counseling. If the client still does not wish to sign help him choose another method.	Clients often have misconceptions about a procedure, even after counseling. Informed consent must be obtained before performing surgical procedures, especially voluntary sterilization
Pressure from someone else	Further assess concerns and, if appropriate, help client choose another method	After voluntary sterilization regret is higher when the decision was made as a result of undue pressure.
Depression	Further assess concerns and, if appropriate, help client choose another method.	Vasectomy is permanent. Help couples considering more children choose another method.
Marital problems	Further assess concerns and, if appropriate, help client choose another method	Because vasectomy is permanent, the decision to have the procedure is best made with both partners in accord.
Client is single or has no children	Further assess concerns and, if appropriate, help client choose another method	Vasectomy is permanent. Help couples considering more children choose another method.

FIVE

CLIENT ASSESSMENT

BACKGROUND

No-scalpel vasectomy (NSV) under local anesthesia is intended for use on healthy men in health facilities with limited resources and equipment. This surgical approach has proven to be an extremely safe, low-risk procedure.

Selecting clients who are acceptable (low-risk) for having NSV performed in an ambulatory (outpatient) setting is a key factor in minimizing the risk of complications—both technical and infectious. Guidelines for selecting acceptable (low-risk) clients are presented in **Table 5-1**.

Once the client makes an informed and voluntary choice for NSV, the provider conducts a physical exam. NSV requires an examination of the groin, penis, testes, and scrotum to rule out any temporary conditions such as a local infection or other contraindications that might require a specialist to perform the procedure or require a delay in performing the procedure.

Table 5-1. Sample Guidelines for Screening Clients for No-Scalpel Vasectomy in Ambulatory Health Care Facilities

CATEGORY	SELECTION CRITERIA	
	Acceptable	Not Acceptable
General health (assessed by history and limited physical examination)	Negative history and no current symptomatic heart, lung or kidney disease	Uncontrolled diabetes or history of bleeding disorder; current symptomatic heart, lung or kidney disease
Emotional state	Calm, stable	Unresolved fear and anxiety
Blood pressure	≤ 160/100 mm/Hg	≥ 160/100 mm/Hg
Previous genital surgery or injury	Negative history, minor genital surgical procedure	History of extensive genital surgical operation
Genital disorders[1] Congenital anomalies[1]	None	Inguinal hernia, hydrocele varicocele, non retractable cryptoarchidism

[1] *Performance of the NSV procedure depends on skill and experience of the surgeon and the facilities available to manage difficult cases*

Only those clients who meet the **acceptable** criteria should have their surgery in outpatient or mobile outreach facilities.

If the client does have any of the above conditions follow the instructions provided, which recommend (1) caution, (2) delay, or (3) special arrangements. Attempting to perform NSV in men who do not meet these criteria invariably requires:

- incisions,
- longer operating time,
- increased risk of complications and
- prolonged recovery.

Table 5-2 Example of clients' health status and possible category of actions

Action	Conditions
If he has any of these, use Caution (C)	• Previous scrotal injury • Swollen scrotum due to swollen veins or membranes in the spermatic cord or testes (large varicocele or hydrocele) • Undescended testicle—one side only. (Vasectomy is performed only on the normal side. Then, if any sperm are present in a semen sample after 3 months, the other side must be done, too.) • Diabetes • Depression • Young age
If he has any of these, delay vasectomy (D)	• Active sexually transmitted infection • Swollen, tender (inflamed) tip of the penis, sperm ducts (epididymis), or testicles • Scrotal skin infection or a mass in the scrotum • Lupus with positive (or unknown) anti-phospholipid antibodies or on immunosuppressive treatment • Scrotal skin infection; active STI; swollen, tender tip of penis, sperm ducts, or testicles • Currently ill with AIDS-related illness • Systemic infection or gastroenteritis • Filariasis or elephantiasis
If he has any of these, make special arrangements (S)	• Inguinal hernia in the groin. (If able, the provider can perform the vasectomy at the same time as repairing the hernia. If this is not possible, the hernia should be repaired first.) • Undescended testicles—both sides • AIDS (see Vasectomy for Men Living With HIV) • Blood fails to clot (coagulation disorders) • Lupus with severe thrombocytopenia

Men who have conditions that make these operations difficult or increase the risks should have their surgery in a well-equipped facility, where the availability of high level anesthesia and other special requirements are available.

MEDICAL ASSESSMENT

Medical assessment of potential NSV clients should include demographic information, a brief medical history, limited physical examination and a complete abdominal and scrotal examination. When evaluating men in a rural or mobile outreach service, the preoperative assessment must be rigorous. At these sites, it is essential to identify clients who have conditions that may increase the risks associated with surgery, as described above.

A physician must conduct or supervise all preoperative medical evaluation. A trained non physician may carry out preliminary screening (in particular, the medical history) using a checklist. The nonphysician must be able to detect any abnormalities or conditions requiring precautions and report them to a physician for evaluation and assessment. The final decision to offer NSV to the client is the responsibility of the operating physician.

Demographic Information

This basic identifying information should include the client's name, address, age, marital status and wife/spouse's name, and occupation including caste/ethnicity, religion, educational status, number of living children, and age of youngest child for reporting and recording purpose.

Medical History

Specific information which should be obtained as part of the medical history includes:

- Temporary or conditions with precautions
- Large hydrocele
- Elephantiasis
- Current/last contraceptive method used
- Past severe illnesses and other medical conditions, including symptomatic or chronic respiratory problems, heart or kidney disease, diabetes, anemia, bleeding disorders (hemophilia), active tuberculosis, sexually transmitted infections (especially genital tract infection-GTIs), psychiatric conditions
- Allergies (especially to local anesthetics and pain medications)
- Current medications (e.g., those taken chronically for blood pressure control or diabetes, etc.)
- High blood pressure
- Convulsions
- Genital discharge
- Urinary tract infections

Physical Examination

Simple general examination and local genital examination of penis, testicles, and scrotum is all that is required. Further examinations as indicated by the client's medical history.

General examination: If **severe** anemia (Hgb <7 g/dl or Hct <20) is suspected and hemoglobin (Hb) or hematocrit (Hct) are not available, check for:

- pallor or skin or eyes (conjunctiva)
- rapid pulse (>100)
- heart murmurs (auscultation)
- Pulse and blood pressure
- General health condition

- Auscultation of heart and lungs
- Other examinations as indicated by medical history

Genital examination (make sure the client has voided before performing the exam)

The genital exam is to discover abnormalities, including STIs that would be a reason to delay or needs special arrangement.

- Scrotum: Inspect the scrotum for abnormal thickness of the skin, lesions, rash or scars of previous surgery or injury.
- Testis: Examine testis for tenderness or any palpable mass.
- Penis: Check the penis for ulcers, discharge or lesions.
- Spermatic cord: Check the spermatic cord for tenderness, unusual thickening or palpable mass.
- Inguinal region: The inguinal region should be examined for buboes, lesions, palpable mass or scars of previous surgery.

Laboratory Investigations

Extensive, routine laboratory investigations are unnecessary as long as the staff performs a careful clinical assessment of the client. For procedures using local anesthesia, it is not necessary to conduct laboratory tests to screen for anemia, diabetes and renal disease unless the medical history or physical examination indicates otherwise. If indicated by history and physical findings, and if microscope is available, obtain necessary specimens of genital secretions for diagnostic studies. Other appropriate investigations may be conducted as necessary.

There are no absolute contraindications for performing vasectomy. There are certain conditions that require caution, delay or referral to a specially equipped center.

SCREENING FOR CONDITIONS THAT MIGHT INCREASE RISK

If the medical examination reveals conditions that are likely to increase the risks associated with surgery, the doctor may need to consider a more advanced facility or consult with another practitioner before deciding to operate. If the clinic staff judges the client unsuitable for surgery for medical reasons, he should be referred for a complete evaluation of the condition identified in the examination. He should also be offered alternative contraceptive methods. If staff judges a client unsuitable for vasectomy service available at that clinic, he should be referred to a facility capable of providing appropriate services.

Medically high-risk clients, after being informed of the risks and benefits of the procedure, should receive services from providers with the highest level of medical expertise and at the most fully equipped medical facility available.

Table 5-3 Conditions that indicate the need to take precautions before or during NSV procedure

(source: NSV curriculum, Participant Handbook, 2007, 2nd edition, Engender health)

Conditions	Reason/s	Recommendations
Young age	His decision may not be sound.	Assess the client's decision to have a NSV. Ensure that he understands vasectomy should be considered permanent. Inform the client about the availability and effectiveness of long-term contraceptives.
Local infection: • Scrotal skin infection • Active STI • Balanitis • Epididymitis or orchitis	Preexisting local infection increases the risk of postoperative infection. Also, surgery at or near the site of an infected lesion can lead to 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 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 gastroenteritis	Preexisting systemic infection also 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 spermatic cord structures may make it difficult to separate structures. NSV may be difficult to perform if the skin is thickened from previous surgery.	Assess the extent of adhesions; if the adhesions will not interfere with vasectomy, perform the procedure. Take extra care when infiltrating the local anesthetic, and pay careful attention to hemostasis.
Intrascrotal mass	Such a 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 the findings do not interfere with vasectomy, perform the procedure. If you are unable to perform the vasectomy, counsel the man about interim contraceptive methods.
Inability to locate, isolate, or move the vas	Difficulties in locating, isolating, or moving 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.
Filariasis; elephantiasis	These diseases may leave the vas difficult or impossible to locate.	Counsel the client about interim methods of contraception until treatment is possible. Even after treatment, extensive surgery (incision) may be required to locate the vas, and a vasectomy may not be possible to do under local anesthesia.

Conditions	Reason/s	Recommendations
Large varicocele	The vas may be difficult or impossible to locate. Repairing the varicocele and performing vasectomy in a single procedure may decrease the risk of complications.	Delay the vasectomy, refer the client to a facility with the appropriate staff, and counsel the client about interim methods of contraception. If small, a varicocele can usually be isolated from the vas and does not interfere with NSV.
Large hydrocele	A large hydrocele may leave the vas difficult or impossible to locate. Repairing the hydrocele and performing vasectomy in a single procedure may decrease the risk of complications.	If the physician is experienced in concurrent procedures, repair the hydrocele and perform the vasectomy through the hydrocele repair incision. As a temporary measure aspiration of the hydrocele to allow easy isolation of vas and can perform NSV. If not, delay the vasectomy, refer the client to a facility with the appropriate staff, and counsel the client about interim methods of contraception. If small, a hydrocele usually does not interfere with NSV.
Cryptorchidism	When cryptorchidism persists into adulthood, infertility is very likely if the disease is bilateral. Unless fertility has been demonstrated (by pregnancy in the partner or by semen analysis), there is no need to perform a vasectomy. 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 the semen analysis 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 (eg hemophilia)	Bleeding disorders lead to an increased risk of postoperative hematoma formation, which in turn leads to increased risk of infection. A severe bleeding disorder could lead to 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 unresolvable bleeding disorder, counsel the client about alternative contraceptive methods.
Diabetics	Diabetics have an increased likelihood of postoperative wound infection. If signs of infection appear, treat the client aggressively with antibiotics.	Correct hyperglycemia before vasectomy and perform vasectomy only with local anesthesia. Follow the client closely postoperatively for signs of infection.
Depressive disorder	Decision making may not be sound.	Assess client for mental status and for his decision to have vasectomy. If necessary, delay the vasectomy and counsel the client about interim methods of contraception.

FINAL MEDICAL ASSESSMENT

After reviewing the client's history, the physical findings and the client's suitability for NSV, the doctor who will perform the operation should conduct a final medical assessment immediately before surgery.

The genital examination done for a preoperative assessment does not preclude the need for the doctor to conduct a genital examination the day of surgery to ensure the absence of other genital disorders, including infection.

This final evaluation should take place at the facility where the procedure is to be performed. (Staff may conduct preliminary screening in other places, such as the client's home or a local health center.)

SIX

INFECTION PREVENTION[1] and HEALTH CARE WASTE MANAGEMENT

BACKGROUND

Thousands of no-scalpel vasectomies under local anesthesia procedures are performed safely throughout the world each year without serious complications due to infection. Occasionally, however, life-threatening infections, including tetanus, gangrene are associated with this surgical procedure. Other more common, but less serious, infectious complications include minor surgical wound infections. In order to prevent problems caused by infection, aseptic technique, including good surgical technique, must be followed during each procedure.

Another concern is the increasing danger of transmission of hepatitis B or HIV to clients, health care providers or clinic staff.[2] Using disposable items to reduce this risk often is unnecessary. Most of these disposables are expensive, difficult to dispose of safely and create environmental pollution problems. Furthermore, adequate supplies of disposable items, such as surgical gloves, often are not available in many countries.

To reduce the risk of infection as well as allow safe reuse of instruments and other items, contaminated waste must be properly disposed of and instruments and other items should be decontaminated, cleaned and sterilized or high-level disinfected after completing each procedure. Because tetanus and gangrene are caused by spore-forming bacteria, equipment should be **sterilized** whenever possible. Sterilization is the only method that reliably destroys bacterial endospores. When sterilization facilities are not available, **high-level disinfection (HLD)** is the only acceptable alternative. The emphasis on this chapter is on the use of infection prevention and health care waste management practices that are practical and feasible in any country and setting.

Remember: Regardless of whether sterilization or high-level disinfection is used, **thorough cleaning to remove soil and organic material is the most effective way to reduce the risk of tetanus and gangrene**

DEFINITIONS

Microorganisms are the causative agents of infection. They include bacteria, viruses, fungi and parasites. For infection prevention purposes, bacteria can be further divided into three categories: vegetative (staphylococcus), mycobacterium (tuberculosis) and endospores (tetanus), which are the most difficult to kill.

Infection prevention often relies on placing barriers between the host and microorganisms. **Protective**

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

2 *Throughout this manual, when hepatitis B virus (HBV) is mentioned, hepatitis C virus (HCV) and Delta hepatitis virus (HDV) also are referred to because their occurrence is worldwide and their modes of transmission/ prevention are similar.*

barriers are physical, mechanical or chemical processes which help prevent the spread of infectious microorganisms from client to client, clinic staff to client and client to staff.

The terms **asepsis**, **antisepsis**, **decontamination**, **cleaning**, **disinfection** and **sterilization** often are confusing. For the purposes of these guidelines, the following definitions will be used:

- **Asepsis** and **aseptic technique** are general terms used to describe the combination of efforts made to prevent entry of microorganisms into any area of the body where they are likely to cause infection. The goal of asepsis is to **reduce to a safe level, or eliminate**, the number of microorganisms on both animate (living) surfaces (skin and tissue) and inanimate objects (surgical instruments and other items).

- **Antisepsis** is the process that prevents infection by killing or inhibiting the growth of microorganisms on skin and mucous membrane by using a chemical agent (antiseptic).

- **Decontamination** is the process that makes inanimate objects **safer to be** handled by staff before cleaning (i.e., inactivates HBV, HCV and HIV and reduces but does not eliminate, the number of other contaminating microorganisms).

- **Cleaning** is the process that physically removes all visible dust, soil, blood or other body fluids from inanimate objects as well as removing sufficient numbers of microorganisms to reduce risks for those who touch the skin or handle the object. It consists of thoroughly washing with soap or detergent and water, rinsing with clean water and drying.

- **High-level disinfection (HLD)** is the process that eliminates all microorganisms except bacterial endospores from inanimate objects by boiling, steaming or the use of chemical disinfectants.

- **Sterilization** is the process that eliminates all microorganisms (bacteria, viruses, fungi and parasites) **including** bacterial endospores from inanimate objects by high pressure steam (autoclave), dry heat (oven), chemical sterilization or radiation.

WHICH PROCESS TO USE

As summarized in **Figure 6-1, decontamination** is the first step in processing **soiled** (contaminated) surgical instruments, and other items. For example, soaking contaminated items briefly in 0.5% chlorine solution rapidly kills HBV and HIV, thereby making instruments and other items safer to be handled during cleaning (American Association of Operating Room Nurses 1990). Larger surfaces such as examination and operating tables, laboratory bench tops and other equipment which may have come in contact with blood or other body fluids also should be decontaminated. Wiping them down with a suitable disinfectant (e.g., 0.5% chlorine) is a practical, inexpensive way to decontaminate these items.

After instruments and other items have been decontaminated, they need to be cleaned and then final processed by either sterilization or HLD (Tietjen and McIntosh 1989).

As outlined in **Table 6-1**, which method is used for final processing (i.e., sterilization or HLD) depends on whether the instruments will touch only intact (unbroken) skin, intact mucous membranes or broken skin, or tissue beneath the skin which normally is sterile (Spaulding et al 1968).

Table 6-1. Final Processing (High-Level Disinfection and Sterilization) for Surgical Instruments, Gloves and Other Items

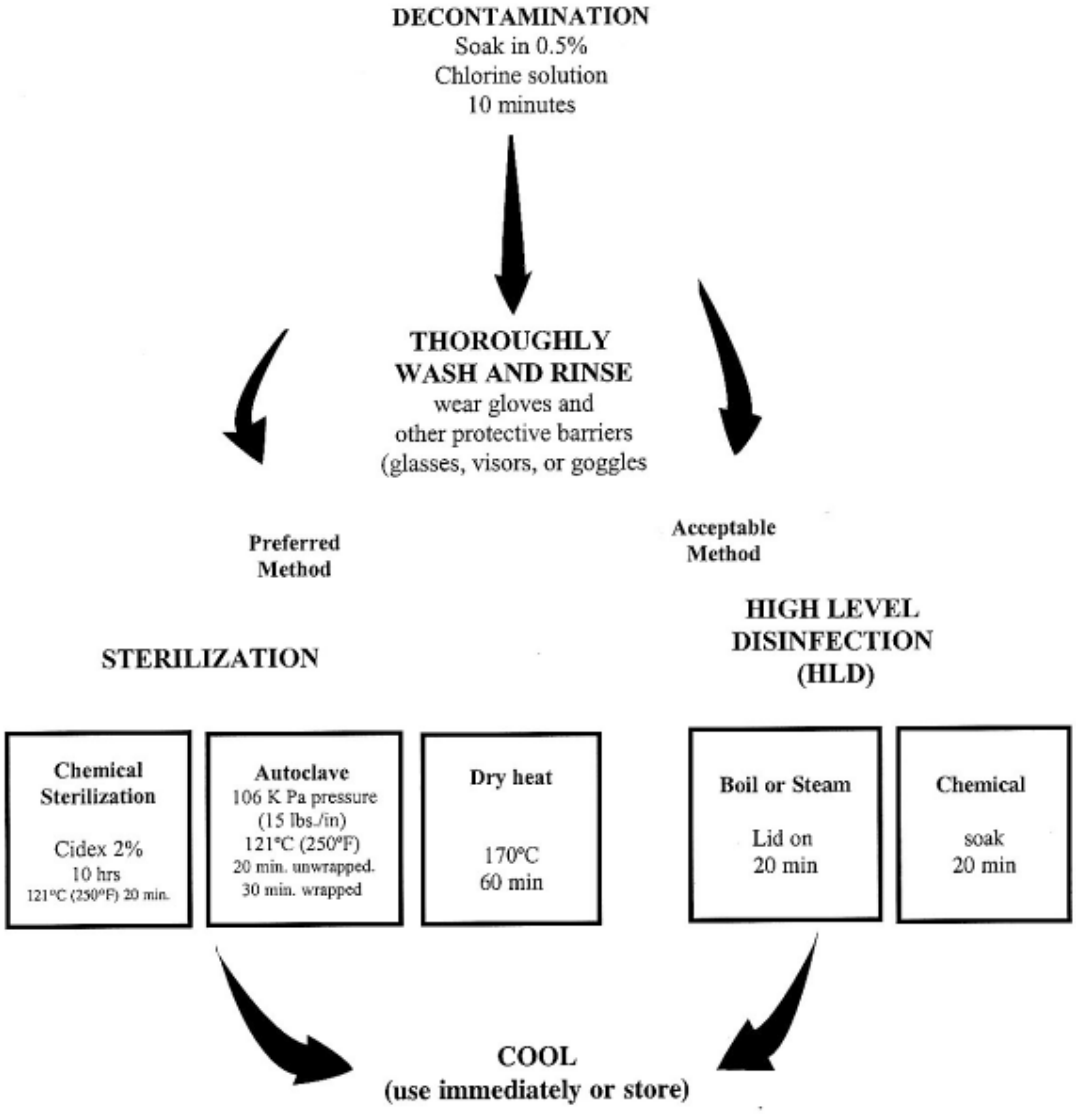
Tissue	Final Processing	Examples
Intact mucous membranes or broken skin	**High-level disinfection (HLD)** destroys all microorganisms except some endospores[a]. HLD should be preceded by decontamination & cleaning.	Ringed clamp, dissecting forceps
Tissue beneath the skin which normally is sterile	**Sterilization** destroys all microorganisms, including endospores. Sterilization should be preceded by decontamination and cleaning.[b]	Surgical instruments such as artery forceps, ringed forceps, dissecting forceps, gloves

[a] Bacterial endospores are forms of bacteria which are very difficult to kill because of their coating; types of bacteria which can produce endospores include the bacteria causing tetanus (Clostridia tetani) and gangrene (Clostridia Perfinges.). Bacterial endospores can be killed reliably **only** by sterilization.

[b] If sterilization is not available, HLD is the **only acceptable** alternative (see **Figure 6-1**).

Adapted from: Spaulding et al 1968.

Figure 6-1. Processing Surgical Instruments, and Other Items



When is Sterilization Absolutely Essential? When is HLD an Acceptable Alternative?

Most authorities recommend that sterilization be the final step in processing instruments and other items used for surgical contraceptive procedures, such as voluntary sterilization. While sterilization, when correctly performed, clearly is the safest and most effective method for processing instruments, if it is neither available nor suitable (e.g., for laparoscopes), then HLD is the **only acceptable** alternative (see **Table 6-1**).

Remember: For either sterilization or HLD to be effective, decontamination and cleaning of instruments and other items must be done first

PROTECTIVE BARRIERS

Placing a physical, mechanical or chemical "**barrier**" between microorganisms and an individual, whether a client or health worker, is an effective means of preventing the spread of disease (i.e., the barrier serves to break the disease transmission cycle). The following actions create protective barriers for infection prevention:

- *hand hygiene*; before and after procedure, contact with patient
- wearing gloves (both hands), while contacting with *blood*, *body fluids*, *secretions*,*contaminated items*, *mucous membrane*, and *non-intact skin*;
- using antiseptic solutions for *preparing the skin*, *scrotum* and *penis prior to surgery*;
- using drapes during ***surgical procedures***;
- wearing appropriate attire (e.g., goggles, mask or apron) when contact with *blood or body fluids* is possible (e.g., cleaning instruments and other items);
- *decontaminating*, cleaning and either sterilizing or high-level disinfecting surgical instruments, gloves and other items ***after use***; and
- Waste management ***with gloved hand***.

HAND HYGIENE

The purpose of hand hygiene is to mechanically remove soil and debris from the skin and reduce the number of transient microorganisms. Hand hygiene with plain soap and clean water is as effective as washing with antimicrobial soaps (Pereira, Lee and Wade 1997). In addition, plain soap water causes less skin irritation (Pereira, Lee and Wade 1997)

Hand Hygiene is one of the single most important procedure in preventing infection. The vigorous rubbing together of all surfaces of lathered hands mechanically removes and often inactivates most organisms. To encourage hand hygiene, program managers should make every effort to provide soap and a continuous supply of fresh water, either from a tap or bucket.

For most activities, a brief hand washing with plain soap (an antiseptic is not necessary) for about 15 to 30 seconds followed by rinsing in a stream of water is sufficient.

Hand hygiene is indicated **before**:

- examining (direct contact with) a client, and
- putting on **sterile** surgical gloves.

Hand Hygiene is indicated **after**:

Any situation in which hands may be contaminated, such as:

- handling soiled instruments and other items, or
- touching mucous membranes, blood or other body fluids (secretions or excretions), and removing gloves.

Remember: Wash hands after removing gloves because they may have invisible holes or tears (Bagg, Jenkins and Barker 1990; Martin et al 1988).

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

- If bar soap is used, provide small bars and soap racks, which drain.
- Avoid dipping hands repeatedly into basins containing standing water. Even with the addition of an antiseptic agent, such as Dettol® or Savlon®, microorganisms can survive and multiply in these solutions.
- Choose from several options when running water is not available:
    - Use a bucket with a tap, which can be turned off to lather hands and turned on again for rinsing, or a bucket and pitcher.
    - Use an alcoholic hand rub which does not require water

Note: A non irritating alcohol solution can be made by adding either glycerin, propylene glycol or Sorbitol® to the alcohol (2 ml in 100 ml 60-90% alcohol solution) (Garner and Favero 1986). Use 3 to 5 ml for each application and rub the solution over the hands for about 2 minutes, using a total of 6 to 10 ml per scrub (Larson et al 1990; Rotter, Koller and Wewalka 1980).

- Dry hands with a clean towel or air dry; shared towels quickly become contaminated. (Carrying one's own small towel or handkerchief is a good way to avoid using dirty towels.)
- Collect used water in a basin and discard in a latrine if a drain is not available.

Surgical Hand scrub

The purpose of the surgical hand scrub is to mechanically soil, debris and transient organisms and to reduce resident flora for the duration of surgery. The goal is to prevent wound contamination by microorganisms from the hands and arms of the surgeon and assistants.

The surgical team (physician and OR nurse/technician) should perform a **3 to 5 minute surgical hand scrub** prior to performing NSV/LA using **Betadine**® or soap (see **Appendix I**). Alternatively, when only soap and water are used for the surgical hand scrub, rub with a 60 to 90 percent alcohol solution is recommended. Additional information on how to prepare and use antiseptics is presented in **Appendix xx.**

The surgical hand scrub is performed before gowning (if used) and putting on sterile. Ideally, the surgeon and assistant should scrub thoroughly between each procedure. In high-volume settings, this may not be feasible because the skin cannot tolerate the irritation caused by frequent scrubbings. **In such settings, surgical staff should do a 3-minute scrub every hour or after every four or five cases (whichever comes first), to minimize colonization of the skin by microorganisms.** They also should scrub if they leave the operating room for any reason and after every case where glove(s) are torn.

1

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the dispenser

2

Dip the fingertips of your right hand in the handrub to decontaminate under the nails (5 seconds)

3

Images 3–7: Smear the handrub on the right forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)

4

See legend for Image 3

5

See legend for Image 3

6

See legend for Image 3

7

See legend for Image 3

8

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your right hand, using the elbow of your other arm to operate the dispenser

9

Dip the fingertips of your left hand in the handrub to decontaminate under the nails (5 seconds)

10

Smear the handrub on the left forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)

11

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the distributor. Rub both hands at the same time up to the wrists, and ensure that all the steps represented in Images 12-17 are followed (20-30 seconds)

12

Cover the whole surface of the hands up to the wrist with alcohol-based handrub, rubbing palm against palm with a rotating movement

13

Rub the back of the left hand, including the wrist, moving the right palm back and forth, and vice-versa

14

Rub palm against palm back and forth with fingers interlinked

15

Rub the back of the fingers by holding them in the palm of the other hand with a sideways back and forth movement

16

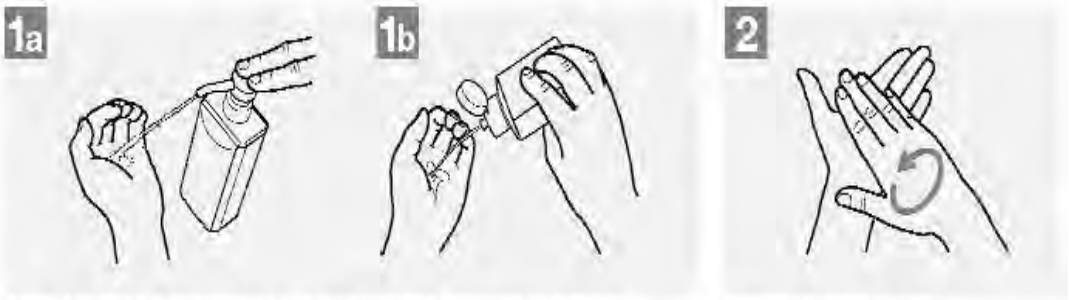
Rub the thumb of the left hand by rotating it in the clasped palm of the right hand and vice versa

17

When the hands are dry, sterile surgical clothing and gloves can be donned

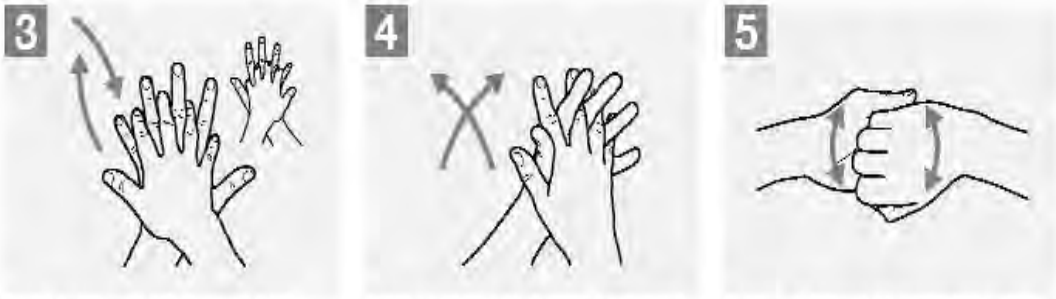
Alcohol Hand Scrub

- Use an alcoholic hand scrub which does not require water



Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;

Rotational rubbing of left thumb clasped in right palm and vice versa;

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

Once dry, your hands are safe.

When to Wear Gloves

Gloves should be worn by all staff prior to contact with blood and body fluids from any client. **A separate pair of gloves must be used for each client to avoid cross contamination**. Using **disposable gloves** is preferable

Which Gloves to Use

- **Clinicians: Sterile** surgical gloves are preferred for performing the NSV.
- **Clinic Staff: Clean utility gloves** should be worn when processing instruments, equipment and linens; for handling contaminated wastes and when cleaning contaminated surfaces.

Do not use gloves which are cracked, peeling or have detectable holes or tears.

ANTISEPSIS

Infection following surgical procedures, such as NSV, may be caused by microorganisms from the skin of the client or from the hands of the health care worker (Larson et al 1990). Hand Hygiene before and after each case and cleaning the client's skin, scrotum and penis with antiseptic solution help prevent infection at the operative site.

Selection of Antiseptics

Antiseptics do not have the same killing power as the chemicals used for HLD. Thus, antiseptic solutions **never** should be used to high-level disinfect objects such as instruments or surgical gloves.

Many chemicals qualify as safe antiseptics. The following antiseptics are commonly available in different parts of the world:

- Alcohols (60–90% ethyl, isopropyl or "Rectified spirit")
- Iodophors, various concentrations (e.g., Betadine®)
- Chlorhexidine gluconate (4%) (e.g.; Hibiclens®, Hibiscrub®, Hibitane®)
- Chlorhexidine gluconate and cetrimide, various concentration (e.g. Savlon)
- Iodine (1-3%); aqueous iodine and alcohol containing products (tincture of iodine)
- Parachlorometaxylenol (PCMX or chloroxylenol), various concentrations (e.g. Detol)

- In working to create an infection-free environment, it is important that the rationale for each of the recommended infection prevention processes (and their limitations) be clearly understood by clinic staff at all levels—from service providers to cleaning and maintenance staff.

Table 6-2. Antiseptics: Microbiologic Activities and Potential Uses

GROUP	ACTIVITY AGAINST BACTERIA							POTENTIAL USES			
	Gram-Positive	Most Gram-Negative	TB	Viruses	Fungi	Endo-spores	Relative Speed of Action	Affected by Organic Action	Surgical Scrub	Skin Scrub	Comments
Alcohols (60-90% ethyl or isopropyl)	Excellent	Excellent	Excellent	Excellent	Excellent	None	Fast	Moderate	Yes	Yes	Not for use on mucous membranes Not good for physical cleaning of skin, no persistent activity
Chlorhexidine (2-4%) (Hibitane, Hibiscrub)	Excellent	Good	Fair	Excellent	Fair	None	Intermediate	Slight	Yes	Yes	Has good persistent effect Toxicity to ears and eyes
Iodine preparations (3%)	Excellent	Excellent	Excellent	Excellent	Good	Fair	Intermediate	Marked	No	Yes	Not for use on mucous membranes can burn the skin
Lodophors (7.5-10%) (Betadine)	Excellent	Excellent	Fair	Good	Good	None	Intermediate	Moderate	Yes	Yes	Can be used on mucous membranes
Para-chloro-metaxylenol (PCMX) (0.5-4%)	Good	Excellent	Fair	Good	Fair	Unknown	Slow	Minimal	No	Yes	Penetrates the skin and should not be used on newborns
Triclosan (0.2-2%)	Excellent	Good	Fair	Excellent	None	Unknown	Intermediate	Minimal	Yes	No	Acceptability on hands varies

Adapted from: Boyce and Pittet 2002; Olmsted 1996.

PROCESSING INSTRUMENTS AND OTHER ITEMS

For NSV, the infection prevention processes which should be used to reduce disease transmission from contaminated instruments and other items are:

- Decontamination,
- cleaning and rinsing, and
- Sterilization, or
- High-level disinfection (HLD).

The sequence and details for performing each of these processes are summarized in **Table 6-3** and **Table 6-4**.

After completing surgery, and while still wearing gloves, dispose of contaminated objects (gauze, cotton and other waste items) in a leak proof container or plastic bag. **Following this**, surgical instruments, needles and syringes, and gloves which were in contact with blood or body fluids should be **decontaminated** by soaking for 10 minutes in a disinfectant (0.5% chlorine solution). The surface of procedure tables, instrument stands and lamps should be decontaminated before reuse by wiping with a cloth soaked in a disinfectant cleaning solution.

Next, instruments and reusable items should be thoroughly **cleaned** with liquid soap or detergent and water and completely rinsed before further treatment. **Finally**, instruments and surgical drapes should be **sterilized**. If sterilization is not possible, **HLD** is the only acceptable alternative or details on processing surgical instruments and other items).

For more details refer Infection Prevention and Health Care Waste Management Reference Manual (2015) by National Health Training Centre.

Table 6-3. Infection Prevention Guidelines for NSV

WASTE DISPOSAL AND DECONTAMINATION

STEP 1: After completing the NSV, and while still wearing gloves, dispose of contaminated objects (gauze, cotton and other waste items) in a properly marked leak proof container (with a tight-fitting lid) or plastic bag. Dispose syringes/sharps in puncture proof container.

STEP 2: Fully immerse all metal instruments in a plastic container filled with a 0.5% chlorine solution for 10 minutes before allowing staff and cleaning personnel to handle or clean them (This step is necessary to help prevent transmission of HBV and HIV/AIDS to clinic staff.)

STEP 3: All surfaces (such as the OR table, instrument stands and OR lamps) that could have been contaminated by blood and mucus also should be decontaminated by wiping down with chlorine solution.

STEP 4: Briefly immerse both gloved hands in the bucket containing the chlorine solution and then carefully remove by turning them inside out. If disposing of gloves, place in the leak proof container. If the gloves are reusable, deposit the gloves in the chlorine solution and soak for 10 minutes.

CLEANING AND RINSING

STEP 5: After decontamination, thoroughly clean instruments with water, liquid soap or detergent and a soft brush, taking care to clean all teeth, joints and surfaces. Rinse well after cleaning to remove all soap or detergent (some detergent can render chemical disinfectants inert). Dry instruments before further processing. Surgical drapes should be washed with liquid soap or detergent and water and air or machine dried.

STERILIZATION

Instruments and surgical drapes should be sterilized by autoclaving. If necessary, metal instruments and glass syringes also can be sterilized by dry heat.

Steam sterilization: 121°C (250°F) at 106 kPa (15 lbs/in^2) pressure for 20 minutes for unwrapped items; 30 minutes for wrapped items. Allow all items to dry thoroughly before removing.

Dry heat: 170°C (340°F) for 60 minutes (total cycle time—placing instruments in oven, heating to 170°C, timing for 1 hour and then cooling—is from 2 to 2½ hours) or 160°C (320°F) for 2 hours (total cycle time is from 3 to 3½ hours).

Note: Dry heat sterilization (170°C for 60 minutes) can be used **only** for metal or glass instruments.

Chemical sterilization: Instruments can be sterilized by dipping them in 2% glutaraldehyde (Cidex) for 10 hours.

Storage: Unwrapped instruments must be used immediately or stored in dry sterile containers (1 week only). Wrapped instruments and drapes can be stored for up to 1 week if the package remains dry and intact, and up to 1 month if sealed in a plastic bag

HIGH-LEVEL DISINFECTION

High-level disinfection by boiling, steaming or the use and chemicals is recommended if sterilization is not possible. Surgical (metal) instruments, should be steamed or boiled for 20 minutes and allowed to dry. Alternatively, surgical instruments can be soaked for 20 minutes in a glutaraldehyde, thoroughly rinsed with boiled water and air dried. Use immediately or store for up to 1 week in a clean, dry high-level disinfected container with a tight-fitting lid.

Table 6-4. Steps in Processing Surgical Instruments, Gloves and Other Items				
Process	**Decontamination** is the first step in handling used items; reduces risk of HBV or HIV/AIDS.	**Cleaning** removes all visible blood, body fluids and dirt.	**Sterilization** destroys all microorganisms, including endospores.	**High-Level Disinfection** destroys all viruses, bacteria, parasites and fungi.
Instruments/Items	**Decontamination**	**Cleaning**	**Sterilization**[a]	**High-Level Disinfection**
Procedure table top, or other large surface areas	Wipe off with 0.5% chlorine solution.	Wash with liquid soap or detergent and water .	Not necessary	Not necessary
Surgical drapes	Not necessary (Laundry staff should wear protective gowns, gloves and eyewear when handling soiled linens.)	Wash with liquid soap or detergent and water. Rinse with clean water; air or machine dry.	Autoclave at 121°C (250°F) and 106 kPa (15 lb/in^2) for 30 minutes.	Not practical
Surgical instruments	Soak in 0.5% chlorine solution for 10 minutes prior to cleaning.	Using a brush, wash with liquid soap or detergent, and water. Rinse with clean water. If they will be sterilized, air or towel dry.	**Preferable**: Dry heat for 1 hour after reaching 170°C (340°F)[b], or Autoclave at 121°C (250°F) and 106 kPa (15 lb/in^2) for 20 minutes if unwrapped, 30 minutes if wrapped.	**Acceptable**: • Boil for 20 minutes and air dry before use or storage. • Steaming for 20 minutes. Chemically high-level disinfect by soaking for 20 minutes. Rinse well with boiled water and air dry before use or storage.

Table 6-4. Steps in Processing Surgical Instruments, Gloves and Other Items *(continued)*

Instruments/Items	Decontamination	Cleaning	Sterilization[a]	High-Level Disinfection
Storage containers for instruments	Soak in 0.5% chlorine solution for 10 minutes	Wash with liquid soap or detergent and water. Rinse with clean water, air or towel dry.	Dry heat for 1 hour after reaching 170°C (340°F), or Autoclave at 121°C (250°F) and 106 kPa (15 lb/in^2) for 20 minutes if unwrapped, 30 minutes if wrapped. Sterilize when empty or contaminated, or weekly.	Boil container and lid. If container is too large; Fill container with 0.1% chlorine solution and soak for 20 minutes. Rinse with water which has been **boiled** for 20 minutes and air dry before use. High-level disinfect when empty or contaminated, or weekly.

[a] If unwrapped, use immediately; if wrapped, may be stored up to 1 week prior to use.

[b] Instruments with cutting edges and needles should **not** be sterilized at temperatures above 160°C to avoid dulling them.

Adapted from: Perkins 1983.

OPERATING ROOM

The OR should be an enclosed area with doors that can be locked and should be located away from heavily used areas of the clinic or hospital. The OR should:

- have adequate lighting,
- have tile or concrete floors to facilitate cleaning,
- be kept free of dust and insects, and
- be air-conditioned if appropriate and possible. (If windows need to be open for ventilation, they should have tight fitting screens.)

There should be adequate hand hygiene facilities including a supply of clean water (i.e., clear, not cloudy with sediment) nearby and a clothes changing room for staff. This area should be positioned so that staff can enter directly into the OR area without passing through high-traffic areas (e.g., client waiting area) or high-risk (contaminated) areas such as hospital wards or treatment rooms. Suitable containers, with tight-fitting lids or plastic bags for disposal of waste items also should be available.

THE SURGICAL ENVIRONMENT

The operating room has special characteristics that increases the chance of accidents. For example, staff often use and pass sharp instruments without looking or letting the other person know what they are doing. The workplace is confined and the ability to see what is going on the operative field for some members of the team (scrub nurse or assistant) may be poor. There is, moreover, the need for speed and the added stress of anxiety, fatigue, frustration and occasionally even anger. Finally, there is the fact that exposure to blood often occurs without the person's knowledge, usually not until the gloves are removed at the end of the procedure, which prolongs the duration of exposure. The fact that fingers are frequently the site of minor scratches and cuts further increase the risk of infection with blood borne pathogens.

TRAFFIC FLOW

The number of microorganisms in a designated area tends to be related to the number of people present and their activity. To help reduce the level of microbial contamination in the OR:

- Keep the number of people and movement to a minimum during surgery.
- Keep doors closed to discourage entrance of unauthorized persons and to reduce movement and air flow.
- Separate clean and soiled items.
- Finally, clients should enter the OR and go to the OR table without crossing through areas where sterile or clean instruments are set up and stored.

PREPARATION OF CLIENTS

Although skin cannot be sterilized, pre-operative washing of the surgical site and antiseptic preparation minimizes the number of microorganisms on the client's skin. Both are important in reducing the risk of surgical wound infection following NSV.

- Clients selected for surgery should bathe prior to surgery. (If this is not possible, staff should thoroughly clean the operative site with soap and water before entering the OR.)
- Pubic and scrotal hair should not be shaved. (If the hair must be cut ,trim it close to the skin surface immediately before the procedure,)
- Liberally apply a locally available antiseptic, such as an iodophor (PVI), to the operative site.
- Allow the antiseptic enough time to be effective before beginning the procedure. For example, when iodophors are used, allow 1 to 2 minutes before proceeding.

SURGICAL ATTIRE FOR CLIENTS AND OPERATING ROOM STAFF

The OR is designated as a clean area; therefore, clients and OR staff should be attired appropriately:

- Clients should change into a clean gown before the procedure. (A clean cloth wrap can be used if gowns are not available. It should not be reused without cleaning)
- OR staff (including cleaning staff) should change into clean scrub suits or gowns, caps and masks **prior to entering the OR**.
- Masks should **fully cover the nose, lower face, jaw and facial hair** and should be replaced when damp.
- Caps should cover all hair.
- Street shoes should be changed to shoes or boots that are worn only in the OR.

Are Face Masks Necessary for Observers in the OR?

According to the results of a study reported in a recent article in the *Journal of Hospital Infection* (Mitchell and Hunt 1991), oral microbial flora dispersed by unmasked volunteers standing 1 meter from the OR table failed to contaminate exposed bacterial dishes (settle plates) placed on the table. According to the article, the numbers of air-borne bacteria expelled from the nose and mouth are insignificant compared with the substantial amount of bacteria shed from the skin. This study confirms earlier findings that during quiet breathing few, if any, nasal bacteria are expelled into the air, despite heavy colonization of the nose.

The article concludes that surgical masks are costly and not necessary for all OR personnel in all cases, **but it states that masks should be worn by the surgeon and all personnel who are scrubbed**.

USE OF MULTI-USE VIALS

The following guidelines are important to follow when using multi dose vials of lidocaine:

- After using a needle for the client's injection, never introduce it again into the vial.
- After using a syringe for an injection, never use it again to withdraw more solution from the vial. Injecting air into the vial with a used syringe, in order to facilitate withdrawal of the liquid, causes the contents of the vial to become contaminated.
- Do not leave a needle in the vial between withdrawals of solution because it will contaminate the contents.
- Ideally, there will be enough sterile syringes and needles so that each is used only once.

SURGICAL TECHNIQUE

Good surgical technique that minimizes tissue trauma and adequately controls bleeding (hemostasis) will reduce the risk of infection. The technical aspects of performing NSV should be standardized to reduce the potential for intra-operative and postoperative problems.

INFECTION PREVENTION TIPS

To minimize the client's risk of infection after NSV, operating room staff should strive to maintain an infection-free environment. To do this the clinician should:

Before Procedure

- Operating room staff who are ill (e.g., have a cold or the flu), infectious or have draining lesions or cuts on exposed areas (face, arms or hands) should be excused or assigned other duties out of the OR area until they are well.
- Select clients who are **low-risk** for infection and who are not grossly malnourished
- Where possible, have client bathe and thoroughly wash his genital area before entering the OR.
- Remove watch and jewellery before hand hygiene.
- Surgically scrub hands with antiseptic solution and water alternatively scrub hands with soap and water followed by alcohol hand scrub.
- After gloving and while looking at the scrotum and penis, liberally apply antiseptic solution several (at least two) times to the area. (If iodophors such as Betadine are used, give them time to work, 1 to 2 minutes to allow for release of free iodine and contact time to kill the microorganisms).

During Procedure

- Keep number of people and movement inside the operating room to a minimum.
- Wear appropriate surgical attire.
- Use **sterilized** or **high-level disinfected** instruments, gloves and surgical drapes.
- Use good surgical technique that minimizes tissue trauma and controls bleeding (hemostasis).

After Procedure

- While wearing gloves properly dispose of contaminated wastes (gauze, cotton and gloves) in a leak proof container or plastic bag.
- Decontaminate instruments and reusable items immediately after use.
- Decontaminate operating table, instrument stands, lamps and other surfaces contaminated during surgery after each case.
- Follow guidelines for cleaning and processing soiled instruments, linens and needles and syringes.
- Wash hands after removing gloves.

"Hands-Free" Technique for Passing Surgical Instruments

A safer method of passing sharp instruments (needles, scissors and scalpels) during surgery has been developed recently. Called the "hands-free" technique of instrument transfer, this technique is inexpensive and simple to use and ensures that the surgeon, assistant and/or nurse **never** touch the same instrument at the same time (Bessinger 1988).

Instruments passed with the hands-free technique include anything sharp enough to puncture a glove (e.g., scalpels, mosquito forceps, loaded needle holders). Using the hands-free technique, the scrub nurse places a sterile or high-level disinfected kidney basin or other suitable small container on the sterile field between her/himself and the surgeon. The container is designated as the neutral zone on which the assistant places sharp instruments. The assistant alerts the surgeon that a sharp instrument has been placed in the neutral zone by saying "scalpel", or "suture ligature," while placing it there. The surgeon then picks up the instrument and returns it to the container after use.

Another way to do this is to have the assistant place the instrument into a container such as a kidney basin and pass it to the surgeon. The surgeon lifts the instrument out of the container which is left on the field until the surgeon returns the instrument to it. The assistant then picks up the container and returns it to the Mayo stand.

MAINTENANCE OF A SAFE ENVIRONMENT

Maintaining a safe, infection-free environment is an ongoing process which requires frequent retraining and close supervision of clinic staff. With diligent application of recommended practices, infections following surgery and transmission of diseases such as hepatitis B and HIV can be avoided. The practices described in this chapter, however, must be conscientiously applied **before**, **during** and **after** each procedure. Laxity at any point in the routine can have disastrous results for the safety of the procedure.

HEALTH CARE WASTE MANAGEMENT

Health care waste includes a large component of general waste and a smaller proportion of hazardous waste. According to the WHO estimation, among the total amount of HCW generated, 80% is general HCW, 15% pathological waste and infectious waste, 1% is sharp waste, 3% is chemical or pharmacological waste and less tha 1% special waste such as radioactive or cytotoxic waste, pressurized container or broken thermometer and used batteries. Thus, very less amount of HCWs is hazardous if not properly managed.

In our context, following basic steps are considered essential for the proper waste management.

- Waste minimization
- Waste segregation
- Waste collection and storage
- Waste transportation
- Waste treatment and disposal

Waste minimization

Waste minimization is defined as the prevention of waste production and /or its reduction. Waste minimization usually benefits the waste producer by reducing the costs for the purchase of goods. It involves specific strategies of changes in management and behavioral change. At the top of the waste minimization option is waste avoidance strategy. Achieving this goal means changing work practices. How we choose to go about our work often dictates how much waste we generate, for example what is our behavior? Do we use disposable or reusable equipment? Do we send paper memos or e-mail? Do we bring our own cup or use a disposable one? This, methods of waste reduction include modification of purchasing procedures, control of inventory and production of less toxic materials when discarded as wastes. However, no action should be taken that would impact on the quality and limit the access to health care. Waste minimization can be achieved through:

- Waste reduction at source
- Giving preference to recyclable and reusable items

Waste reduction at source

Reduction involves measures that either completely eliminate use of a material or generate less waste. Example are improving house-keeping, reviewing purchasing policies without compromising work standards or environmental outcoms. Reduction can also be achived through product substitutions, and modifications. While purchasing the product it should be carefully assessed in terms of its potentials to generates problematic waste, result in toxic emission, or be detrimental to the operation and maintenance of treatment facilities in the long turn. Some of the examples are: mercury thermometer should be replaced with electronic /digital thermometer, work with supplier to reduce packaging of the products. Simple changes to patient care procedures can also be made to minimize the waste generated. Some of the examples are as follows:

When preparing for dressing, cleaning and sterile procedures, practitioners should critically assess material required. Unwanted extra materials should be removed for re-sterilization or reuse. This should occur prior to the commencement of the procedure, which minimize the potential of contamination.

Review frequency of waste collection, size and location of containers and bags.

Some of the reduction policies include:

- Purchasing reduction: selection of supplies, which are less wasteful or less hazardous
- Use of physical rather than chemical cleaning methods (e.g. steam disinfection instead of chemical disinfection)
- Prevention of wastage of products, e.g.in using and cleaning activities.

Giving preferences to reusable a d recyclable items

Product recycling and reuse can minimize the volume of HCWs, though a high standard of patient care and worker safety may preclude reuse of some items. Plastic syringe, catheters and waste contaminated with radioactive substances such as plastic, disposable gloves, syringes and needles cannot be recycled or reused. Medical and other equipments used in HCF may be reused provided that it is designed for the purpose and will withstand the sterilization process; some examples are scalpels, glass bottles and containers. After use reusable items should collected separately from non-reusable items, carefully washed and sterilized by one of the available process, however, infectious waste should not be washed before sterilization. Instead washing is recommended after sterilization before sending into the recycling. HCF should critically examine current waste streams and determine what product can be separated out at the point of generation to be effectively recycled. Some of the materials which can be recycled are given below:

- Glass
- Plastics
- Aluminum cans
- Paper and card boards
- Iron

Before beginning any reclamation recycling program, it is recommended to review the possible use for these products.

Waste segregation

Waste segregation refers to the process of separation of waste at the point of generation and keeping them apart during handling, collection interim storage and transportation. Segregation of the waste at source is the key principle of successful and sage waste minimization and is the most important step for a successful management of HCW. In fact, it reduces the quantity of those wastes, which are hazardous and require special attention and treatment. It is highly recommended that segregation of HCF occurs on site at the time the waste is generated, for example, when an injection is given, needle and syringes are placed in a different waste container, or when packaging is removed from supplies and equipment and kept separately. Thus segregation must take place at the bed site, at the operation theater, at ward, at laboratory, wherever it is generated. Non – risk waste (e.g. paper, glass, plastic, iron) can be recycled, Non-risk biodegradable organic waste9i.e. Food waste, garden waste) can be composted. Infectious waste must never be mixed with non infectious waste to keep the volume of infectious waste as low as possible.

Given the fact that only about 10-25% of the HCW is hazardous, treatment and disposal costs can be greatly reduce Health care wastes. Base on the hazardous properties of the waste, the type of treatment and disposal practices that are applied to the waste generated. A recommended way of identifying Heath care wastes categories is by sorting the waste into color-coded and well-labeled bags or containers. Sturdy (rigid walled) container should be used container should be selected according to the following criteria:

- The opening must be wide enough to allow disposable material to be dropped into the container by a single hand operation. Depending on the bulk of the disposable material of which the particular container is designed, the aperture should, under normal conditions of use, inhibit removal of the contents.

- If retractable lids are incorporated, they should be designed or long forceps should be provided so that there is never need to push material into the container by hand.
- Container should be designed to minimize the possibility of external surface being contaminated when disposing of a used item.
- The container wall must be impermeable to fluids and non-readily penetrable. Hence, card board containers are never acceptable for this purpose.
- After being sealed, all types of containers must be leak-proof.
- The container must be capable of being securely sealed and remaining sealed during transport.
- The container must be safe and easy handle.

All the specific procedures of health care waste segregation packaging and labeling, should be explained to the medical and auxiliary staff and displayed in each department/ward on charts located on the walls nearby the health care waste containers that should be specifically suited for each category of waste. Segregation should:

- Always take place at the source, i.e. at the ward, bed side, Operation Theater, medical laboratory, pharmacy, or any other room or ward in the health care waste is generated.
- Be simple to implement for the medical and auxiliary staff and applied uniformly.
- Be safe and guarantee the absence of infectious health care wastes in the domestic waste flow.
- Be well understand and well known by the medical and ancillary staff of the health care wastes
- Be regularly monitored to ensure that the procedures are followed strictly.

Apart from these, following should also be followed:

All sharps should be collected together, regardless of whether they are contaminated or not. Container should be puncture proof made of either metal or high density plastic and fitted with covers. It should be rigid and impermeable to contain not only sharps but any residual liquids from syringes. To discourage abuse, container should be tamper proof ad needles and syringes should be rendered unusable.

- Bags and containers for infectious and highly infectious waste should be marked with the internationally approved symbol for infectious waste.
- Waste with high content of heavy metal (e.g. cadmium or mercury) should be collected separately.

For more details refer guideline on Health Care Waste Management Reference Manual (2014) by DoHS/Management Division

The recommended color-coding of the containers for different categories of the waste is provided in Table below:

Waste category symbol and labeling		Color code for container	Examples of waste
Non- Risk Health care waste	Non risk waste biodegradable	Green	Left over foods, gardens, fruits peels, flowers etc
	Non risk waste recyclable 	Dark green	Non-biodegradable, which can be recycled plastic bottles, cans, metal, glass, plastic papers , rubber etc
	Other non-risk health	Light blue	Other non-risk health care waste do not belong to bio-degradable and recyclables
Health care waste requiring special attention	Pathological waste  Danger! Pathological waste	Red	Human body parts, organ human tissue, removed organs, imputed parts, bone marrow
	Hazardous sharps  Danger! Contaminated sharps. Do not open	Red	Needles, glass syringes, with fixed needs scalpels, blades glass etc. which may cause puncture and cuts
	Pharmaceuticals	Red	Unused and expired drugs
	Cytotoxic pharmaceutical waste  Danger! Hazardous Infectious waste	Red	Waste with anti- neoplastic effect such asM alkylated substances, anti metabolic, antibiotics, plant alkaloids and hormones etc

Waste category symbol and labeling		Color code for container	Examples of waste
Infectious and highly Infectious	Danger! Hazardous waste infectious  Danger! Hazardous infectious waste	Brown	Discarded items contaminated with blood and body fluids from clinically confirmed infected patients including cotton, dressing materials, soiled plaster, linen, bedding, swabs, gloves syringes without needles infusion equipment without spike, bandages other materials contaminated with blood dialysis equipment, blood from patients infected with HIV viral hepatitis, brucellosis, respiratory tract secretion from patient infected with TB, anthrax, rabies
	Danger! Highly infectious waste 	Brown]	Waste generated from the microbiological cultures, laboratory waste, such as sputum culture of TB laboratory highly concentrated microbiological cultures
Other hazardous waste	Danger! To be discarded by authorized staff only  	yellow	Waste with high content of heavy metals such as batteries, pressurized container, organic and inorganic chemicals
Radioactive waste	Danger! Radioactive waste 	Black	Waste includes solid, liquid and gaseous waste contaminated with radio nuclides such as Cobalt, Technetium, Iodine, Iridium, generated from in-vitro analysis of body tissue and fluid, in- vivo body organ imaging and tumor localization

Methods of health care waste management at different levels

Types and categories of Health care waste	Methods of management	Health Post	PHC	District Hospital	PHC ORC immunization post/Session	Private Public teaching Hospital	Clinic/ Pathology lab clinic	Pharmacy /Medical stores
Non- Risk Health care waste								
Non- risk waste biodegradable	The waste can be composted to produce compost manure and can also be used for production of bio-gas	P	P	P	P	P	P	P
Recyclable (Non-biodegradable)	Recycle item should be recycled and reused	P	P	P	P	P	P	P
Other non- risk waste	The waste can be composted or recycled, contact the local authority for disposal	P	P	P	P	P	P	P
HCW requiring special attention								
Human anatomical waste such as placenta, human tissue	Dispose in placenta pit/safe burial/controlled incineration as per standard operating procedure(SOP)	P	P	P	0	P	P	0
Sharps such as injections, blades	Mutilate /cut the tip of the syringe and needle with needle and hub cutter, then autoclave and dispose properly Or Waste are first disinfected with 0.5% chlorine solution and then subjected to deep burial/ encapsulation/ septic vault.	P	P	P	P	P	P	P

Types and categories of Health care waste	Methods of management	Health Post	PHC	District Hospital	PHC ORC immunization post/Session	Private Public teaching Hospital	Clinic/ Pathology lab clinic	Pharmacy /Medical stores
Pharmaceutical waste such a waste comprising of date expired, contaminated and discarded medicines	Apply return back policy; return the waste to the sore and from the store to the supplier Or Dispose in secured landfill after encapsulation.	P	P	P	0	P	P	P
Cytotoxic waste	Apply return back policy; return the waste to the sore and from the store to the supplier Or Dispose landfill with encapsulation.	0	0	0	0	P	P	P
Infectious/ Highly infectious								
Infectious waste such as and highly infectious waste	Autoclave the waste and then dispose properly. Mutilate/cut before disposal.	P	P	P	0	P	P	0
Infectious waste such as bandage, cotton	Autoclave the waste and then dispose proper Or disinfect waste with 0.5% chlorine solution and dispose safely	P	P	P	P	P	P	0

Types and categories of Health care waste	Methods of management	Health Post	PHC	District Hospital	PHC ORC immunization post/Session	Private Public teaching Hospital	Clinic/ Pathology lab clinic	Pharmacy /Medical stores
Radioavtive waste Sealed radiation source, liquid and gaseous, material contaminated with radionuclide, such as paper cups, straws, needles syringes, test tubes	Apply return back policy: return the waste to the store and from the store to the supplier; it should be agreed at the purchasing phase. Or Radioactive isotope should be collected, packaged, inventoried and securely stored for time period suitable for complete radioactive decay. In the case of mixed radioactive and infectious waste, the radioactive component is addressed first and later suitable treatment for the infectious component should be carried out.	0	0	0	0	0	P	0

Types and categories of Health care waste	Methods of management	Health Post	PHC	District Hospital	PHC ORC immunization post/Session	Private Public teaching Hospital	Clinic/ Pathology lab clinic	Pharmacy /Medical stores
Other hazardous waste								
Heavy metal such as Mercury	Should be collected and sotred separately in glass bottle with waste and well labeled and stored in secured place.	P	P	P	0	P	P	P
Chemical waste: chemical used in production of biological toxins chemical used in disinfection, insecticides	Chemical treatment and discharge into drains after massive dilution with plain water	P	P	P	0	P	P	P

Note: Responsible person for health care waste management: Chief of the Health care facility/organization /clinic
-Ref: Health Care Waste Management Guideline 2014, MOH,DOHS_

SEVEN

ANESTHESIA

BACKGROUND

The goals of anesthesia for no-scalpel vasectomy (NSV) procedures are to:

- Prevent pain and discomfort
- Minimize stress and anxiety

Local anesthesia, when properly administered and managed by the surgeon and his assistant, meets both of these goals and is recommended for NSV. The key to having a successful NSV program, however, depends on physicians being adequately trained to operate on awake (or lightly sedated) clients (i.e., are specially trained to handle tissues gently and use "verbal" anesthesia ["verbacaine"]).

Because NSV often is performed in ambulatory facilities, it is important that each program determine the pain control method most suited to their facility. They should consider the technical abilities of the clinicians providing pain control medication, the availability of drugs and their ability to manage complications of chosen regimens.

GOAL OF PAIN MANAGEMENT

The purpose of pain management for NSV is to ensure that the client experiences a minimum of anxiety and discomfort as well as the least risk to his health. Appropriate use of various agents combined with gentle technique and verbal support from the provider and nursing staff allows the client to be awake, responsive and in minimal fear and discomfort. Achieving the balance of maximum comfort and minimum risk requires the accurate assessment of each client's preoperative condition (general physical assessment and vital signs—respiration, pulse, blood pressure and temperature) as well as his individual needs (body size, history of chronic disease, level of anxiety and drug allergies).

PAIN MANAGEMENT TECHNIQUES

The **keys** to pain management and client comfort with NSV are:

- A client who is emotionally ready to have surgery while awake; this is achieved by supportive attention from staff **before**, **during** and **after** the procedure (helps reduce anxiety and lessen pain)
- A provider who is comfortable working with clients who are awake and is trained to handle instruments gently
- The selection of an appropriate level of pain medication

Use of verbacaine by the provider can make the procedure much easier for the client. Verbacaine involves being able to:

- Quickly establish a positive relationship with the client
- Comfortably and openly talk with the client throughout the procedure

Tips for working with clients who are awake and not, or only lightly, medicated include:

- Explain each step of the procedure prior to performing it.
- Wait a few seconds after performing each step or task (e.g., applying the ringed clamp) for the client to prepare for the next one.
- Move slowly, without jerky or quick motions.
- Use instruments with confidence.
- Avoid saying things like "This won't hurt" when, in fact, it will hurt; or "I'm almost done" when you're not.
- Talk with the client **throughout** the procedure.

PREOPERATIVE PREPARATION

Patient assessment

History – past history of chronic illness eg: cardiac disease, seizure, HTN, DM

Physical assessment – vitals (pulse, blood pressure, respiratory rate, temperature)

- General and systemic examination

Generally, preoperative medication for NSV clients is **not** necessary.

ANESTHESIA

The dangers of general anesthesia and regional anesthesia, particularly in settings that lack skilled staff (anesthesiologist or anesthetist) and facilities for close monitoring of the client during the procedure and recovery have been well documented. Therefore, it is important to use alternative approaches for the safe, effective management of pain. Local anesthesia with (so-called "modified local") or without sedation is safer than either general or regional (spinal/epidural) anesthesia, especially when procedures are being performed in an outpatient setting (see **Table 7-1**). In addition, use of general or regional anesthesia subjects clients to increased risk of serious cardio pulmonary complications (e.g., aspiration of gastric contents, severe hypotension or cardiac arrest) as a result of overdose, improper administration of anesthesia, lack of skill (e.g., failure to intubate the client) or inadequate monitoring.

Local anesthesia, most commonly provided by a local field block with lidocaine, is widely used to ease the pain associated with NSV. Local anesthesia causes minimal physiologic disturbance, allowing the client to recover rapidly.

If the client's anxiety cannot be managed by counseling (verbacaine) alone then the client should be referred to tertiary care center where conscious sedation may be provided to client using drugs such as:

- Inj. Midazolam IV (0.03 to 0.05 mg/kg) usual adult dose of 1-2mg.
- Inj. Pethidine 25mg IV usual adult dose

Note : while providing sedation it should be ensured that client is not over sedated to affect ventilation and oxygenation.

Because clients remain alert and awake during the procedure, it is especially important to ensure:

- Counseling to increase the client's cooperation and to minimize his fears
- Good provider-client communication throughout the procedure (see above)
- Time and patience as local anesthetics are not effective immediately

The following are conditions for the safe use of local anesthesia:

- All members of the operating team must be knowledgeable and experienced in the use of local anesthetics (lidocaine).
- Emergency drugs and equipment (suction and resuscitation apparatus) should be readily available, in usable condition and **all** members of the operating team trained in their use.

Lidocaine is the anesthetics most commonly used for NSV. **Lidocaine** is the world standard for local anesthesia. It is inexpensive, safe, effective and has rapid onset. Furthermore, there is a low risk of allergic reaction associated with the use of lidocaine. Lidocaine (without adrenaline) is the preferred anesthetic for NSV.

Table 7-1. Advantages, Disadvantages, Indications and Contraindications for Local, General and Spinal/Epidural Anesthesia for NSV

	LOCAL	GENERAL	SPINAL/EPIDURAL
Advantages	• Avoid risks of general and spinal/epidural anesthesia • Low cost • Rapid recovery when light or no sedation used • Rapid induction • Client awake and able to give early warning of some complications • Decreased postoperative nausea and vomiting • Presence of anesthetist not required	• Stationary operative field • Complete analgesia • Amnesia present • Anxiety eliminated	• Client awake and able to give early warning of some complications • Stationary operative field • Reduced need for sedation • Decreased postoperative nausea and vomiting
Disadvantages	• Requires precise and gentle surgical technique • Mild to moderate client discomfort • Toxicity of local anesthetic agents if overdose or given intraveneously	• More costly; requires special equipment, personnel and environment • Longer recovery • May cause greater postoperative discomfort • Postoperative sore throat may result form intubation • Nausea and vomiting common • Toxicity of anesthetic agents • Longer hospital stay	• Not easy to administer; requires specialized training • Takes relatively long time to administer (10 -30 minutes for epidural) • Recovery slower than with local anesthesia • Toxicity of anesthetic agents • Complications like hypotension and bradycardia are common • Post spinal headache could happen
Indications	• All clients without contraindications for local • Setting other than operating room • Client's fear of general anesthesia • Pulmonary disease • Cardiac disease	• Anxious client • Less experienced surgeon • Client with presumed pelvic pathology • Extremely obese client	• Client's fear of general anesthesia • Pulmonary disease

	LOCAL	GENERAL	SPINAL/EPIDURAL
Precautions	• Anxious client • Less experienced surgeon • Conditions increasing operating time sensitivity to intended medications	• Severe cardiac or pulmonary disease • Client's fear of general anesthesia • Lack of appropriate equipment and experienced manpower • Sensitivity to intended medication	• Seldom justified for short voluntary sterilization procedure • Pre-existing back disorder (relative contraindication) • Sensitivity to intended medications • History of neurological disease • Coagulopathy • Inexperienced anesthetist • Client refusal • Cutaneous infection at incision site

Source: World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception 1988.

ADMINISTRATION OF LOCAL ANESTHESIA

The goal of local anesthesia is to achieve an effective anesthetic block. As a local agent, it is necessary to create a skin wheal for the scrotal skin puncture step (**Figure 7-1**). To effectively block pain during the vasal manipulation, infiltration of each paravasal area using 2 to 5 cc of 1% lidocaine is needed. (**Figure 7-2**).

Figure 7-1. Side View of the Skin Wheal

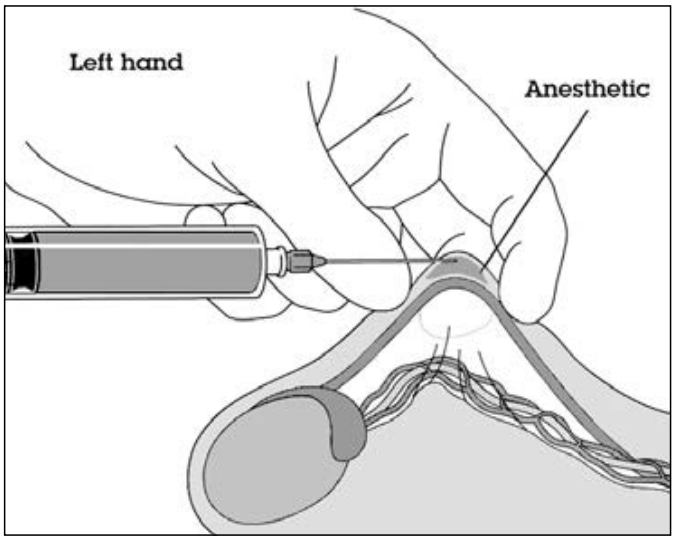
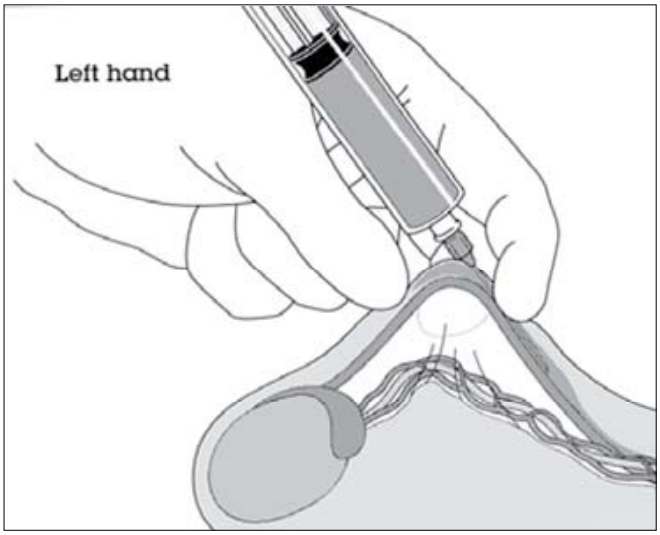


Figure 7-2. Paravasal Infiltration



The maximum safe dose of 1% lidocaine (without epinephrine) is 3 mg per kg body weight (e.g., 20 ml for 40 kg body weight). If lidocaine is supplied in 2% strength, it should be diluted to 1% with normal saline or sterile water because achieving an adequate block with 2% frequently requires more than 3 mg per kg body weight. The 1% strength results in more volume for more effective infiltration.

COMPLICATIONS OF LOCAL ANESTHESIA

Major complications from local anesthesia are extremely rare. Convulsions and deaths have, however, been reported in cases where excessive doses were used or injections into a vein occurred. To minimize the risk of major complications, local anesthetics should be used in the smallest effective doses with careful attention to proper technique. In most cases, 3 ml to10 ml of 1% lidocaine is adequate. In no cases should the total dose exceed 3 mg per kg body weight of the client (i.e., about 20 ml)**.** Aspiration (pulling back on the plunger of the syringe) prior to injection reduces the risk of intravenous injection. When recommended dosages are followed, and the plunger is withdrawn before each injection, toxic levels of local anesthetic agents rarely occur. Nonetheless, it is important to recognize the signs and symptoms of toxicity so that no further injections are made and medical treatment is begun.

Remember: The keys to safe use of a local anesthetic are to be sure that it is not injected directly into a vessels and not to exceed the maximum safe dose (3mg/kg).

The following sequence indicates increasingly toxic levels of local anesthetic:

Mild Effects

- Numbness and tingling of lips and tongue
- Metallic taste in mouth
- Dizziness and light-headedness
- Ringing in ears
- Difficulty in focusing eyes

Severe Effects

1. **CNS effects -**
    - Drowsy
    - Disorientation
    - Muscle twitching and shivering
    - Slurred speech
    - Tonic-clonic convulsions (generalized seizures)

2. **Cardiac effects –**
    - Hypotension
    - Arrhythmia
    - Cardiac arrest

3. **Respiratory effects –**
    - Respiratory depression or arrest.

Management of Toxic Effects

For mild effects, wait a few minutes to see if symptoms subside, talk to the client and then continue the procedure. Immediate treatment is needed for severe effects: keep the airway clear and give oxygen by mask or ventilation (Ambu) bag if needed. Should convulsions occur or persist despite respiratory support, small increments of diazepam (1–5 mg) or midazolam (1 - 2 mg) should be given intravenously and be ready for airway management.

Note: The clinician should be aware that the use of diazepam/ midazolam to treat convulsions may cause respiratory depression.

MONITORING VITAL SIGNS

Client monitoring must be a routine practice in performing NSV. All staff members should be trained in how and how often to monitor the client during the procedure. Local anesthetic agents may cause hypersensitivity reactions and central nervous system toxicity. Knowledge of the etiology and symptomatology of these reactions enables intervention that may prevent further complications. Staff members should be able to recognize the following:

- Normal and abnormal reactions to drugs used during the procedure
- Normal physiological baseline for the client
- Changes in the client's condition

The staff must monitor and record blood pressure, pulse, oxygen saturation and respiratory rate before, during and after the procedure until the client is discharged.

EIGHT

SURGICAL PROCEDURE

BACKGROUND

Essentially, vasectomy involves gaining access to the vas deferens of each testis through the scrotal skin under local anesthesia. Occlusion of the vas is accomplished by ligation excision (LE) and fascial interposition (FI) or by cauterization with fascial interposition. Skin closure is completed by pressure dressing or suturing (if required).

The No-Scalpel Vasectomy (NSV) was introduced as a less invasive, safer and easier to learn technique of male sterilization compared to the conventional or incisional vasectomy. The technique of gaining access to the vas deferens differentiates the no-scalpel from the conventional vasectomy technique (see **Chapter 1**; **Table 1-2** for comparative difference). Once access to the vas deferens is accomplished, the method of occlusion is similar.

Vasectomy is safe and relatively free of side effects. To minimize problems, programs should be guided by the following principles:

- Doctors and staff should be trained and skilled in the no-scalpel vasectomy technique, use of local anesthesia, proper use of the ringed and dissecting forceps, managing complications and other emergencies.
- The facility must be equipped with drugs to handle emergencies.
- All instruments and equipment must be in working condition before the surgical procedure is begun.
- Doctor and support staff must observe strict infection prevention practices
- Client must be carefully screened and selected.

The material presented in this chapter is intended to reinforce practical training and to serve as a ready reference for questions. It can not substitute for actual practice which is absolutely necessary for the clinician to develop proficiency in the no-scalpel vasectomy.

CLIENT ASSESSMENT

Only those clients who meet the acceptable criteria should have their surgery in ambulatory facilities (see **Chapter 5**). The final decision to offer NSV to the client is the responsibility of the operating doctor who should conduct a final medical assessment immediately before surgery. The genital examination done for pre-operative assessment does not eliminate the need for the operating doctor to conduct a repeat examination prior to surgery particularly if the initial examination was performed by another clinician.

TIMING OF PROCEDURE

Healthy male clients with no contraindications should be offered the surgical procedure as soon as convenient for them.

PREPARATION

The NSV kit contains all the instruments needed for the procedure. Alist of equipment and instruments for NSV can be found in **Appendix D**. It is important that the instruments be in excellent condition. In addition, check that all instruments and other items have been sterilized or high-level disinfected prior to use (see **Chapter 6**).

The following instruments and supplies are needed for the NSV procedure:

- examination or operating table
- soap for washing the genital area
- antiseptic solution
- local anesthetic agent (1 % lignocaine)
- cotton balls
- one sterile or high- level disinfected bowl for holding the antiseptic solution
- examination and sterile surgical gloves
- sterile surgical drapes
- sterile gauze and surgical tape
- sterile or high-level disinfected instrument tray, for holding instruments
- sponge holding forceps
- one 5 cc sterile disposable syringe with 1.5 inch, 23 or 24 gauge needles
- NSV dissecting forceps
- extracutaneous ringed forceps or ringed clamp
- scissors- sterile or HLD straight scissors for cutting suture material
- scissors for cutting scrotal hair
- suture material-black silk suture (braided preferred) (may also use absorbable suture: 2-0 or 3-0)

GENERAL PROCEDURE

Secure the penis on the abdomen with tape. Gently wash the scrotum with antiseptic solution. Cover the prepared area with a sterile drape. Fix the vas using three finger techniques. Local anesthetic agent is used to create skin wheal. Paravasal infiltration is done for each vas. After grasping the vas with the ringed clamp, the scrotal skin is punctured using the sharp dissecting forceps. After the vas is exposed, it is occluded by ligation with excision (LE) or cauterization. A fascial barrier must be created by pulling fascial membrane (translucent membrane) over the testicular end of the vas. The step is repeated for the other vas. The skin puncture is pinched closed prior to applying the dressing.

STEP-BY-STEP INSTRUCTION FOR NSV

Before starting the procedure, again check to be sure that the client has:

- Informed, voluntary consent for the procedure (a signed consent form does not assure that consent has been given freely and with full information);
- Emptied his bladder and cleaned his genital area.

Talk to the client:

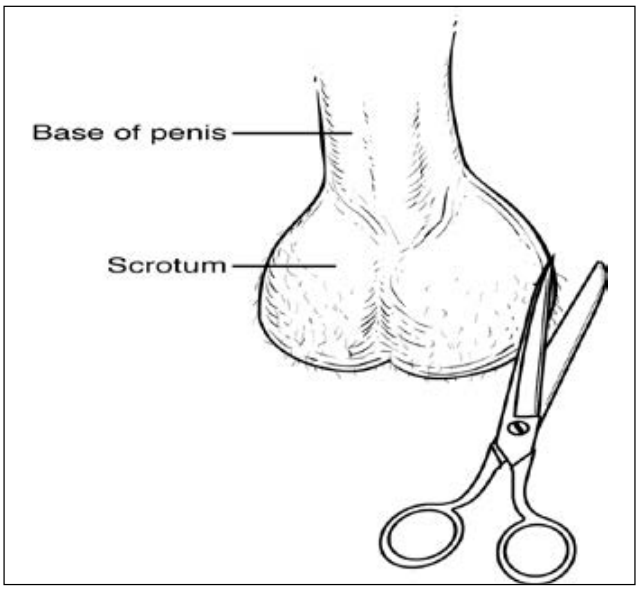
- Explain to the client that the skin will be anesthetized but that he will feel some pain. Tell him that he may feel some nausea and discomfort during some step of the procedure particularly during application of the ringed clamp;
- Tell him that if he feels any discomfort at any time, he should inform a member of the surgical team so that a team member can do something to relieve his discomfort.

For doctors who are just beginning to perform NSV, appropriate positioning of the operating team around the operating table plays an important role in ensuring a smooth operation. Right-handed surgeons should stand on the right of the client while the opposite is true for left-handed doctors. This precludes the need to change position intraoperatively to catch the contralateral vas.

Getting Ready

- Change into surgical apparel. Next, greet the client respectfully and with kindness as they enter the waiting area of the operating room.
- Review the client's medical record and perform additional examination if indicated in the screening checklist. Next, verify client's identity and that informed consent was obtained by asking the client if he understands and voluntarily agrees to the NSV procedure. Before sending the client to the operating room, check that he has recently voided and thoroughly washed and rinsed his genital area.
- Help the client onto the examination table and position flat on his back. While allowing the client to rest, determine that the required sterile or high-level disinfected instruments, gloves and other supplies, including the emergency tray, are ready to available to prepare. Open the sterile package or high-level disinfected instrument container without touching the instruments.
- If necessary, trim scrotal hair. (See **Figure 8-1**).**Figure 8-1. Trimming Scrotal Hair**

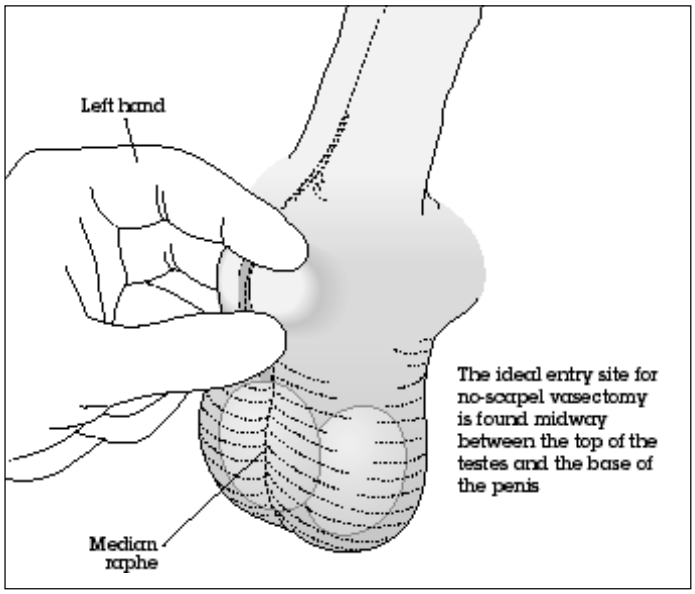
Figure 8-1. Trimming Scrotal Hair



Preoperative Tasks

- Wash your hands thoroughly with soap and water and dry them with a clean dry cloth or allow them to air dry use clean gloves. Examine scrotal area. Assess thickness of scrotal skin and diameter of vasa, and check for pathology such as hernia or hydrocele.
- Retract penis upwards onto the abdomen in a 12 o'clock position (if necessary, anchor comfortably in place using small strip of surgical tape).
- Perform surgical scrub (for 3 to 5 minutes) and put on sterile surgical gloves on both hands. **If the gloves are powdered, wipe off the powder using the sterile gauze soaked in sterile or boiled water**. Powder granules that are not removed may fall into the puncture site and cause unnecessary scarring. Then, arrange the instruments and supplies in the order in which they will be used.
- Using a circular motion, gently apply antiseptic solution twice around the operative site. If the antiseptic used is povidone iodine, allow it to air dry for about 2 minutes. Then, place a sterile or clean surgical drape over the scrotal area.
- Next, draw 3 to 5 ml of 1% local anesthetic (e.g., lidocaine **without** epinephrine).
- Throughout the procedure the surgeon and the operating room staff should provide "verbal anesthesia" by talking to the client.
- Identify, isolate and fix the right vas deferens under the median raphe at the junction of the middle and upper third of the scrotum. This step is accomplished using the three finger technique.
  - First, position the middle finger of your left hand under the scrotum.
  - Next, place your thumb between the top of the testes and the penile base, along the median raphe.
  - Then, palpate the scrotum with the middle finger and the thumb to sweep the vas toward the raphe beneath your thumb. Hold the vas between your thumb and middle finger.
  - Next, place your left index finger on top of the scrotum above the ride created by the middle finger.

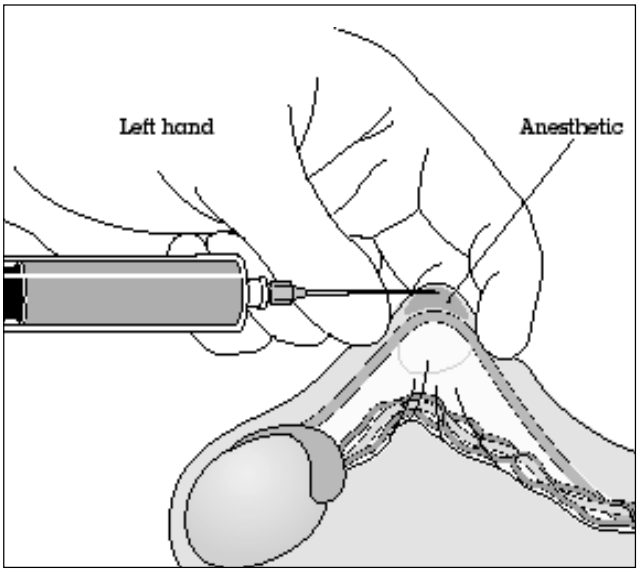
Figure 8-2. Three Finger Techniques (Right Side)



Local Anesthesia Administration

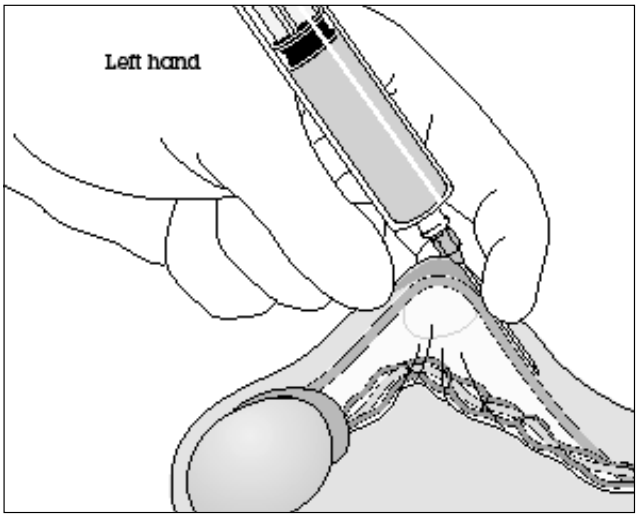
- Explain to the client that the injection of anesthetic will be slightly painful, but that he shouldn't feel any pain during the procedure. At the median raphe, between the thumb and index finger, insert just the tip of the needle under the skin. Raise a skin wheal by injecting a small amount of anesthetic.

Figure 8-3. Creating Skin Wheal, Side View



- Advance the needle parallel to the right vas within the external spermatic fascial sheath toward the inguinal ring about 4 centimeters (1.5 inches) above the wheal. Pull back gently on the plunger to be sure the needle is not in a blood vessel. Then, inject 2 to 5 milliliter of anesthetic into the sheath, without withdrawing the needle.

Figure 8-4. Paravasal Infiltration (Right Vas)



- Identify the left vas using the same 3-finger technique. Then insert the needle through the same hole and repeat injection of local anesthetic. Withdraw the needle fully and either recap it using

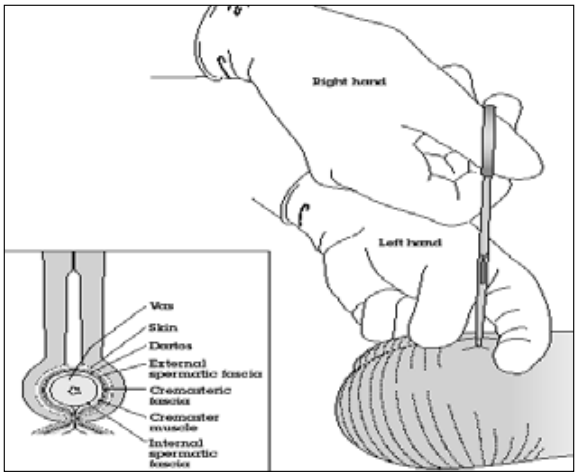
the one-hand technique or place it in a safe area to prevent accidental needle sticks. Finally, gently rub the area around the injection to spread the anesthetic within the tissues.

- Pinch skin wheal between thumb and forefinger to reduce local edema. Next, using the tip of the sharp dissecting forceps, test the puncture site to be sure the anesthetic is working. If the client can feel pain, wait 2 more minutes before proceeding.

Isolating and Ligating the Vas

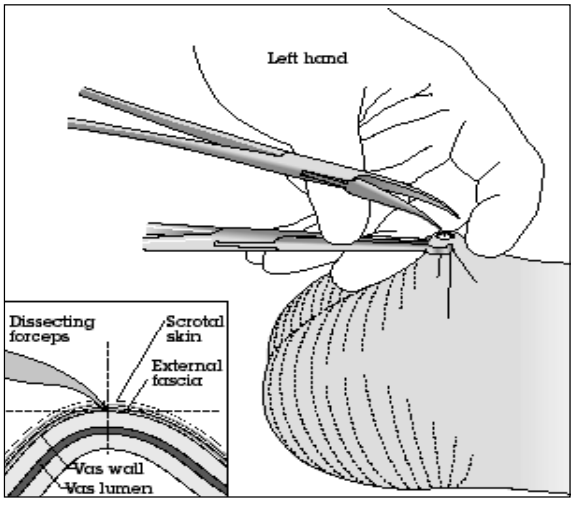
- Using 3-finger technique to position the right vas under the skin wheal, apply the ringed clamp at a 90° angle directly onto the skin overlying and around the vas deferens. Gently close the clamp completely around the vas, up to the first click-stop. Next, transfer the ringed clamp to the opposite hand and elevate vas by lowering clamp handle.

Figure 8-5. Extracutaneous Application of the Ringed Clamp



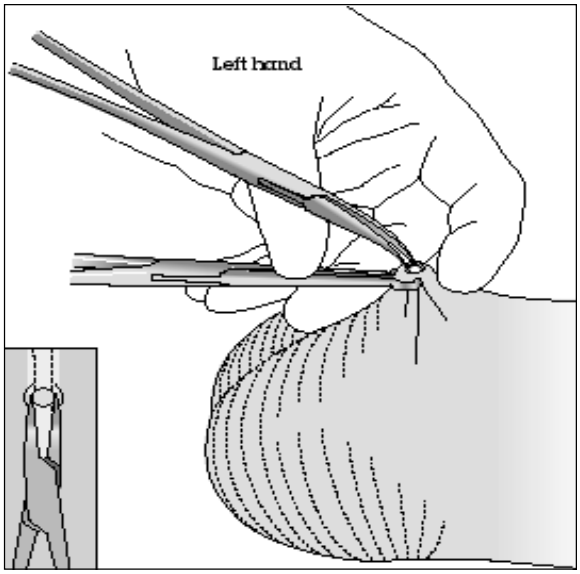
- Press index finger down to tighten scrotal skin just ahead of the tips of ringed clamp. With the curved tips pointed downward, hold the dissecting forceps in the right hand. Next, puncture scrotal skin and anterior wall of vas using medial blade (left blade for right-handed person) of dissecting forceps. Finally, withdraw dissecting forceps and close both blades.

Figure 8-6. Piercing the Skin with the Medial Blade of the Dissecting Forceps



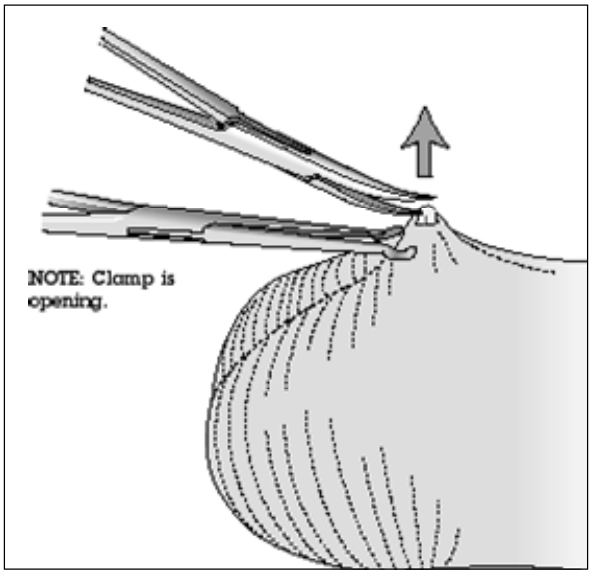
- Facing downwards, pierce the wall of the vas deferens at a 45 degree angle.
- Insert both tips of the dissecting forceps into the puncture site. Then, gently open blades of dissecting forceps transversely and spread tissue to make a skin opening twice the diameter of the vas. Next, clear the fascia overlying the vas using the dissecting forceps.

Figure 8-7: Spreading the Tissues to Make a Skin Opening Twice the Diameter of the Vas



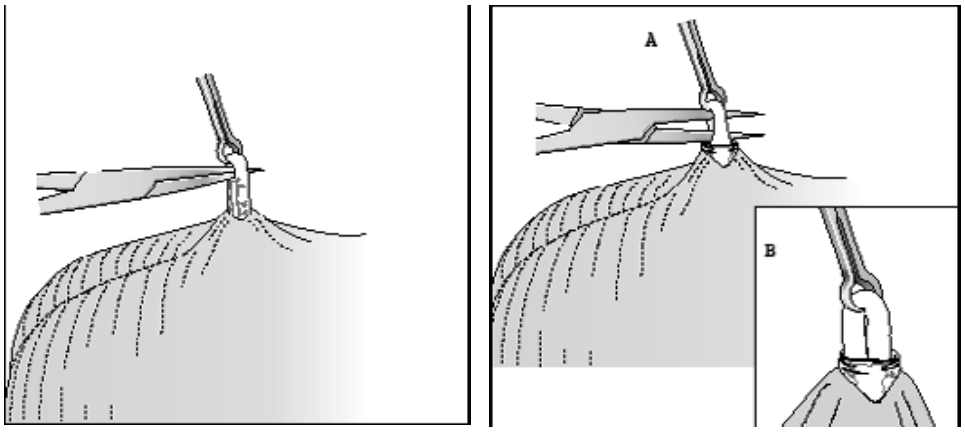
- Withdraw the dissecting forceps, and reinsert using only the lateral (right) blade of the dissecting forceps.
- Then rotate the dissecting forceps clockwise 180° to expose a loop of the vas. While delivering a loop of vas through the puncture site, slowly release the ringed clamp with the left hand, thus allowing the forceps to elevate the vas through the puncture hole but still keeping it in place. If the vas is difficult to deliver, more extensive spreading of the sheath may be required. Once the loop of vas has been delivered, close the dissecting forceps on the vas to prevent its slipping back in to the scrotum while the ringed clamp is removed from the skin.

Figure 8-8. Releasing the Ringed Clamp Before Elevating the Vas with the Dissecting Forceps-Ringed Clamp Open, but Still in Place



- Reapply the ringed forceps to securely grasp a partial thickness of the elevated vas. Release the dissecting forceps and use it to isolate the vas from the surrounding tissues. Then, use one of the tips of the dissecting forceps to puncture the vas sheath just below the vas, taking care not to injure the vas artery. Next, reinsert both tips into punctured sheath and strip the sheath away from the vas by spreading the blades of the dissecting forceps downwards for at least a 1 cm length of the vas. **Be careful** at this point to avoid blood vessels.

Figure 8-9. Dissecting the Vas from its Fascial Sheath



- Ligate the vas with a free tie using black silk suture. The prostate end of the vas is ligated and one end of the ligature is cut. The testicular end of the vas is ligated. Excise 1 cm of vas or cauterize vas 1.0 to 1.5 cm (both directions). Both stumps are separated by at least 1 cm. Ligate any bleeders to ensure hemostasis. Cut the ligature at the testicle end.

Figure 8-10. Ligation of the Vas

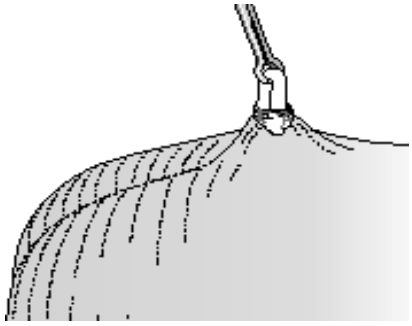
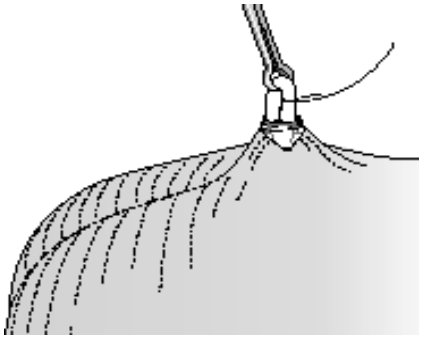
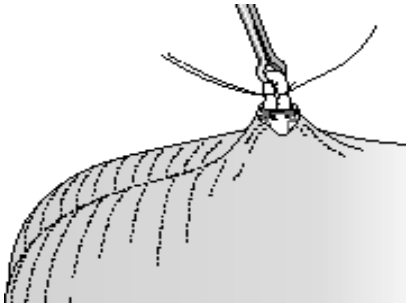
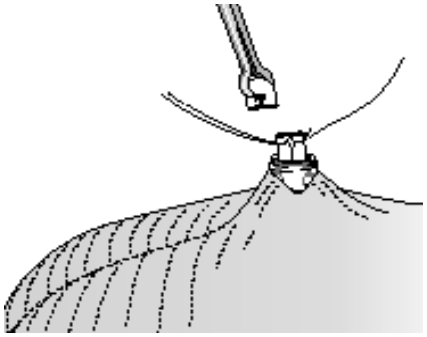
Figure 8-10 (a). Sheath and Vessels are Stripped Away From the Part of the Vas Being Occluded 	The surgeon must be certain that the segment of the vas to be occluded is separated and naked of all sheath and vasal before proceeding to ligation.
Figure 8-10 (b). The Prostatic End of the Vas is Ligated and one end of the ligature is Cut 	The strength used to tie the ligature must be just enough to occlude the vas and not too much to cut through the vas.
Figure 8-10 (c). The Testicular End of the Vas is Ligated. 	Ligate the vas more than 1 cm apart using two separate 2-0 silk or 3-0 silk ligature.
Figure 8-10 (d). Up to 1 cm of the Vas is Excised 	Excision using a sharp scissors should follow after each ligation of either end of the vas. Excise at least 1 cm. of vas approximately 3 mm from each ligature. Inspect for bleeding after each excision and control it when present.

Figure 8-10 (e). Both Stumps are Separated by at Least 1 cm

Figure 8-10 (f). The Ligature at the Testicular End is Cut

Fascial Interposition

Why vasectomy fails is not well understood. However, somehow, the two cut ends of the vas must reconnect (known as recanalization) so that sperm passage is possible. In the case of vasectomy by ligation and excision it is thought that failure may result from death of the tissue and sloughing of the cut ends of the vas at the site of the ligature, recanalization would then be more likely to occure.

Fascial interposition places a tissue barrier between the two cut ends of the vas. This is done by suturing the thin layer of tissue that surrounds the vas (the fascial sheath) over one end of the vas. It has been promoted as a way to reduce the already low vasectomy failure rates by decreasing the likelihood of recanalization. Evidence also shows that combined ligation and excision (LE) with fascial interposition (FI) increases the efficiency than simply with ligation and excision.

Creating Fascial Interposition

Create fascial barrier by pulling the sheath over testicular end of vas and secure it with a suture.

Steps in Completing Vasectomy by Fascial Interposition (FI)

- Allow both ends of the vas to drop back in to the scrotum by gently pinching and pulling up on the scrotum with the thumb and index finger until the prostate end is felt passing through the fingers.

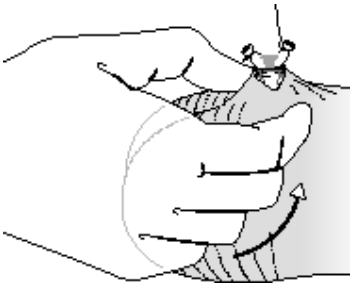


Fig. 8-11(a). The Operator Gently Pinches and Pulls up on the Scrotum With the Thumb and Index Finger

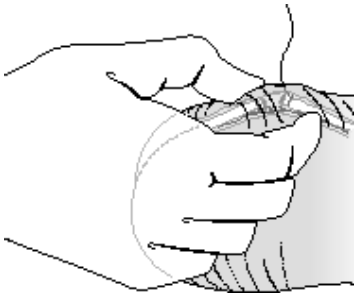
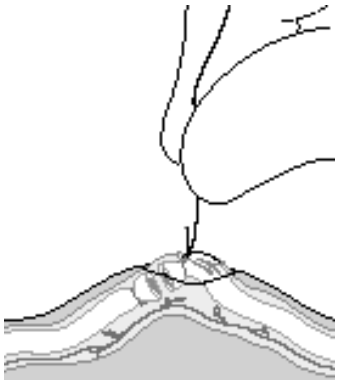


Fig. 8-11(b). The Prostatic End of the Vas Passes Between the Fingers into the Scrotum.

- Gently pull the uncut ligature of the prostatic end to puncture the wound.

Fig. 8-11(c). The Uncut Ligature at the Prostatic End is Pulled Through the Puncture End



- As the vas appears, it should be covered with the fascial sheath, which is seen as a translucent membrane covering the stump of the cut vas. If the translucent membrane is not covering the vas, the vas should be dropped back into the scrotum by gently pinching the scrotum so that the stump falls back to its original position.
- Carefully grip and hold tight the fascial membrane using the tip of the dissecting forceps, tie the fascial membrane about 2 or 3 mm below the previous tie of the prostatic end and cut both ends of the ligature.

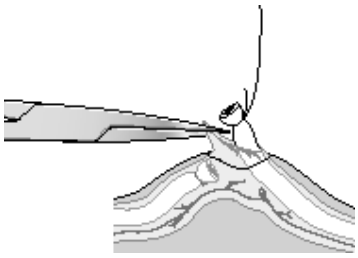


Fig. 8-11(d). With the Tip of the Dissecting Forceps, the Fascial Sheath is Grasped and Held

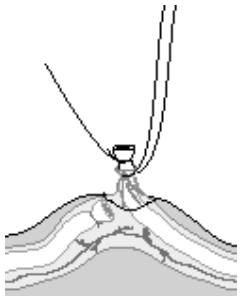
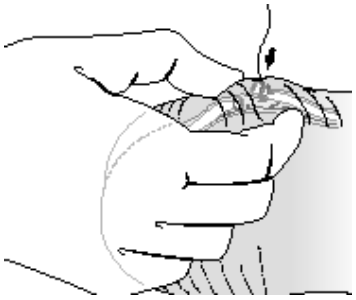


Fig. 8-11(e). The Fascial Membrane is Tied About 2 to 3 mm Below the Tie at the Prostatic End

- Allow the stump of the prostatic end to drop back into the scrotum by gently pinching the scrotum so that the stump falls back to its original position.
- After assuring by palpation with the thumb and middle finger that the prostatic end is in the correct position, pull the single ligature just enough to see the stump of the prostatic end, then cut the single ligature and once again allow it to drop back into the scrotum.

Fig. 8-11(f). The Stump at the Prostatic End is Allowed to Slip Back into the Scrotum



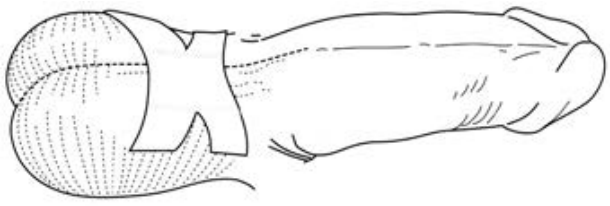
- When fascial interposition is complete, the stumps of the prostatic end should be outside the fascial sheath, and the stump of the testicular end should be inside the fascial sheath.

- Repeat the same steps for the left vas.

Return vas to original position by gently pulling down on the testes. Then, repeat steps for left vas. Next, palpate the scrotum to check that both vas deferens are ligated and in proper position. Finally, pinch puncture site tightly for a minute.

- Apply antiseptic solution to the wound and using sterile gauze, press down on the incision to stop any bleeding. Then, remove the drape. Bring the edges of the incision together and cover with a Band-Aid® or adhesive tape. Before helping the client off the operating table, help him put on a scrotal support, if available.

Figure 8-12. Skin Closure and Dressing



Postoperative Tasks

- While the client is resting, decontaminate the instruments and other items. . Decontaminate by submerging them in the chlorine solution for 10 minutes.
- Before removing your gloves, submerge all of the instruments in the chlorine solution. Decontaminate by allowing to soak for 10 minutes. Dispose of any waste materials by placing in a leak proof container or plastic bag.
- Briefly immerse both of your gloved hands in the bucket of chlorine solution. Remove the gloves by turning inside out. If the gloves will be reused, decontaminate by submerging in the chlorine solution and allowing it to soak for 10 minutes. If you will dispose of the gloves, place in a leak proof container or plastic bag. Wash your hands thoroughly with soap and water and dry with a clean, dry cloth or allow to air dry.
- Complete the client record and if available and appropriate, provide him with written post operative care instructions. Explain to the client how he should care for his wound and discuss with him what he should do if he experiences any problems. Ask him to repeat your instructions to ensure that he understands them. Answer any questions he may have. Schedule a follow-up appointment with him, if necessary.
- After the client has rested for 15 or 20 minutes, ask him how he feels. Make sure he feels well enough to leave before sending him home. Then provide client with at least 30 condoms and advise client to return for semen analysis after three months. Finally, complete NSV card and record in client record.

WASTE DISPOSAL AND DECONTAMINATION

(For detail please go through chapter 6)

- Before removing gloves, place instruments in a container filled with 0.5% chlorine solution for decontamination. Before immersing the needle and syringe, fill with chlorine solution (Do not disassemble.) Soak for 10 minutes and rinse immediately with clean water to avoid discoloration or corrosion of metal items.
- The surgical drape must be washed before reuse. Place in a dry, covered container and remove to the designated washing area.
- While still wearing gloves, place all contaminated objects (gauze, cotton and other waste items) in a properly marked, leak proof container with tight fitting lid or in a plastic bag.
- If disposing of gloves, immerse both gloved hands briefly in chlorine solution and then carefully remove gloves by turning inside out and place in a waste container.
- If reusing gloves, immerse both hands briefly in the chlorine solution to decontaminate the outside. Remove them by turning inside out. To ensure that both surfaces of the gloves are decontaminated, place them in a chlorine solution and soak for 10 minutes.
- Wash hands thoroughly with soap and water and dry them with a clean, dry cloth or allow them to air dry.
- All waste material should be disposed after proper treatment.

CLIENT INSTRUCTIONS FOR WOUND CARE AT HOME

- Keep the operative site dry for 3 days, and rest as much as possible gradually resuming normal activities as he feels able.
- Do not have sexual activity for 2-3 days and stop if uncomfortable.
- Avoid heavy lifting or putting tension on the scrotal area for 1 week
- For pain, take one or two analgesic tablets such as ibuprofen, every 4-6 hours. (Do not use aspirin as it may increase bleeding.)
- Remove adhesive tape on 4rth day by him-self.
- Return to have the wound inspected if necessary .
- See a health care provider if there are signs of hematoma formation or infection.

NINE

POSTOPERATIVE RECOVERY, DISCHARGE AND FOLLOWUP[1]

BACKGROUND

Monitoring the client after surgery is a very important function because it is during this period that any effects of surgical trauma or other postoperative complications become apparent. Although nurses or other staff members will carry out the tasks related to postoperative recovery and discharge, the surgeon is ultimately responsible for the quality of recovery room care.

Before discharge, a staff member should give the client postoperative instructions, orally and in writing if appropriate. The client should be asked to repeat these instructions to ensure that he has understood them and be given a followup appointment. The surgeon or designee assesses that he is ready for discharge.

The followup visit should occur within 7 days of surgery so that progress of healing can be assessed and look for signs of infection. The visit should include an examination of the operative site and any other relevant examination required by the specifics of the case and symptoms or complaints of the client. If the client has a problem that cannot be resolved, another visit should be scheduled.

POSTOPERATIVE MONITORING

In the postoperative period, staff must observe the client constantly. The client monitor has the following responsibilities:

- Receive the client from the operating room; review the client record.
- Make the client as comfortable as possible
- Monitor the client's vital signs**:**
  - Check blood pressure, respiration and pulse after 15 minutes and repeat as necessary until they are stabilized at preoperative levels.
  - Record vital signs in the client record after each checking.
- Check for scrotal swelling or bleeding.
- Check the surgical dressing for dryness.
- Observe the general condition of the client (including changes in skin color, postoperative pain.
- Administer drugs or treatment for symptoms according to the doctor's orders.
- Provide liquid and carbohydrates (e.g., hard candy, clear fruit juices, warm sweet tea) in order to raise blood sugar and carbohydrate levels.
- Complete the client record form.

1 *Adapted from: Philippine Family Planning Program. 1993. Guidelines: Minilaparotomy with Local Anesthesia. Family Planning Service, Department of Health: Manila, The Philippines.*

POSTOPERATIVE INSTRUCTIONS

Before the client is discharged, the client should be told the following postoperative instructions:

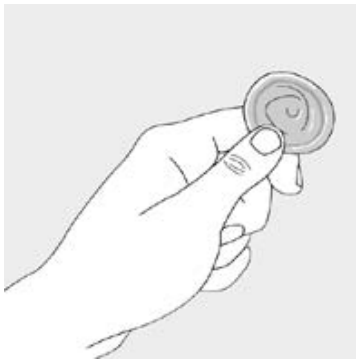
- He should rest, use the scrotal support and keep the operative site dry for 5 days, gradually resuming normal activities as he feels able. (He should be able to return to normal activities within seven days after surgery.)
- He should **not** have sexual intercourse for 2-3 days, and should stop if it is uncomfortable.
- He should avoid heavy lifting or putting tension on the incision for one week.
- He should return to the clinic or contact the clinic or doctor immediately if he develops any of the following:
  - Fever (greater than 38° C or 100.4° F)
  - Dizziness with fainting
  - Persistent or increasing scrotal pain
  - Bleeding or fluid coming from the incision
- For pain he may take one or two analgesic tablets, such as ibuprofen, every four to six hours. (Do not use aspirin as it may increase bleeding)
- He can return for a **followup visit** within 7 days of surgery or if necessary only.
- He should be counseled to use condoms until the sperm analysis is negative.
- Return for semen analysis after 3 months.

Written instructions summarizing the above also should be provided to the client or his spouse

CLIENT INSTRUCTIONS FOR CONDOM USE

- Use condoms during the first 3 months
- Unroll the condom onto the erect penis before the penis enters the vagina.
- Each condom should be used only once.
- Dispose of used condom by placing in a waste container, in the latrine or burying.

Figure 9-1. Steps for Condom Use



STEP 1: Carefully open package. Do not unroll condom before putting onto the penis.

STEP 2: If not circumcised, pull foreskin back. Place condom onto the end of erect penis. Leave 1-2 cm space at the tip.

STEP 3: Unroll the condom up to the base of the penis.

STEP 4: Check to ensure there is space at the tip of the penis.

STEP 5: After ejaculation, hold to the base (ring) of condom and withdraw the penis before losing erection.

STEP 6: Slide condom off without spilling content. Dispose properly.

How to Give Postoperative Instructions

- Give the client a copy of the postoperative instructions written in a language he understands.
- If the client is illiterate, ask him to name a literate friend or relative near his home who can read the instructions to him at a later date.
- Explain the instructions to the client in a language that he understands.
- Explain what the client can expect to feel on the days following surgery. Common symptoms include:
  - incision discomfort
  - scrotal discomfort
- Explain the warning signs of complications and where he should go if they occur:
  - scrotal pain that is persistent, severe or increasing
  - bleeding or pus or swelling at the incision site
  - fever
- Check whether the client understands the instructions by asking him to repeat them.
- If the followup visit is to take place at another facility, make sure that the client knows where the clinic is and how to get there.
- Encourage the client to ask questions.

DETERMINING WHEN THE CLIENT IS READY FOR DISCHARGE

Occasionally a client may require overnight observation. The following are indications that a client is not ready for discharge:

- He is unable to retain fluids (vomiting).
- He is unable to ambulate (unsteady when standing).
- He shows signs of possible scrotal bleeding.
- He shows signs of hypovolemia. He is unable to void or is dizzy or has an increase in pulse rate when moving from lying down to a sitting up or standing position. (An increase in pulse rate when moving from a lying to sitting position with legs dangling is a more sensitive indicator of hypovolemia than is low blood pressure.)

The client is recovered sufficiently to be discharged when he meets the following conditions:

- He can walk upright with minimal support.
- His vital signs are stable.
- He has no bleeding or seepage from the wound.
- He has no unusual complaints.

Before discharging the client, the staff should assure the following:

- He understands the signs of potential problems (warning signs).
- He understands that he should return to the clinic immediately or seek emergency care if a problem develops.

- He has heard and repeated the postoperative instructions.
- He has received any medications ordered.
- He has received a followup appointment.
- He has received condoms at least for 3 months.

TRANSFER OF CLIENT RECORDS

All client records should be maintained at the service site where the procedure took place. If the followup visit will take place at another facility, the client should be given a card to give to the followup provider. The card should state the date of the procedure, the type of procedure and any special instructions. If it is necessary to transfer a copy of the client's records, the original should be kept at the facility where the surgery took place.

FOLLOWUP

Although it is preferable that the operating surgeon conduct the followup examination, a trained paramedic can perform the examination and manage minor complications. If the client goes to another health center for followup, it is important that the staff at that facility be trained to do a careful followup examination and report any observed complication to the facility where the NSV took place.

When to Return to the Clinic

The **followup visit** should occur within 7 days of surgery and should include an examination of the operative site, and any other relevant examination called for by the specifics of the case and symptoms or complaints of the client.

Routine Followup

During a routine followup visit, the staff assesses the client to determine if he has any side effects or complications related to the surgery. In addition to medical problems, a staff member should look for signs that the client may be experiencing dissatisfaction or regret related to the procedure.

The followup visit should include the following tasks:

- Check the medical record or referral form, if available, for background information on the client and the surgical procedure.
- Ask the client if he has experienced any problems or had any complaints since the surgery. Specifically, ask if the man has experienced any of the following:
  - wound discharge or bleeding
  - urinary difficulties
  - fever
  - pain or other distress
  - scrotal swelling
- Examine the operative site to assess healing and the absence of infection
- Treat or refer for any complications indicated by the examination.
- Document the followup visit in the client's medical record, including complaints, diagnosis and treatment.
- Advise client to return after 3 months.

Confirmation of Vasectomy Success

Successful ligation of both vas deferens effectively blocks newly produced sperm cells from traversing the ejaculatory duct system. However, sperm cells already in transit or stored in the ejaculatory ducts distal to the ligation remain active and potent as long as three months after the procedure. These sperm cells are either flushed out by ejaculating into a condom or become inactive during the three month wait period.

After the three month period, clients are routinely instructed to return to the clinic for sperm analysis. Semen collection is usually done on site or at home as long as the specimen is not more than an hour old. The results are immediately available and in most instances confirm a successful vasectomy. However, when the sperm analysis result continues to document the presence of active sperm cells, decisions have to be made to further assist the client. The next steps should include:

- Instruct the client to return after 1 month for a repeat sperm analysis. Additional condoms should be provided and used at every sexual intercourse.
- If the repeat sperm analysis is positive, compare it with the initial sperm analysis result for any substantial decrease in count and motility.
- Advise repeat vasectomy if the two results do not show any difference.
- Advise a repeat sperm analysis and continued use of condoms for another 1-2 month if the results indicate a decreasing trend.
- Repeat vasectomy if active sperm cells continue to be documented 6 months after the procedure.

Emergency Followup

Clients making an emergency followup visit should receive immediate attention. Staff should be alert to the possibility of internal bleeding or infection.

If the man had surgery at another health facility, the medical records may not be available. The staff member conducting the interview should obtain chronological information covering all events since the day of surgery. Complications and treatment should be reported to the facility where the NSV was performed.

The emergency visit should include the following tasks:

- Examine the client immediately. Check all areas related to his complaint.
- Read the medical record, if available.
- Obtain chronological information from the client. Include any problems during the surgery or in the recovery period; development of problems or increase in discomfort and any medications taken or treatments obtained.
- Decide on the treatment for problems that can be handled on an outpatient basis.
- Arrange for a higher level of treatment for potentially serious complications.
- Note on the client record all problems and actions taken.
- Inform the facility where the NSV was performed about the emergency followup visit (if applicable).

FAILURE OF VASECTOMY

The occlusion of the vas deferens is one of the most effective methods of contraception. However, spontaneous recanalization is possible. If followed correctly, the standardized NSV technique should minimize the risk of spontaneous recanalization.

TEN

MANAGEMENT OF COMPLICATIONS

BACKGROUND

Complications are abnormal conditions caused by the procedure that require intervention or management beyond routine postoperative care. For example, a wound infection noted on the fifth day after surgery that requires opening the wound is a complication, while abdominal cramping on the day after the procedure is a side effect. Mild pain in the operative site with some swelling and bruising are frequently occurring and expected side-effects of NSV.

Serious complications are rare and those from NSV are even rarer. The mortality rate for NSV is low if complications are immediately and accurately diagnosed and effectively treated. Complications of NSV generally are the same as those associated with similar surgery. They can be broadly categorized into two groups;

1. Surgery related complications
2. Anesthesia related complications

1. Surgery Related Complications

a. Immediate Complications
   i. Bleeding
   ii. Vasovagal reaction (faint or syncope)

b. Delayed Complications
   i. Hematoma of the scrotum
   ii. Infection of the wound
   iii. Sperm granuloma
   iv. Others

2. Anesthesia Related Complications

a. Immediate Complication
   i. Vasovagal reaction (faint or syncope)
   ii. Anaphylaxis
   iii. Cardiac Arrest

Overall, NSV is a safe procedure and few men experience complications. Major complications occur in less than 0.4% of all cases.

In addition to the specific interventions described in this chapter, the following steps should be taken when a complication arises during the procedure;

- Stop surgery while emergency treatment is underway.
- Complete the surgery only if the client's condition has stabilized.

- Consider hospitalizing the client for observation.
- Record the complication and the treatment in the client record.
- Report the complication to the Family Health Division

EMERGENCY MANAGEMENT

When a complication becomes an emergency certain critical interventions are necessary to care for the patient. Steps for clinical care of people in emergencies have been well established. Some are general in nature and others are very specific. They include;

- Initial assessment and steps
- History taking
- Brief physical exam
- Diagnosis
- Initial therapy and stabilization, and
- Referral

Initial Assessment and Steps

- *Keep calm.* Focus on the needs of the patient.
- *Stay with the patient.* Make sure someone (with medical knowledge if possible) stays with the patient.
- *Take charge*. One person must be in charge in an emergency in order to give clear direction. During NSV the operating doctor should assume responsibility and provide directions to the group.
- *Call for help*. Delegate *one particular* individual to go quickly to get additional help (nurse, doctor or other support staff, if necessary). Get oxygen cylinder and emergency kit ready at hand for immediate use.
- *Talk to the patient*. Ask the patient what happened. Ask what he is feeling (pain, dizziness, difficulty breathing, etc.)
- *Position the patient*. Help the patient to a comfortable position, generally lying down with the feet elevated. This also makes it easy for the staff to provide medical attention to the patient. Loosen any tight clothing. Expose an arm so that the blood pressure can be taken.
- *Quick exam.* Take the patient's blood pressure, pulse and respiratory rate. Feel the skin to know if it is warm or cool. Record these findings on the record sheet.

History Taking

In a no-scalpel vasectomy setting, intra-operative complications rarely turn into an emergency situation. If they do, however, the complication can be caused by:

1. Complication of surgical procedure
2. Anesthesia related complications and
3. Previously known or unknown medical problems, for example fits, seizure or medical problems such as asthma or bronchitis.

The operating doctor should quickly ask some questions to assess the situation. Remember ask only pertinent questions during the initial stages of an emergency.

Brief Physical Exam

The initial assessment of the patient included taking the vital signs. This should be repeated every 15 minutes in the initial stages of the management of the emergency. In addition, do the following physical exam

Skin: check for flushing of skin, whether the skin is cool or warm, moist or dry and the presence of urticaria or cyanosis

Chest: listen for shallow breath sounds or wheezing

Heart: listen for any change in rhythm or rate

Surgical site: check for bleeding

Diagnosis

Based on the history and physical findings a decision is made regarding the likely diagnosis. Once the diagnosis has been established the situation should be managed according to the guidelines provided for their management later in this chapter. The complications which may occur in this setting include;

- Vasovagal reaction, also called syncope or faint, or
- Anaphylaxis or cardiac arrest, both of which are very rare.

Initial Therapy and Stabilization

Initial steps to stabilize a patient are similar for a variety of different complications. Refer to **Appendix C** for more details on initial therapy and stabilization.

Referral

Certain problems cannot be handled at the facility where they are first noticed. A good clinician recognizes what he or she is capable of managing and what is not and transfers those cases which cannot be manage in a timely fashion. While making the referral, if the situation ever presents during NSV, make sure that the client is in a stable condition and the examination findings and therapeutic interventions are properly documented for the benefit of the next provider. Having a clinician accompany the client during the transfer will provide opportunity to continue necessary emergency management while the client reaches the referred hospital.

Also patient with symptomatic chronic illness should be referred for operation to higher center with better medical facilities.

SURGERY RELATED COMPLICATIONS

Though complications are rare they may occur and need to be identified and managed properly. The more commonly occurring complications are those related to surgery.

1. Immediate Complications include:

a. Bleeding from the puncture site

This could be either due to superficial skin ooze or bleeding from the deeper structures. Apply secure pressure over the skin puncture site with thumb and index finger for at least three minutes. With this maneuver skin ooze normally stops bleeding. If the bleeding from the skin is strong apply a mattress suture of the skin to secure hemostasis. If bleeding persists and appears to be from the deeper structures, slightly increase the incision under local anesthesia, identify the bleeding points and clamp and ligate them. Apply tight pressure bandage with the help of a gauge bandage and a support garment (or a T bandage, if available).

b. Vasovagal reaction (faint or syncope)

Faint or syncope is a benign and short-lived episode of unconsciousness due to a temporary decrease in the BP and /or amount of oxygen reaching the brain.

Cause

- Getting up from lying down position too quickly.
- Emotional upset.
- Painful stimulus.

Assessment and diagnosis

Vasovagal reaction is characterized by the following;

- Low blood pressure.
- Pulse is initially slow then rapid and weak.
- Skin is cool, moist, and pale.

Note: if the pulse is absent, this is not faint. Take action as for cardiac arrest.

Treatment

Follow the treatment **algorithm for "FAINT" (page 10-6)**

Reassure the client as he regains consciousness and allow him to recover in a comfortable place. Before he leaves allow the client to ask questions about what happened.

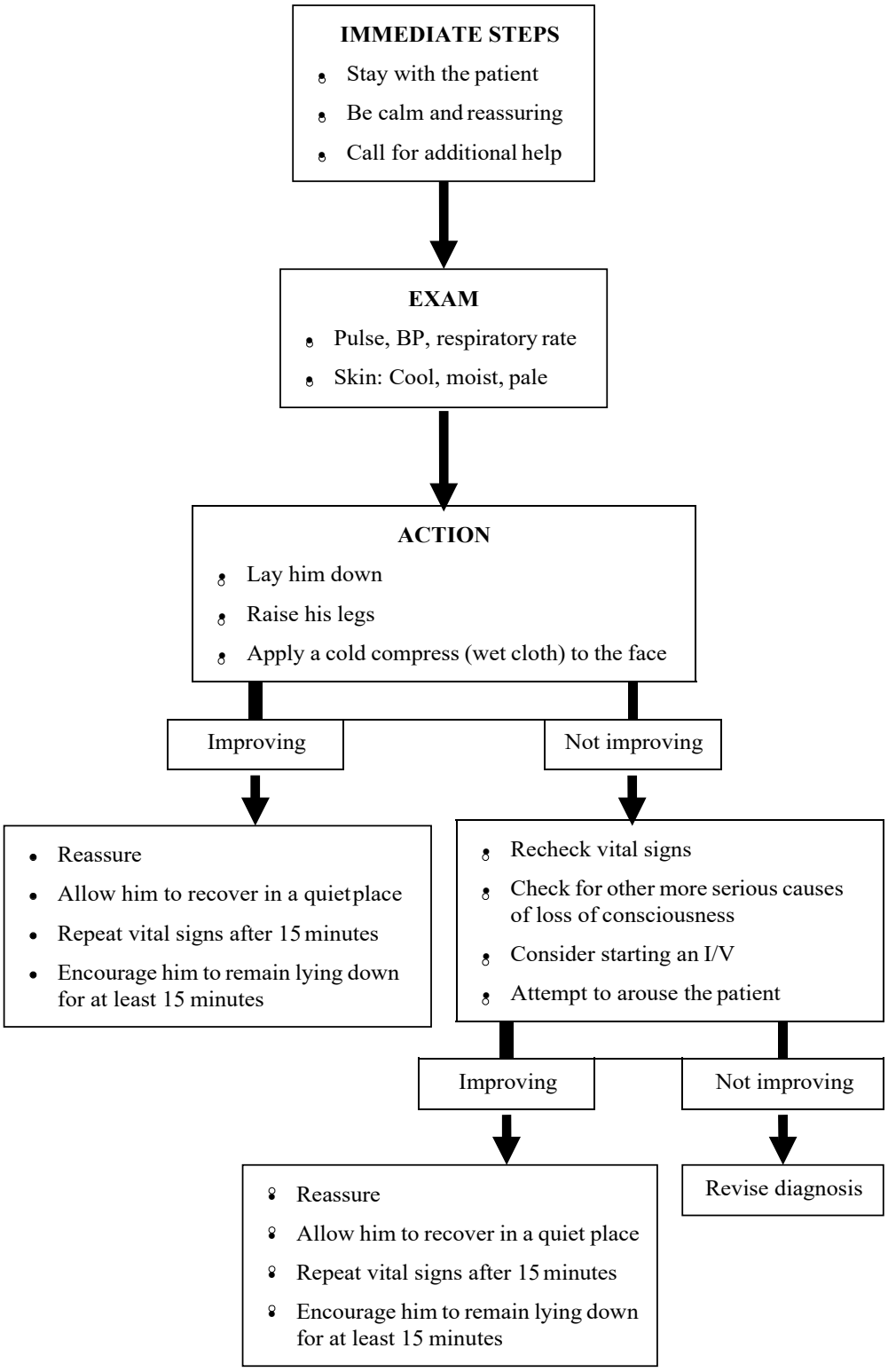
Immediate complications and their causes and management outlines are listed in **Table10-1**.

MANAGEMENT OF INTRAOPERATIVE COMPLICATIONS

Table 10-1. Potential Intraoperative complications

	Vasovagal Reaction (neurocardiogenic syncope)	Lidocaine Toxicity	Injury to testicular artery
Symptoms	• Fainting • Nausea • Weakness • Lightheadedness • Blurred vision • Sweating • Decreased blood pressure • Heart rate increases initially, then decreases • Pallor • Cold, clammy hands • Restlessness	• Numbness of tongue and mouth • Lightheadedness • Tinnitus (ringing in the ears) • Visual disturbances • Slurred speech • Respiratory arrest • Myocardial depression • Arrhythmia • Hypotension • Cardiac arrest • Convulsions • Coma (very high overdose)	• Bleeding observed in fascia around the vas
Treatment	• Reassure the client • Raise the client's feet • Lower the client's head • Administer atropine if the client's pulse is lower than 40 • Administer oxygen	• Drug discontinuation • General supportive measures • Maintain airway and respiration • Oxygen • Diazepam, midazolam or thiopental (for convulsions) • Vasopressors (mephentermine, ephidrine or dopamine, for example) for hypotension	• Cautery/ligation to control bleeding
Etiology	• Painful procedure • Anxious client	• Overdose of lidocaine • Intravascular injection	• Injury to blood vessel during stripping of fascia from vas
prevention	• Gentle surgical technique • Effective anesthetic block • Explain procedure to the client in advance • Reassure client during procedure	• Do not administer a dose >30 cc of 1% solution or >15 cc of 2% solution (dose is based on weight, maximum safe dose of plain lidocaine is 3 mg/ kg)	• Careful stripping of fascia and blood vessels

FAINT


IMMEDIATE STEPS
Stay with the patient
Be calm and reassuring
Call for additional help
EXAM
Pulse, BP, respiratory rate
Skin: Cool, moist, pale
ACTION
Lay him down
Raise his legs
Apply a cold compress (wet cloth) to the face
Improving
Not improving
Reassure
Allow him to recover in a quiet place
Repeat vital signs after 15 minutes
Encourage him to remain lying down for at least 15 minutes
Recheck vital signs
Check for other more serious causes of loss of consciousness
Consider starting an I/V
Attempt to arouse the patient
Improving
Not improving
Reassure
Allow him to recover in a quiet place
Repeat vital signs after 15 minutes
Encourage him to remain lying down for at least 15 minutes
Revise diagnosis

2. Delayed Complications include:

a. Hematoma of the Scrotum

Post-operative swelling of the scrotum with relatively little pain is the commonest form of scrotal hematoma. This occurs due to unrecognized injury to the blood vessels or bleeding around the spermatic cord. If pain is a major symptom suspect super-added infection. A small sized hematoma can be left undisturbed to let it resolve on its own. Provide scrotal support and reassure the client that the condition will resolve. A larger size will require surgical drainage under local anesthesia. A corrugated rubber drain may need to be left in-situ for twenty-four hours to allow for the collection to drain out. If drain is placed it should be removed after twenty-four hours. Provide prophylactic antibiotic coverage and non-steroidal anti-inflammatory drugs for pain relief. A scrotal bandage should be worn until the condition is resolved.

b. Infection of wound

Infection of wound is identified by the presence of pain and swelling of the operative site. Failure to observe appropriate infection prevention practices and/or failure to instruct client in proper care of the wound are possible causes of infection of the wound. An advanced infection is characterized by the presence of purulent discharge with abscess formation and the patient may complain of fever. On examination the scrotum is tender with raised local temperature. There could be frank discharge of pus. If abscess is present it should be immediately drained under local anesthesia. Immediately start a course of antibiotics, 250mg of ampicillin and 250mg of cloxacillin given together every six hours given for 7 days. Give 400mg of ibuprofen every six hours for pain relief. The patient should be seen 2 days after starting the therapy to assess the response to treatment. Scrotal support should be advised until infection resolves.

c. Sperm granuloma

This condition occurs due to inflammatory reaction to sperm accumulation at the cut end of vas. The client usually complains of a nodule in the scrotum separate from the testis. The client may also complain of intermittent pain in the nodule. If there is no pain, reassure the client that it is a benign condition and there is no cause for concern. However, if the pain is persistent, surgical intervention is required. Under local anesthesia the cyst needs to be evacuated, cut and sealed. Provide prophylactic antibiotic cover and analgesia for pain like in the management for hematoma of the scrotum.

Other late complications and their possible causes and management outlines are listed in **Table 10-2**.

POTENTIAL POSTOPERATIVE COMPLICATIONS OF VASECTOMY

Table 10-2. Potential Postoperative Complications of Vasectomy

	Bleeding	Hematoma
Symptoms	• Bleeding observed at incision site • Swelling of scrotum	• Swelling of scrotum
Treatments	• Most small vessel bleeding can be controlled by compression	• Control bleeding by pressure • Cautery and ligature may be used for large vessel bleeding • Rarely, may require incision and drainage • If hematoma is stable, allow to resolve on its own • Provide prophylactic antibiotics
Prevention	• Careful surgical technique	• Careful surgical technique • Understanding and carrying out of postvasectomy instructions
Etiology	• Vasectomist's failure to strip spermatic cord vessels from the vas before transection • Vsectomist's failure to control bleeding before wound closure	• Rough handling of tissue • Vasectomist's failure to control bleeding before wound closure • Excessive strain or heavy lifting by client after vasectomy

	Infection	Sperm Granuloma
Symptoms	• Pus, swelling, or pain at the incision site or in the scrotum • Fever	• Pain at the testicular end of the vas or the tail of the epididymis • Nodule felt during palpation
Treatments	• *Superficial infection*: clean and apply local antiseptic and clean dressing • *Underlying tissue infection*: antibiotics and wound care • *Abscess*: antibiotics, drainage, and wound care • *Cellulitis or fascitis*: debridement, antibiotics, and wound care	• Asymptomatic: no intervention • *Pain*: use nonsteroidal analgesics • *Persistent pain*: evacuate the cyst; cut and seal the vas ¼ inch towards the testis • ***Do not*** excise the granuloma • Rarely, chronic pain warrants an epididymectomy
Prevention	• Observation of proper infection prevention procedures • Recognition of bleeding • Client keeps wound dry after vasectomy	• Unknown
Etiology	• Failure by vasectomist to follow infection prevention procedure • Unrecognized or untreated hematomas • Improper postoperative care of the wound by vasectomists or client	• Occlusion of vas leads to accumulation of sperms

	Discharging Scrotal Sinus
Symptoms	• Delayed painless scrotal discharge usually after 3 months.
Treatment	• Under local anesthesia, release the adherent end of the vas from skin. • Confirm the release by freely rolling vas within the scrotum between the thumb and index finger
Precaution	• Appropriate performance of fascial interposition (FI) tying the internal spermatic fascia not cremasteric or external spermatic fascia and pulling the vas in its original position
Etiology	• Incomplete separation of sheath form the vas. Sometimes the scrotal muscle fibers or external spermatic or cremasteric fascia caught in the knot while doing fascial interposition (FI) becomes the cause of formation of scrotal sinus

	Chronic Testicular Pain	Infectious and Congestive Epididymitis
Symptoms	• Chronic unilateral or bilateral pain in the scrotum without palpable abnormality • Swelling (sometimes) • Pain during intercourse or strenuous activity	• Fever • Scrotal pain • Swelling • Induration
Treatments	• Nonsteroidal analgesics • Pain may gradually subside spontaneously	• Bed rest • Scrotal elevation • Ice packs • Nonsteroidal analgesic • Antibiotics
Prevention	• Unknown	*Infectious epididymitis*: • Follow infection prevention procedures • Screen clients for STIs *Congestive epididymitis* • Unknown
Etiology	Possibly caused by: • Neuroma or peri-neural irritation • Epididymal engorgement with sperm • Sperm granuloma formation due to back pressure-induced rupture of epididymal tubules • Site baths • Antibiotics • Spermatic cord blocks If the above fails, vasectomy reversal or denervation of the spermatic cord may be helpful.	*Infectious epididymitis*: • Failure to follow infection prevention procedure • Sexually transmitted pathogens *Congestive epididymitis*: • Pressure on epididymis resulting from sperm blockage

	Pregnancy in the Client's Partner	Vasectomy Failure
Symptoms	• Client's partner is pregnant	• Semen analysis shows sperm
Treatments	*Determine the reason for the pregnancy by*: • Estimating the date of conception • Asking if the couple had unprotected intercourse for the 12 weeks after the vasectomy • In confidence, asking the partner if she has had intercourse with another man • Offering semen analysis • Referring the couple to further counseling or prenatal care	• Explain to the couple how the failure could have concurred • Offer to repeat the vasectomy procedure.
Prevention	• Instruct the client to use contraceptive before vasectomy and during the post operative period *For vasectomy failure*: • Careful surgical technique	• Careful surgical technique
Etiology	• Pregnancy before the vasectomy • Partner's sexual activity with a man other than the client • Unprotected intercourse at any time up to 12 weeks after vasectomy • Vasectomy failure	• The vasectomist's failure to properly occlude the vas • Spontaneous recanalization

ANESTHESIA RELATED COMPLICATIONS

Serious anesthesia-related complications are likely to occur as a result of overdose, improper administration of the anesthesia or inadequate monitoring.

a. Vasovagal reaction (syncope or faint)

The treatment and management of vasovagal reaction as a complication due to anesthesia is the same as that described under surgery related complication.

b. Anaphylaxis

Anaphylaxis is a generalized severe allergic response to drugs. It is cause by something injected, swallowed, inhaled or applied externally. It is not related to dose of drug or route or speed of administration. It can occur even in-patient who have safely used the drug before.

Anaphylactic response with povidone iodine or lidocaine is extremely rare. However, should the need arise the doctor and the medical team should be prepared to manage the complication.

Cause

With relevance to NSV there are only a few causes which may possibly give rise to this condition;

i. Iodine preparation (e. g. Betadine)
ii. Reaction to latex gloves
iii. Lidocaine or other local anesthetics, which is very rare.

Assessment and diagnosis

Anaphylaxis is characterized by all or most of the following;

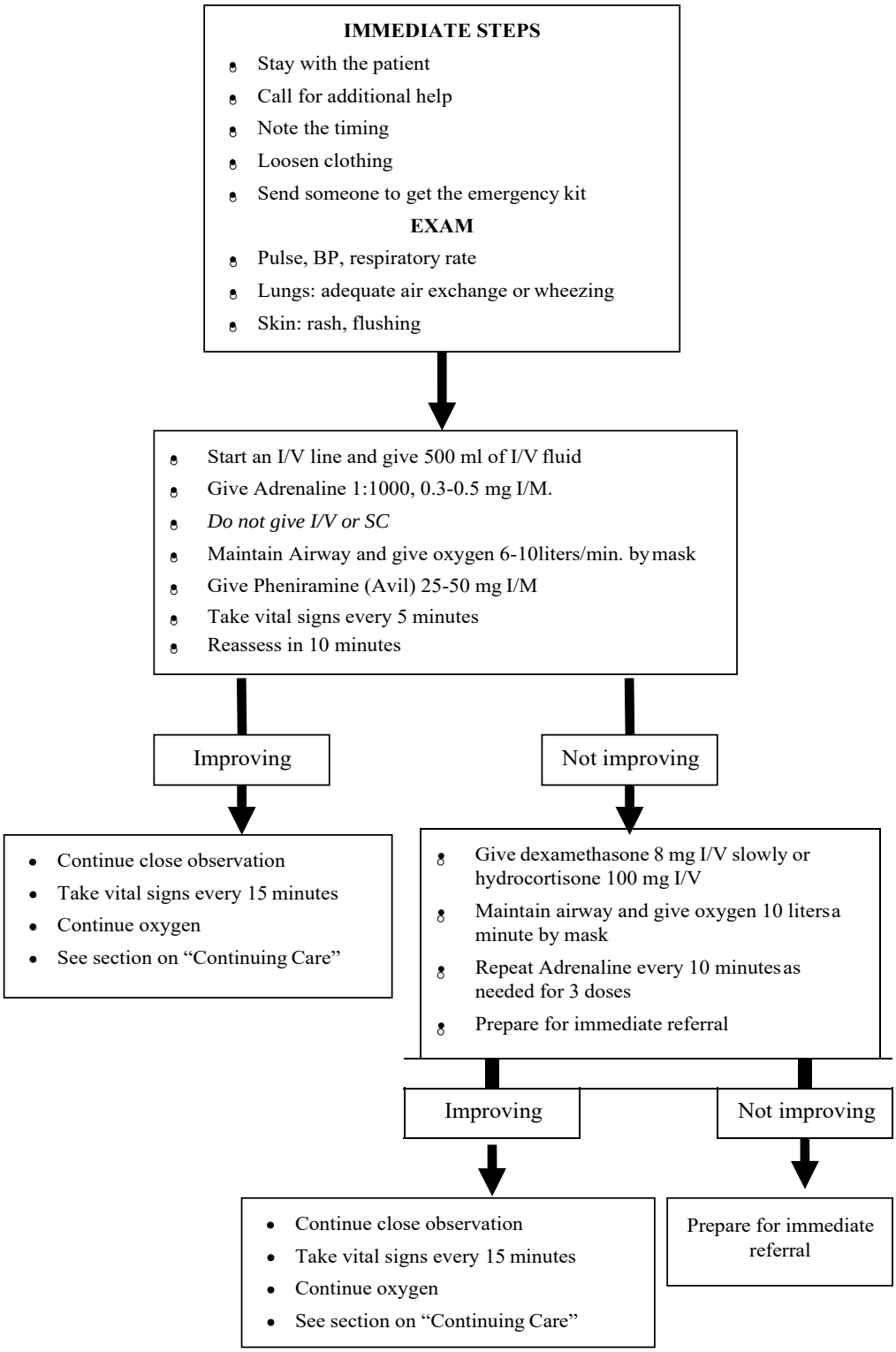
a. Hypotension
b. Difficuly breathing due to bronchoconstriction and/or inflammation of airway
c. Urticaria (raised red patchy rash) on trunk and extremities
d. Flushed skin
e. Itching

Anaphylaxis can range from mild to severe, but more importantly, it can be progressive. Therefore, even mild cases should be immediately evaluated and considered for treatment.

Treatment

Follow the treatment **algorithm for** "**ANAPHYLAXIS".**

ANAPHYLAXIS



c. Cardiac Arrest

This is a very rare event in family planning setting. However, if a cardiovascular complication does occur, the surgical team should be prepared to provide basic cardiopulmonary resuscitation. The CPR procedure is given in detail in **Appendix C (BLS protocol).**

Absence of pulse for 10 seconds or longer is diagnostic of cardiac arrest. Early in cardiac arrest ineffective "gasping" efforts or apnea may be confused with spontaneous respiration. Anesthesia related cardiac arrest is usually preceded by progressive bradycardia and/or cyanosis. Monitoring vital signs during procedure helps to avoid the problem progressing to cardiac arrest.

EMERGENCY MANAGEMENT OF INTRAOPERATIVE VASECTOMY COMPLICATIONS

How Complications Become Serious

- Staffs fail to recognize signs of an overdose.
- Monitoring staffs are distracted by other duties.
- Staffs lack knowledge of emergency measures.
- Emergency equipment is unavailable or does not function.
- Emergency medications are unavailable.
- Staffs lack training in the use of emergency drugs.
- Staffs are unclear about their roles and responsibilities in emergency care.

Staff Preparation for Emergencies

All staff must be trained to effectively manage emergencies. Staff must be skilled in administration of intravenous fluids and drugs. They must understand which drugs may be used, how to administer them and their expected actions. They must be familiar with the use of all emergency equipment and must check all such equipment before each operating session. The person monitoring the client in the operating room and the recovery room must be capable of detecting early signs of complications and be able to take initial emergency action. The emergency care supplies and drugs must be kept in an accessible place known to the staff members.

Emergency equipment and supplies

The equipment listed below must be available for emergency use in the operating room and recovery area. All emergency equipment must be immediately available, ready for use and in good condition. A battery-operated light source should be available for back-up or focused illumination of the operative site.

- Ambu bag with face mask (different size mask)
- Oral airways (at least two sizes)
- Nasal airways (at least two sizes)
- Oxygen cylinder
- Stethoscope
- Sphygmomanometer

- Blanket
- Syringes
- IV cannulas different sizes (16,18,20,22)
- IV infusion set
- Adhesive tape
- Flashlight
- Gauge pieces
- Kidney tray
- 2-0/3-0 catgut, atraumatic

Emergency Drugs

The drugs listed below must be available in the operating room and recovery area. The staff should be well informed about the drugs, their use, dose, strength and route of administration, signs of toxicity and treatment of overdose. The following emergency drugs are recommended.

- Atropine
- Adrenaline (1:1000)
- Diazepam/ midazolam
- Corticosteroids (Dexamethasone or Hydrocortisone)
- Aminophylline
- Frusemide
- Dopamine
- Intra Venous fluids –
    i. Dextrose 5%, 25%
    ii. Dextrose in Normal Saline
    iii. Normal Saline/Ringer Lactate
    iv. Haemacele
- Intra Venous set
- Calcium gluconate
- Avil
- 2% lignocaine preservative free (eg. xylocard)

ELEVEN

MANAGEMENT AND QUALITY OF CARE IN NSV SERVICE

BACKGROUND

Over the years, increasing attention has been given to strengthening and improving quality of care within family planning programs worldwide. Quality of care makes a lot difference also in family planning service. It affects the use of methods effectively, use continuously and even affects whether people start family planning at all. The quality of services provided at facility also direct bearing on whether a client returns to facility and whether a client tells others about the services. If quality is poor, the services received could result in complications, which could affect the health of the client. The client may not be satisfied and they may drop out the service which impact in cost expenses for the service and the dissatisfied clients may go to private services or elsewhere in the public system. International studies throughout the world have clearly demonstrated a direct relationship between quality of care and use of services.

There are also many pressures and demand arising in this field due to increase level of education of people, increase awareness of human right, improves social status, increase competition of health services increase use of technology of health services etc.

WHAT IS QUALITY OF CARE?

Quality of care is a relative term and has different connotations for different people. In general, people mistakenly assume quality of care to be highly sophisticated and technological services, which are provided by highly trained medical personnel in very big hospitals in cities. In reality, quality services do not have to be sophisticated and expensive and can be achieved in rural setting with effective and efficient use of available resources. There are different perceptions of quality: a physician may define quality on the basis of knowledge and skills of clinical procedure, whereas a nurse may define it in terms of a care during and after the surgery. Similarly a manager may think of quality as adequate resources, trained staff and good facilities for clients. Good quality of care to one person may not appear so to another. Personal and professional perception, experiences, needs to influence, identification of the specific components of quality of care.

Although views on quality of care differ, it should not be forgotten by all concerned people that family planning service is provided for the welfare of clients to fulfill their reproductive needs. So service providers and managers should give importance not only to the technical quality of services but also values client needs and rights such as privacy and confidentiality, counseling and informed choice, interpersonal communication, safety etc. during providing family planning services.

Remember: A high quality program is client-oriented and helps individuals achieve their desired reproductive goals.

There are many definitions given by different organizations and individual on quality of care in family planning services. However to define quality of care in family planning, the Bruce-Jain framework of six elements (choice of methods, information given to clients, technical competence, interpersonal relations, continuity and follow up, appropriate constellation of services) of care have been used as the standard.

"Quality of Care in Family Planning means the delivery of services to the clients, based on free choice of available methods, by trained human resources with information and counseling, keeping in view the clients perspective, essential service standards, resources and the environment, to meet the needs and expectations of present client and attract future acceptors"; Consensus Definition: IPPF, QoC Workshop, South Asia Region, 1992.

According to the IPPF, the clients perspective of quality of care emphasizes method of choice and availability of methods, respectful and friendly treatment, maintain privacy and confidentiality, service provider's competency, information and counseling, convenient hours (waiting time) and affordability. Three elements can help clients feel well treated:

- Face-to-face communication
- Skillful providers who shows clients that they care about their work
- Consideration of women's and men's need, fears and reactions may be perceived differently by male and female providers (Diaz 1994)

BENEFITS OF QUALITY SERVICE

Studies done in many countries have shown that the quality services in family planning leads to benefits to clients and programs. These benefits include:

Client Satisfaction and Continuation:

Quality services increase client satisfaction and encourage people to continue using contraception to avoid unintended pregnancies.

Safety and Effectiveness:

Quality services enhance safety for clients and service providers. It also helps client to interact with service providers listen and understand the instructions carefully. In such situation clients also follow instructions which helps to increase the effectiveness of contraception.

Increase Use of Contraception:

When client are satisfied with service they continue the methods for long time and they inform about the service to other possible clients. This will help to continue the contraception for current users and attract for new or potential clients. If quality is poor, client may start to blame against the contraception methods.

Reduces the Cost of Service:

If the quality of service is good, the infection rate and other complications will be less. Client accepts the contraception and continues for long time. This will ultimately reduce the cost of services. **Increase Staff Satisfaction and Motivation:** Service providers get greater personal and professional satisfaction when they can offer good quality service to clients and clients start to appreciate on the service they received.

Increase Image of Institution, Profession and Program:

Health institutions, which provide good quality service, help them to establish good image among clients and in society. It helps client to build trust on institution and prestige about the service and inform other clients about the quality service.

Ensuring Access to Services:

Quality of care closely linked to accessibility. Access means more than the mere existence of a nearby health workers or facility. Access of quality service emphasize in terms of language, time, cost, culture etc that should be suitable to clients. Quality service deals with all these matters.

IMENSIONS OF QUALITY

There are numbers of views on dimensions of quality of family planning services. Some has mentioned their views according to the right of clients and others have given according to the service delivery system.

In 1990, Judith Bruce put forward six basic elements that constitute quality. This "Bruce framework", as it has come to be called, has since functioned as the primary reference point for quality of care in family planning program. Following are the six elements:

1. Choice of Methods

Choice of methods refers to the variety of contraceptive methods available to an individual/ couple. Clinicians should have the knowledge and skills required to offer several family planning methods in order to provide the one most appropriate for each client's needs and choice.

Indicators	Suggested Activities
1. Number/range of methods available	1. Ensure all FP methods available at the site based on level and trained manpower
2. Provider refers clients elsewhere for methods if unavailable at the site	2. Refer the clients in appropriate site, if the demanded method is not available
3. Few restrictions placed on available methods	3. Provide the services as per guidelines and protocols
4. Client receives chosen method	4. Respect clients needs and informed choice

2. Information Given to Clients

Information given to clients refers to information that enables clients to choose and use a contraceptive method with satisfaction and provides a good understanding of the method. This information should be part of the counseling process and includes how the methods work, precautions for use, benefits and limitations, how to use the method selected and any potential side effects and complications. When this task is performed appropriately, clients should be able, for instance, to correctly explain and use the method chosen.

Indicators	Suggested Activities
1. Providers gives in-depth information on method accepted	1. Provide essential information to clients especially focusing on procedure, mode of action, side effects, advantages, disadvantages, follow up etc.
2. Client correctly explains method chosen	2. Ensure clients understand essential information regarding the chosen methods.
3. Service provider trained in counseling skills	3. Manage trained staff on counseling.
4. Method-specific informational material available	4. Made available of FP specific IEC materials.
5. Privacy acceptable for counseling and exam	5. Keep and maintain privacy
6. VSC consent from available and signed by client	6. Made available of VSC consent form, explain 7 points of informed consent form, sign the form.

3. Technical Competence

Technical competence refers to the level of the clinical skills of providers (trained service providers), their observance of protocols (written descriptions of steps to be followed during service provision) and use of recommended infection prevention practices in delivering family planning services. Practice needs to be strengthened first using the checklist.

Indicators	Suggested Activities
1. Existence of written guidelines on FP practices	1. Ensure written guidelines on FP (NMS, VSC guidelines, protocols etc.)
2. Provider demonstrates skill at clinical procedures	2. Available of trained and competent providers.
3. Infection prevention procedure maintained	3. Ensure standard infection prevention practices while providing services.
4. Availability of appropriate basic items for delivering available methods	4. Made available of all essential equipment and supplies to service provider
5. Capability for handling complications	5. Ensure that service providers are trained to manage complication occurred while providing services. Also made available of emergency drugs and equipment as per NMS.

4. Client Provider Interaction

Client provider interaction refers to the provider's skill in establishing a positive atmosphere and two-way communication to assist clients in discussing any fears, clear misconception and misunderstanding that they may have about a specific contraceptive method (NSV) or family planning in general.

Indicators	Suggested Activities
1. Provider established rapport for assessing clients' personal situations	1. Ensure providers interaction with clients and encourage clients to ask questions.
2. Client expressed that service providers' politeness made them easy to ask any question,	2. Respect client's dignity. Conduct client exit interview.
3. Service providers trained in interpersonal communication	3. Read guidelines regarding interpersonal communication

5. Continuity of Care

Continuity of care refers to the mechanisms by which clients can have proper counseling,any side effects treated, switch their method if desired and receive resupplies or another suitable method easily.

Indicators	Suggested Activities
1. Ease of re-supply or availability of another chosen method	1. Ensure FP logistics and supplies are at place.
2. Clients for follow-up are identified and contacted	2. Ensure for follow up.
3. Reasons for non-return are identified	3. If clients do not return on the given follow up date, inform them through health facility staffs or FCHV, or other mechanisms.
4. Clients encouraged to return as needed	4. Inform the clients that they can come to health facility, if they have any problem or query regarding the FP and other health problems

6. Appropriate Constellation of Services

Referring both to the type and placement of services offered, so that they are convenient and acceptable, and respond to clients' needs, both for family planning and related health services.

Indicators	Suggested Activities
1. Client perceptions of privacy for counseling and examination, waiting time, time with provider, clinic hour and days, staff (in terms of gender, ethnic group, age)	1. Maintain privacy during different stages, avoid longer waiting time
2. Client perceptions of adequacy of waiting room, examination room, cleanliness/hygiene, water, toilet facilities	2. Ensure adequacy of physical facilities like waiting room, examination room, and cleanliness ygiene, water, toilet

QUALITY MANAGEMENT PRINCIPLE

Managers and service providers should understand about the principle of quality management when they plan and implement quality service in their health institutions. Following are the four key principles of quality management. These principles should drive the health services being offered by health facilities.

1. Quality Assurance is Oriented Towards Meeting the Needs and Expectations ofthe Patient and the Community

Quality assurance requires a commitment to finding out what patients and community need, want, and expect from the health services. The health team must work with communities to meet service demand and to promote acceptance of needed preventive services.

2. Quality Assurance Focuses on Systems and Processes

By focusing on the analysis of service delivery processes, activities, as well as outcomes, quality assurance approaches allow health care providers and managers to develop essential standing order and job aids with an in-depth understanding of a problem in same activities and to address its root causes rather than blaming to individuals and solving problem superficially.

3. Quality Assurance Uses Data to Analyze Service Delivery Processes

Simple quantitative approaches to problem analysis and monitoring are another important aspect of quality improvement. Data-oriented methods allow the QA team to test its theories about root causes; effective problem solving should be based on facts, not assumptions.

4. Quality Assurance Encourages a Team Approach to Problem Solving and Quality Improvement:

Participatory approaches offer two advantages. First, the technical product is likely to be of higher quality because each team member brings unique perspective and insight to the quality improvement effort. Second, staff members are more likely to accept and support changes that they helped to develop. Thus, participation in quality improvement builds consensus and reduces resistance to change.

QUALITY ASSURANCE

Quality assurance is a process of all the arrangements and activities that bridge the gap between the expected performance and actual performance and is like a safeguard that maintain and promote the quality of care. In other word quality assurance is that set or activities that are carried out to set standards and to monitor and improve performance so that the care provided is an effective and as safe as per National Standards /Tools. There are various approaches developed and used to assure the quality service. USAID Quality Assurance Project has accepted Quality Assurance Process as an approach among them.

CLINICAL SET UP TO PROVIDE NSV SERVICES (Refer QI tools checklist)

Before going for training and after completion of the training, the service provider should discuss about the support needed to start or provide continue NSV services in their health facility. (QI Tool FP 05 NSV)

After training in order to provide quality NSV service, the service providers should:

1. Choose service delivery room
2. Manage necessary logistics for NSV service
3. Manage instrument/equipment
4. Manage necessary supplies
5. Set up service delivery room
6. Ensure availability of IEC materials
7. Maintain infection prevention practices
8. Ensure availability of written protocols, guidelines and standards
9. Maintain recording and reporting system

Steps to be followed after the client make an informed choice to provide NSV Service:

1. Provide pre-surgical counseling
2. Provide pre surgical physical examination
3. Provide NSV service according to standards
4. Provide post procedure counseling and explain for follow up

PROVIDING INFORMATION TO POSSIBLE CANDIDATES OR COMMUNITY ABOUT THE AVAILABILITY OF NSV SERVICES

1. Information about the availability of NSV services at the health facility can be shared: During FCHV meeting, workshop and any forum, provide information about the availability of the services provided through your HF/Hospital and ask them to give the information to the mother's groups and also ask them to refer potential candidates for the services.
2. Health workers meeting, workshop and any forum, inform them about the services available in your health facility and ask them to refer potential candidate for health facility services
3. Health Facility Operational and Management Committee meetings or any forum, inform community people about the services available in your health facility.
4. Organizations working for FP/RH program, inform them about the services available in your HF, "Ilaka" level meetings, workshops and any forums, provide information about the availability of the services provided through your health facility.
5. PHC/ORC or EPI clinics provide information to the clients the availability and provide counseling and encourage them to go to the health facility to get the services. immunization clinic

Preparation of Post Training Action Plan

The main objective of this training is to provide skills and knowledge on NSV to start the service immediately. In order to start the service, the service provider has to prepare service site and provide information to potential candidates as well as the community about the availability of the service. For this, on the basis of the points discussed above, the participants should prepare action plan and provide a copy to the training site and take one copy to their service site after training. The action plan should include plan for site preparation, information dissemination to potential candidate and expand accessibility of the service.

- Points to be include during preparation of action plan
- Clearly list the tasks to be done
- Write the participant's (trainee's) name for the responsible person to complete the tasks.
- Mention the date of accomplishment of the task.
- Mention the support or resources needed to complete the task.

Prepare Action Plan

On the basis of the points discussed above, prepare action plan (Appendix I) and provide a copy of the action plan to National Health Training Center coordinator for sharing with Family Health Division.

THE QUALITY ASSURANCE AND PERFORMANCE IMPROVEMENT PROCESS

Every health facility sets its goals and objectives according to availability of facilities and the need of the community. As time and the need of the community get changed, the goals and objectives of the health facilities are also changed. All the health facilities are providing various services to achieve their goals and objectives. In order to meet the objectives and to improve the quality of services, the service providers should use systematic approach to evaluate what should be done and what is being done.

Use of different steps of performance improvement helps to manage work easily and helps to find out the root cause. It helps the health facility and the service providers to fulfill their need.

Steps to Improve Performance

Different steps are developed for performance improvement. It would support in improving the quality and performance. The steps of performance improvement are:

1. **Desired Performance:**

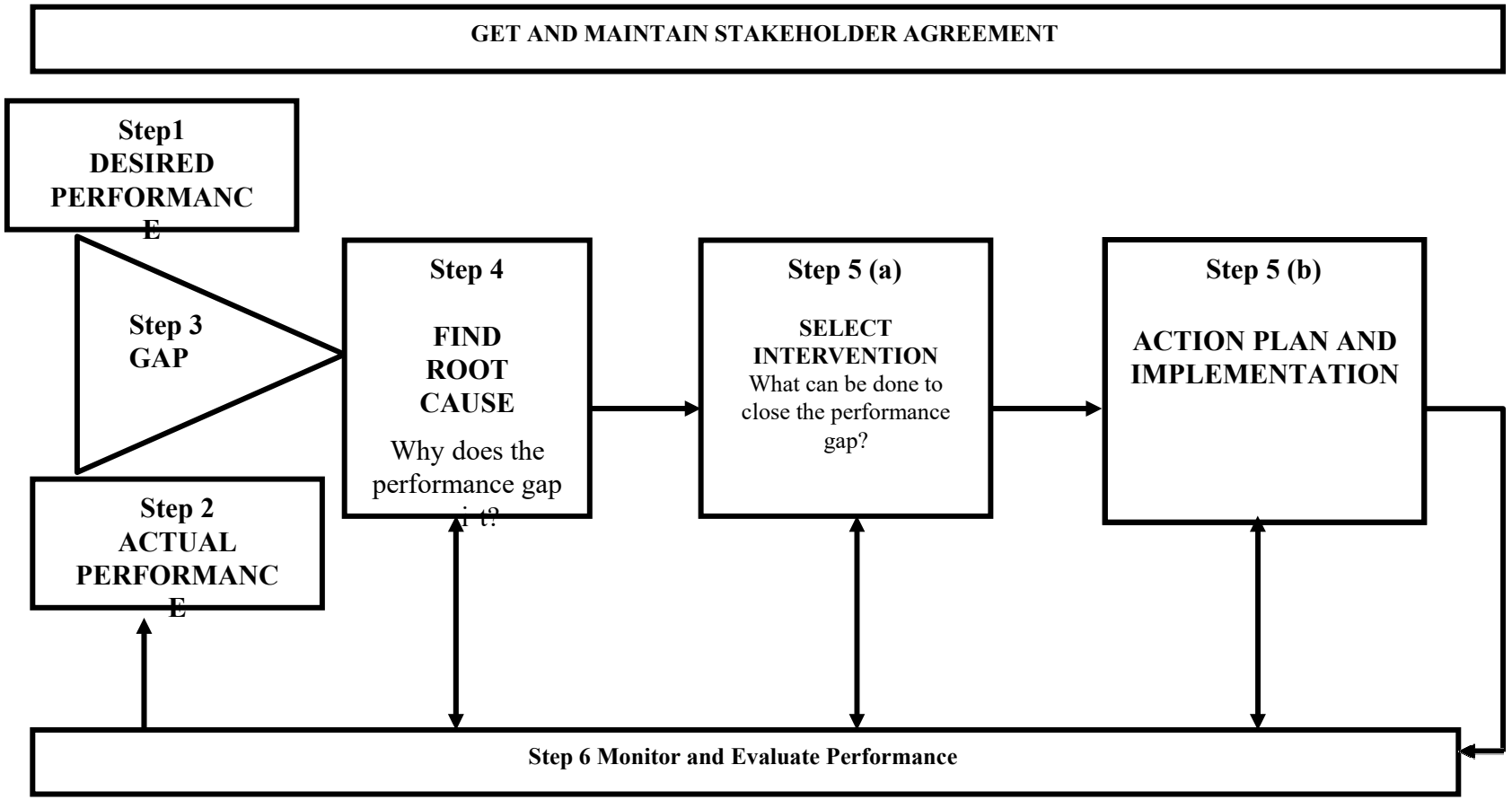
   Desired performance means the standard of quality services that a health facility want to achieve. The standards of quality services are based on National and International standards or guidelines. To perform well and to achieve quality of services, the staff members must know what they are supposed to do. Staff must know not only what their job duties are, but also how to perform them.

2. **Actual Performance:**

   Actual performance is measuring performance based in desired performance. Time to time performance evaluation is necessary to find out whether services are being provided as per the standards/ tools or not. The evaluation can be done by finding out whether the clients are satisfied or not with the services provided, whether the services are being provided as per the set standards, whether there is client provider interaction or not, whether recording is being done properly or not, whether services are available or not etc. This type of performance evaluation or assessment is done every 4 months (three times a year). Although it is not included during the training it is necessary to assess according to client/care taker exit interview or social audit as well.

   Checklists (Participant Handbook) and tools (Appendix H) which are developed on the basis of job description and guidelines could be used to conduct performance evaluation. Evaluation can be done in various ways such as self-assessment, peer assessment or external assessment.

Steps of Performance Improvement



3. Finding Gap:

Health facilities/Hospitals can find out the major performance gaps using performance evaluation on the on the basis of desired performance. These gaps identified should be considered as an opportunity to improve the quality of services. If there are huge gaps, then they should be prioritized. Instead of trying to address all the gaps at once, the health facilities should try to address 5-7 gaps at a time as per priority.

4. Finding root cause:

It is known that if there is gap between desired performance and the actual performance, then there is a problem. Therefore, it is necessary to find out the root cause of the identified gaps. Root causes are not identified simply. Therefore, to find out the root cause of the identified gaps between desired performance and the actual performance, all the staff members of the health facility, quality improvement team and/or HFOMC members should sit together and try to evaluate performance and analyze gaps. After analyzing gaps, root cause should be identified. If root cause is identified properly then only appropriate solution to address the gaps could be found.

Root cause of a problem could be identified using "Why…….why….? Questioning technique or using question such as what could be the cause of the problem?

As root cause for not being able to perform well is related to the working environment of the service providers, organizational support, availability of supplies, knowledge and skills and desire to work, it should be taken into account during root cause analysis.

5. Selecting and Implementing Interventions:

Once the causes of the performance gap have been identified, ways to improve performance need could be developed. The ways of improvement should be developed and implemented by the staff of the health facility/Hospital. Sometimes, health facility management committee, District, Regional and Central level support is needed in order to solve some problems.

Implementation plan for any activity should be done on the basis of availability and feasibility of resources, supplies and the agreement of the staff of the health facility. If the solution of the problem is beyond its capacity, the health facility should make a long term plan and seek for external support like health facility can coordinate with District Quality Assurance Working Committee which is in the District (Public) Health Office

Staffs of the health facility and the management committee need to discuss and prepare action plant in order to accomplish activities for problem solving. Please refer to the sample of action plan in Appendix I.

6. Monitoring and evaluating performance:

It is important for the organizational head or service providers or supervisors to continue monitoring to determine whether or not performance has improved once interventions have been implemented, from time to time. In case due to some reason, if there is no improvement, then again root cause could be identified and appropriate solution could be implemented.

TWELVE

MOBILE OUTREACH SERVICES

BACKGROUND

In Nepal, reproductive health services are often not accessible in rural areas. In order to make voluntary surgical contraception services available to all people, in the 1970s "camps" were introduced in the service delivery system. There are two types of camps used for provision of voluntary surgical contraception services in Nepal. In the first, a trained surgical team from outside the district provides services at a district hospital where VS services usually are not provided. In the second, a team from the district hospital travels to rural or remote sites and provides services in temporary settings (e.g., schools, community centers).

Although the provision of VS services in camp settings has been widely accepted in Nepal and is generally believed to be of high quality, it is important that such service provision remains of high quality. The quality standards applied to camps should be the same as those for fixed sites. In some cases, the requirements for camps may be greater than those for fixed sites. For example, the clinicians who work at camps must be experienced not only in the provision of VS services but also in diagnosis and treatment of problems because the emergency backup at camps is less than that available at fixed sites. The provision of services in camps requires some special considerations. According to the *National Medical Standards for Reproductive Health*:

> "Standards for mobile services should be well defined, written down, provided to all team members, and used as the basis for training and supervision."

STAFF

Staff who works on mobile teams should be the most highly trained skilled and experienced personnel available. In the camp setting, the emergency backup system is likely to be less accessible than when services are delivered at fixed sites. Providers must, therefore, be able to recognize problems promptly and to manage them appropriately. While newly trained physicians may be part of a team working in a mobile setting, it is not advisable that they work on their own. Nurses who work as members of mobile teams should have OT experience and should be able to handle surgical instruments correctly. It is important that the skills of providers be up-to-date, if providers do not perform procedures on a regular basis, they may need to have their skills updated before working at a camp.

In Nepal, providers are compensated for each VS procedure they perform. This system may encourage providers to perform many procedures in a single session, leaving inadequate time for proper processing of instruments and other items. In addition, it can lead to fatigue on the part of the team which can result in substandard care. The *National Medical Standards for Reproductive Health* states that a clinician should perform no more than 50 Voluntary Sterilization procedures in a day.

STAFF PATTERN

The provider should be health staff trained in voluntary sterilization procedures. Such training should be based on the MoH, NHTC; No- Scalpel Vasectomy training curriculum. Such health staff may include a physician.

The **minimum number** of staff required to safely conduct a vasectomy operation is as follows:
(note: make provision for Lab Assistant if the HF do not have one where camp is organized)

No.	Position	Function
1	Trained Doctor	Oversee preoperative assessment and perform surgery.
1	HA/Sr. AHW/ Nurse	Perform preoperative assessment, ensure understanding and documentation of informed choice/informed consent and assist the surgeon in OT and prepare OT
1	Clinical Helper	Work in the OT/sterilization, instrument cleaning and package.
1	CMA/ANM/AHW	Registration, counseling and postoperative cares.
1	Supporting staff	Assist in preoperative preparation and other tasks.

COUNSELING

Counseling and client education often are performed by local health workers before the camp is opened. This allows for a more efficient flow of clients during the camp, as those clients who come will already have chosen voluntary sterilization (VS). When counseling is done in advance, providers should review the main points of counseling clients for VS (see **Chapter 2**) before performing a minilaparotomy.

All family planning clients should receive the same degree of counseling, regardless of the service delivery site. Counseling provides an opportunity for clients to learn about all methods of family planning so that they are better able to make an informed choice of an appropriate method. Because VS is permanent, it is of particular importance that clients make an informed choice. Although clients must sign an informed consent form prior to the procedure, this form does not ensure that the client has been counseled adequately; it is the responsibility of the doctor to ensure that the client has made an informed choice of VS. (See **Chapter 2** for more information on the counseling process.)

CLIENT ASSESSMENT

Client assessment for mobile VS services may begin before the site is ready to receive clients. For example, local health care workers trained to perform client assessment for VS may be able to determine if it is appropriate for a client before the client is referred to the camp.

Client assessment at mobile sites should be the same as at fixed sites. It should include a medical assessment by a trained health care provider as well as hemoglobin and urinalysis testing. In addition, client assessment should include questions to ensure that the client has made an informed choice of VS. If, on assessment, VS is not found to be suitable for a client, he should be referred for further counseling and provided with another family planning method.

INFECTION PREVENTION AND HEALTH CARE WASTE MANAGEMENT

Standard infection prevention procedures should be followed at mobile sites. Handwashing supplies should be provided, including running water or a bucket and pitcher. If neither of these is available an alcohol rub must be provided. Disposable surgical gloves must be provided and this should not be processed; if re-usable surgical gloves are provided then they must be processed (sterilization is preferred but if not possible then only high-level disinfected) between cases. All instruments used for the procedure must also be processed between cases. Finally, waste must be disposed of according to the Infection Prevention and Health Care Waste Management manual (NHTC) or Health Care Waste Management Guideline (MoH/DoHS/Management Division).

Note: There is concern that providers may be performing too many cases in a day to allow for processing of instruments and gloves. The government's limit of the 50 Voluntary Sterilization per physician per day should allow for enough time for processing.

EMERGENCY BACKUP

Emergency backup is required for all sites offering VS services. When such services are provided in mobile sites, the need for backup is even more important. Mobile teams must be supplied with all the supplies and equipment needed to manage surgical emergencies.

In particular, every site must have:

- a functioning oxygen cylinder,
- tubing and masks, and
- an Ambu bag.

(See: Appendix B)

The mobile team must be trained in the management of emergencies, including use of all emergency equipment and drugs.

The team should have formal relationships with district or primary health care centers in the area. The local backup facilities must have supplies, equipment and trained staff required to handle complications following VS. These facilities should be prepared to receive clients from the camps if additional emergency backup is needed. Relationships with local facilities also will ensure that clients who need continued medical treatment after emergencies will have a way to receive it.

FOLLOWUP CARE

Clients who undergo VS procedures in mobile settings require the same follow up care as those who receive services at fixed sites. At some sites, members of the mobile team may remain at the site until all clients have returned for their follow up visits or they may return on the day on which follow up visits are scheduled. If this is not possible, clients can return for follow up visits with local health care providers. In any case, local providers should be trained to provide follow up care in case problems develop or questions arise. Referral centers should be identified for follow up of complicated cases and local providers should be made aware of where clients should be referred.

PLANNING

Providing VS services in mobile settings requires coordination at both the central and district levels. Planning should address the promotion and implementation of mobile sites and should include budgets, schedules, human resources and administration. See *Voluntary Surgical Contraception Mobile Outreach Services in Nepal: Guidelines* for more detailed information on planning mobile services.

LOGISTICS

In order to ensure quality of care at mobile sites, logistics should be monitored at all times. The services should be monitored from the perspective of both the clients and the service providers. As with fixed sites, managers should ensure that clients are not waiting too long for services. They should ask clients to assess the services they received. In addition, s/he should ask providers if they have encountered any problems and help them to solve them. Each day the manager should check the supplies and arrange to replenish any supplies that are low. S/he should also monitor infection prevention and health care waste management practices.

APPENDIX A

STATUS OF FAMILY PLANNING SERVICES IN NEPAL

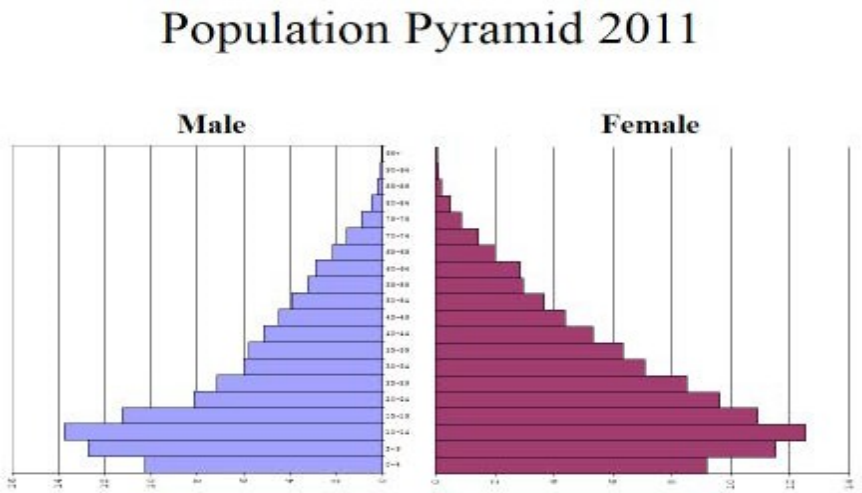
BACKGROUND

Nepal has a population of 26.5 million with the population growth rate of 1.35 percent per annum (Census 2011). Nepal's pyramidal age structure with a youth bulge is due to the high fertility levels prevailing in the past (**Figure A-1**). The total fertility rate (TFR) in Nepal is 2.6 per women (NDHS 2011) which ranges from 1.6 per women in urban areas to 2.8 in rural areas.

Table A-1 : Demographic and Health Indicators for Nepal in 2011

Population	26.5 million
Birth rate	22/1000 population
Death rate	8/1000 population
Growth rate	1.35 percent
Maternal Mortality Ratio (MMR)	281/100,000 live births
Infant Mortality Rate (IMR)	46/1000 live births
Under 5 Child Mortality Rate	54/1,000 live births
Total Fertility Rate (TFR)	2.6 births per women
Modern Contraceptive Prevalence Rate (MCPR)	43 percent
Percentage of population under 15 years of age	39 percent

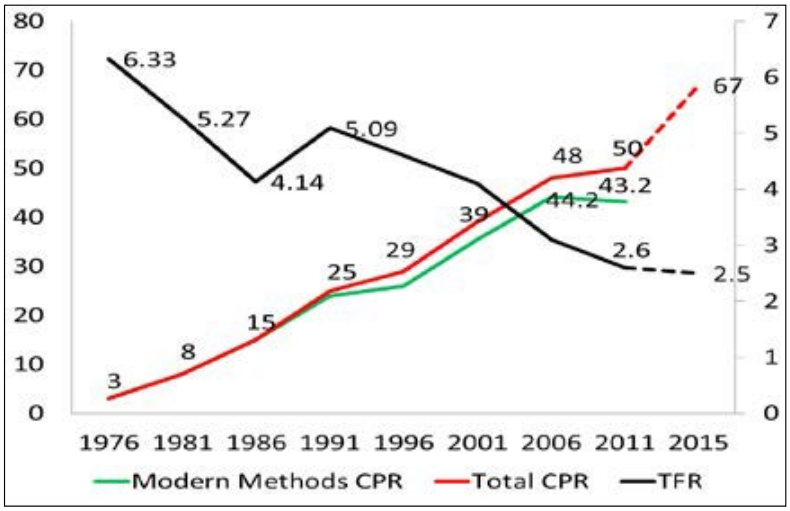
Figure A-1 : Population Pyramid, Nepal, (Census 2011).



Source: Nepal Census 2011

Figure A-2. Trends in TFR and CPR, 1976-2011

Figure A-2 depicts a tremendous increase in contraceptive utilization with a simultaneous reduction of total fertility rate from 6.33 children per women in 1976 to 2.6 children per women in 2011. This has been possible through expansion of FP services to communities through the health service network such as hospitals, primary health care (PHC) centers, health posts (HP), primary health care outreach clinics (PHC/ORC) and mobile voluntary surgical contraception (VSC) camps. The role of private and not-for profit NGO sector is also substantial for this achievement. The government has committed to increase investment in family planning and developed a strong policy framework to meet the targets of a mCPR of 50% and a further reduction in the TFR to 2.1 by 2020 (National FP Costed Implementation Plan 2015-2020).



FAMILY PLANNING SERVICES IN NEPAL

In order to provide the reproductive population with options to limit or space pregnancies, various contraceptive methods are made available under the national health services delivery system. Family planning services are provided through public and private health institutions at various levels through static services as well as mobile VSC outreach clinics. FP counselling and referral are critical components of quality FP service.

- **FP Counseling**

  Counseling is an important activity for assisting clients to make informed choices regarding an appropriate family planning method. FP counseling services are provided to all potential clients by FP providers. Accordingly, Comprehensive Family Planning (CoFP) and counseling training of FP service provider is provided. However, service statistics shows that discontinuation of FP methods is increasing in Nepal indicating a need for strengthening counseling on FP.

- **Referral**

  Referral is one of the main approaches for increasing access to FP services. At the community level provided injectable (e.g, Depo), pills and counseling service by trained AHW/ANM, and condoms and pills are re-supplied through a network of FCHVs, while requests for other FP services are referred to the PHC outreach clinics, HPs or to mobile VSC camps. For sub-dermal implant, IUCD and VSC services, HP refer clients to the PHC centers or hospitals per required.

Voluntary Surgical Contraception (VSC)

Voluntary Surgical Contraception (VSC) which includes vasectomy and minilap is popular in Nepal. In Nepal, VSC current users represent more than half of the total current users of modern contraceptives (57%) (Annual Report; DoHS 2070/71).

At present, VSC services are being provided in different parts of Nepal through static clinics as well as seasonal and VSC out-reach clinics. National Health Training Center (NHTC) has been conducting various types of in-service trainings including VSC training to support health services. Currently NHTC is conducting training for medical doctors as service providers in minilap and no-scalpel vasectomy (NSV).

TRENDS IN FAMILY PLANNING CURRENT USERS

Table A-2 shows the annual target of current users and achievements both in terms of absolute number and percentages in the last 3 fiscal years. In FY 2068/69, 95 percent of its target was achieved which decreased to 93.8 percent in FY 2069/70 and further decreased to 91.2 percent in FY 2070/71. Nevertheless the absolute number of current users shows an increasing trend over the last 3 years. The contraceptive method mix in Nepal shows that most of the share (>50%) of FP users is occupied by sterilization methods, followed by injectable and pills. The utilization of LARCs (implant and IUCDs) is minimal.

Table A-2 : Trend in Family Planning Current Users (all modern methods), FY 2068/69 to 2070/71

Region	Fiscal Year						
	2068/69		2069/70		2070/71		
	Projected	Achievement	Projected	Achievement	Projected	Achievement	%
EDR	666500	618312	671500	624657	699000	628053	89.9
CDR	1043200	960196	1062000	972244	1101500	959435	87.1
WDR	397300	359294	387500	359964	418000	374405	89.6
MWDR	290000	304854	307500	306865	332000	332683	100.3
FWDR	183000	203596	196500	197970	204500	219432	107.3
National	2580000	2446252	2625000	2461700	2755000	2514008	91.2
	Percent	95		93.8		91.2	

Source: Annual Report 2070/71, MD, DoHS

TREND IN MALE VSC ACCEPTORS

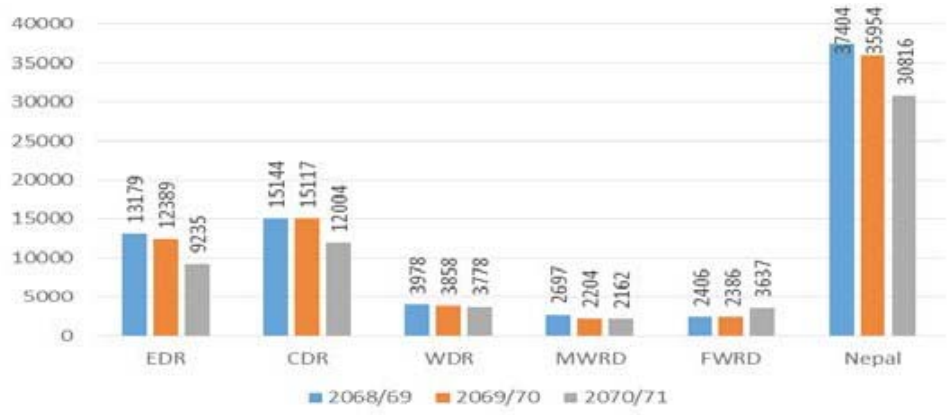
The trend in male VSC over the last three years can be seen in Table A-3. The number of new male VSC acceptors in the fiscal year under review has decreased significantly in the all regions except slight decreased in MWDR and FWDR. Also at the national level, the overall number of male VSC has decreased from 13,781 in FY 2068/69 to 8,397 in 2070/71. Considerable efforts are needed to increase the number of male VSC in the future, as the government is committed to increase male participation in the national RH/FP program.

Table A-3: Male VSC Acceptors, FY 2068/69 to FY 2070/71

Region	2068/69	2069/70	2070/71
EDR	1,075	621	288
CDR	5,604	4,270	2,849
WDR	2,320	1,692	1,234
MWDR	3,161	2,532	2,684
FWDR	1,621	1,346	1,342
	13,781	10,461	8,397

Figure A-3 shows the female VSC acceptors across five regions in EDR, CDR, WDR, MWDR and FWDR over the years. As can be expected, the Central Region has the highest numbers of female VSC acceptors for all three years, as the region has the greatest total population.

Figure A-3 Female VSC Acceptors FY 2068/69 to 2070/71



Region	2068/69	2069/70	2070/71
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FWDR	1,621	1,346	1,342
	13,781	10,461	8,397

TREND IN VOLUNTARY SURGICAL CONTRACEPTION

Table A-4 exhibits the number of male and female VSC acceptors recruited in the last 3 years by region and type of procedure. The total number of VSC acceptors had decreased from 51185 in FY 2068/69 to 46,415 in FY 2061/62 and to 39,213 in F.Y 2070/71

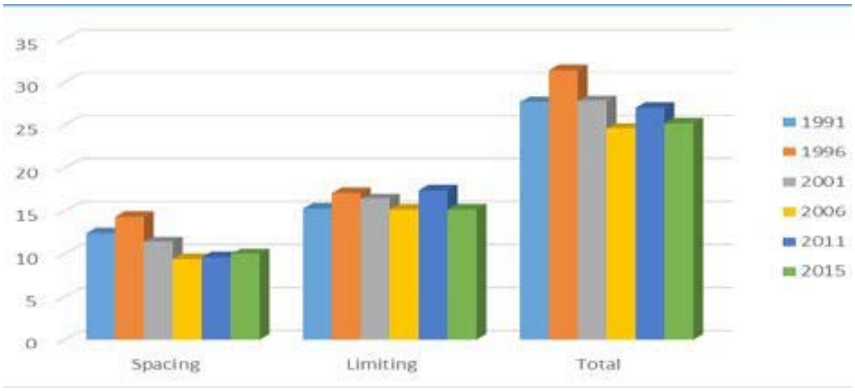
Table A-4. Total Number of New VSC Acceptors by Type of Procedure, by Region, FY 2068/69 to FY 2070/71

Procedure	Years	Region					National total VSC	Procedure as a % of total VSC
		EDR	CDR	WDR	MWRD	FWRD		
Expected cases	2068/69	16350	32400	7750	8000	5500	70000	
	2069/70	13900	20850	6050	5650	4550	51000	
	2070/71	14600	25600	6900	6300	4600	58000	
Minilap	2068/69	13179	15144	3978	2697	2406	37404	73.1
	2069/70	12389	15117	3858	2204	2386	35954	77.5
	2070/71	9235	12004	3778	2162	3637	30816	78.6
Vasectomy	2068/69	1075	5604	2320	3161	1621	13781	26.9
	2069/70	621	4270	1692	2532	1346	10461	22.5
	2070/71	288	2849	1234	2684	1342	8397	21.4
Total new VSC acceptors	2068/69	14254	20748	6298	5858	4027	51185	
	2069/70	13010	19387	5550	4736	3732	46415	
	2070/71	9523	14853	5012	4846	4979	39213	
	Procedure as a % of total VSC	65.2	58	72.6	76.9	108.2	67.6	

UNMET NEED FOR FAMILY PLANNING

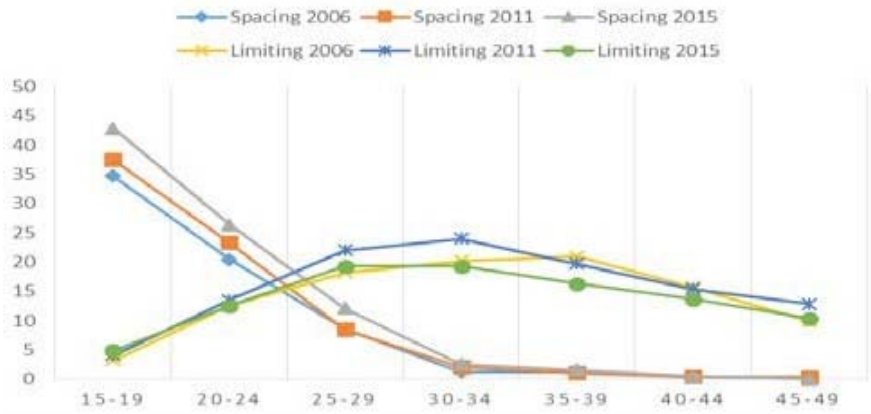
In the context of Nepal, fecund currently married women who say that they do not want any more children or that they want to wait two or more years before having another child, but are not using contraception, are considered to have an *unmet need* for family planning. The *unmet need* for FP services has remained high in Nepal; it was 27.7 percent in 1991**,** by 1996 it was estimated to have increased to 31.4 percent and by 2001 it was reduced to 27.8 percent (**Figure A-4).** There has been slight reduction in unmet need of FP since 1991**.** In addition, according to the MICS 2015 the *unmet need* for spacing at 10 percent and that for limiting at 15.2 percent. Figure A5 shows that *unmet need* for spacing has been reduced in 2006 compared to the 1991 and then increasing slightly till now but that for limiting it is same as that of 1991 level.The total *met need* would be 75 percent if the *unmet need* were fulfilled**.** Clearly, greater efforts are needed to change *unmet need* for family planning information and services to *met need*.

Figure A-4. Contraceptive Unmet Need Trends, 1991-2015



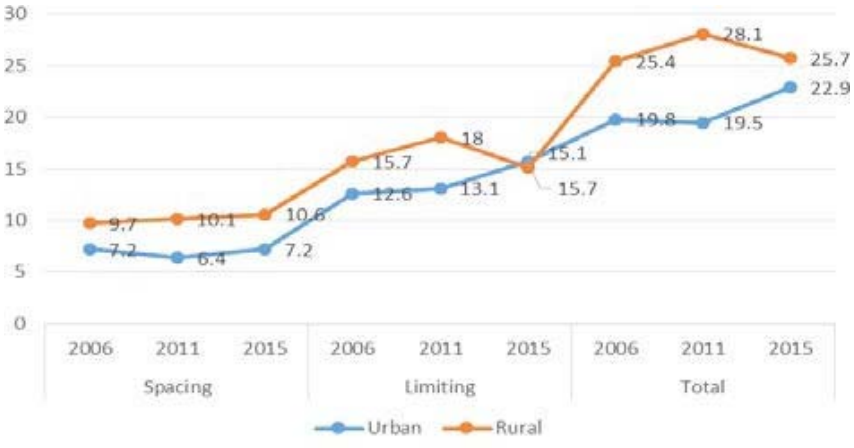
As expected, *unmet need* for spacing is higher for younger women aged 15-24, while *unmet need* for limiting is higher among older women aged 25-29 according to latest MICS of 2015 (Figure A-5).

Figure A-5. Trends in Contraceptive Unmet Need by Age of Women, 2006-2015



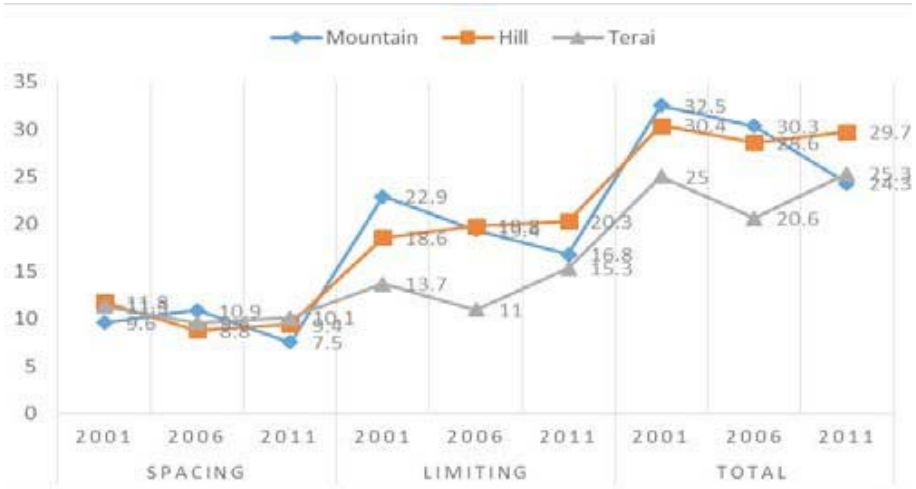
Unmet need is high among women in rural areas than among women in urban areas. This difference is less in 2015. (**Figure A-6**)

Figure A-6. Unmet Need for Contraceptives by Rural-urban Residence, 2006-2015



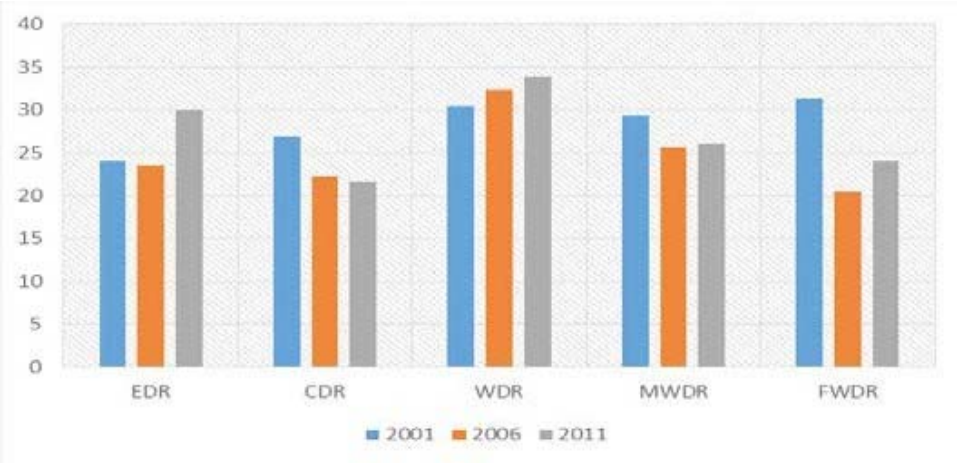
Unmet need for family planning is found lowest among women in the Terai region than in other two ecological regions. Although sometime *unmet need* is higher among women in the hills and sometimes among women in the high mountains, the last survey of 2015 shows highest *unmet need* for family planning among women from the Hill region than among women in other regions (**Figure A-7)**

Figure A-7. Unmet Need for Contraceptives by Ecological Regions, 2001-2011



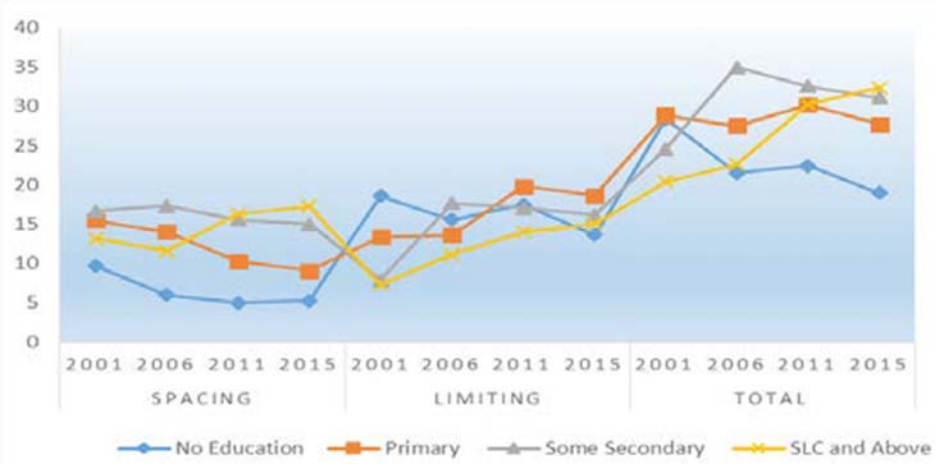
Except in 2001, *unmet need* for family planning has been found to be lowest among women residing in the Central Development Region in 2006 and 2011 and highest among women living in Western Development Region in 2006 and 2011 than among women from the other four Development Regions (**Figure A-8**)

Figure A-8. Unmet Need for Contraceptives by Development Regions, 2001-2011



Women with higher level of education have higher *unmet need* for family planning compared to their counterparts with lower level of education or no education at all. (**Figure A-9**)

Figure A-9. Unmet Need for Contraceptives by Level of Education, 1991-2001



By satisfying *unmet need*, the CPR can potentially be increased to about 75 percent in a relatively short time span. Since the current use of modern contraceptives is not that high at 43 percent, maintenance of current users is, perhaps, less of an issue, most of the users being sterilization acceptors (slightly above 54 percent in 2001).

Very little research has been done to understand the non-use of contraceptives by couples with FP *unmet needs* neither from quantitative nor qualitative viewpoints. The findings from limited research conducted until now revealed that the fear of side effects and fear that FP causes weakness were the most important reasons for non-use among the *unmet need* group. These findings were limited to pill and laparoscopy/vasectomy uses[1]. A baseline survey carried out in 1994 in three districts of the Terai and one hill district indicated the lack of interaction between client and provider, lack of quality services and misconceptions[2] as the major reasons reported for the large *unmet need*. Another study carried out in 1993/94 in Chitwan district corroborates the above findings and it also emphasizes that desire for at least one living son is a serious hindrance to contraceptive acceptance[3]. This latter finding is in line with much earlier study which showed that son preference is a hindrance to limit family size[4]. A study in Banke district noted that 80% of family planning acceptors of temporary methods discontinued within six months and highlighted the influence of husbands and mother-in-laws on family size and contraceptive use.

Conclusion

Considering stagnant CPR of the country for almost a decade and continuing disparity in use of contraceptives in different geographic regions and population sub-groups there is a need for strengthening national family planning program. The FP program should adopt best practices to

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1 *Ministry of Health (MOH), 1993, Nepal Fertility, Family Planning and Health Status Survey (NFHS), 1991, Kathmandu.*
2 *The met need for family planning in 2001 was 39.3 percent (MOH, April 2003).*
3 *Shrestha, A., Stoeckel, J., and Tuladhar, J. 1988, Factors Related to Non-use of Contraceptives Among Couples with Unmet Need for Family Planning, Kathmandu.*
4 *Storey, D., Karki, Y.B., Heckert, K., & McCoskrie, 1996, Nepal Family Planning Communication Survey, 1994, Key Findings Report , Four District Baseline Survey, NHEICC, Department of Health Services, MOH, Kathmandu.*
5 *Stash, Sharon. 1999. "Explanations of unmet need for contraception in Chitwan, Nepal.". Studies in Family Planning 30(4): 267-287.*
6 *Karki, Yagya B. "Sex Preference and the Value of Sons and Daughters in Nepal'. Studies in Family Planning, 19(3), May/June.*

fulfill FP needs of special groups like migrants, postpartum and post-abortion mothers, youth and adolescents, poor individuals/couples living in rural, hill and mountain areas. Greater investment in family planning services through concerted advocacy efforts to policy makers seems imperative. Furthermore, increasing awareness on FP in the community should go hand in hand. More contextual knowledge and research on contraceptive utilization and continuation, FP communication strategies and innovative service delivery mechanisms are warranted.

APPENDIX B

EMERGENCY PREPAREDNESS[1]

Being able to work quickly and correctly in an emergency requires the surgical team to be fully familiar with the use of emergency equipment and drugs. This includes both doctors and nurses, although their roles are different. Because nurses will be expected to carry out doctors' orders with regard to emergency treatments, they must understand which drugs may be used, how to administer them, their expected actions, and the use of emergency equipment.

EMERGENCY EQUIPMENT

The following resuscitation and emergency equipment should be available for use in the operating room and recovery areas:

- Stethoscopes
- Sphygmomanometers
- Oral airways (at least two sizes)
- Nasal airways (at least two sizes)
- Suction machine with tubing and two traps with Yankuer
- Portable pulse oximeter
- Oxygen cylinder
- Ambu bag (a self-inflating bag) with face mask (different sizes)
- IV cannulas different sizes (20,18,16)
- Blankets
- Mouth wipes
- Emesis basins
- Flashlights or emergency lights
- Syringes and needles, including butterfly sets
- Intravenous infusion sets and fluids
- Gauze pads
- Adhesive strapping
- Emergency drug tray
- 2-0 or 3-0 chromic catgut with needle (Atromatic catgut)

All emergency equipment must be readily available, complete, sterilized, prepared for use and in good functioning condition.

A laryngoscope and endotracheal tubes are appropriate only when trained and experienced personnel are available to use them.

A battery-operated light source should be available for backup or focused illumination of the operative site.

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1 *Adapted from: Philippine Family Planning Program. 1993. Guidelines: Minilaparotomy with Local Anesthesia. Family Planning Service, Department of Health: Manila, The Philippines.*

STAFF PREPARATION FOR EMERGENCIES

The following points will ensure that staff are able to handle emergencies that occur during Vasectomy procedures:

- The staff must be familiar with the use of all emergency equipment items and must check all such equipment before each operating session.
- At least one member of the surgical team must know how to administer cardiopulmonary resuscitation.
- The staff must be skilled in the administration of intravenous fluids and drugs.
- The client monitors both in the operating room and in the recovery room, must be aware of the early signs of complications, and must be able to take initial emergency action, if necessary.

EMERGENCY DRUGS

The following should be readily available in the operating room and recovery areas:

Quantity	Name of Drugs
5	Amps. Adrenaline (1/1000)
6	Inj. Avil (25 mg/cc) (IM)
10	Hydrocortisone 100 mg vial / dexamethasone (4 mg/ml)
5	Bottles Ringer's Lactate solution, 500 cc
6	Sets IV Infusion sets
6	Amps. Diazepam (2 cc) or midazolam vial, to be used only for seizure reaction to lidocaine
2	Amps. Pethidine, 100 mg
10	Amps. Inj. Atropine 0.6 mg
1	lidocaine 2% (Preservative free-xylocard)
2	Haemacele
4	Calcium Glucomate 10%/Calcium Chloride 10%

Note:

All drugs if drawn into a syringe, the syringe should be well handled (labeling the name of drugs in syringe).

APPENDIX C

CARDIOPULMONARY RESUSCITATION

BACKGROUND

Vasectomy is a safe procedure and few men experience complications especially when the procedure is performed under local anesthesia. Important complications occur in less than 2% of all cases and the majority of these are anesthesia-related. Serious anesthesia-related complications are often the result of overdose, improper anesthesia administration or inadequate monitoring.

According to the National Guidelines, intubation is the preferred method for ventilation ininstances of cardiopulmonary distress when trained personnel and equipment are available. Intubation may be dangerous, however, when performed by personnel who have not been trained in it or have not performed it regularly.

In Nepal, vasectomy is provided in both static and mobile health centers. Most of these clinics are in rural areas where access to specialized care is limited, and health care workers there are expected to be able to manage complication when they occur.

Survival depends on quick decision-making and application of emergency medical measures. Monitoring of vital signs before and during the operation is an integral part of the process that includes:

1. Immediate Recognition of early warning signs or cardiac arrest and activation of emergency response system.

⇩

2. Early CPR with emphasis on chest compression

⇩

3. Rapid defibrillation

⇩

4. Effective Advance Life Support

⇩

5. Integrated post-cardiac-arrest care

This process is the “chain of survival” described in most cardiopulmonary resuscitation (CPR) training for personnel responding to medical emergencies. Its principles are equally applicable in most clinical settings.

EARLY WARNING SIGNS

Prompt recognition and intervention usually prevent respiratory and cardiac arrest. Taking and recording of vital signs should become a routine part of all procedures and the monitor should be trained to report abnormal findings. Ultimately, the responsibility for assuring a safe procedure rests on the vigilance of the operating team.

During Vasectomy, respiratory problems can result from a number of causes, including:

- Anaphylaxis, vasovagal attack
- Over-sedation
- Aspiration of gastric content
- Cardiac arrest

Signs of primary respiratory arrest range from decreased breathing rate to dyspnea. A pulse will initially be present as the heart and lungs can continue to circulate oxygenated blood to vital organs for a few minutes. Cardiac arrest ensues when decreased breathing is allowed to progress. Prompt intervention while the client still has a pulse can save the client's life. Cardiac distress occurs as a result of:

- Anaphylaxis
- Over-sedation
- Intravenous injection of lidocaine
- Overdose of lidocaine
- Pre-existing cardiac disease
- Hypotension

Circulation ceases when cardiac arrest occurs, depriving vital organs of oxygenated blood. Anesthesia-related cardiac arrests are usually preceded by progressive bradycardia. A "death-like look" or cyanosis becomes evident. Early in cardiac arrest, ineffective "gasping" efforts or apnea may be confused with spontaneous respiration. Pulse is absent at large arteries.

When evaluating distress remember the **ABC**:

- **A**irway—Check for obstruction. Tongue falling back in the throat or aspiration of gastric contents during vomiting could obstruct the airway in unconscious clients.
- **B**reathing—Assess spontaneous breathing.
- **C**irculation—Assess pulse at the carotid or femoral artery and blood pressure.

ACTIVATION OF EMERGENCY MEDICAL SYSTEM

In most instances, handling an emergency requires the coordinated effort of clinic staff. It is crucial to identify roles of the clinic staff during the medical emergency. An emergency medical and support team would coordinate efforts to handle the emergency effectively.

BASIC LIFE SUPPORT

The primary goal of Basic Life Support (BLS) is providing emergency oxygenation to the brain and the heart until definitive medical treatment can restore their normal function. In emergency cardiac care this is the phase that:

- prevents cardiopulmonary arrest or insufficiency, and
- supports ventilation and/or circulation in instances of respiratory and cardiac arrest, respectively

BASIC LIFE SUPPORT ALGORITHM

Recognition
- unresponsive
- no breathing or no normal breathing (only gasping)
- no pulse palpated within 10 seconds

⇩

CALL FOR HELP

⇩

CPR Sequence
Compression:
- rate : at least 100/min
- depth : at least inches (5 cm)

Chest wall recoil :
- allow complete recoil between compression ie. Equal compression : relaxation ratio
- rotate compression every 2 minutes
- minimize interruption between compretion to <10 seconds.

Airway :
- head tilt – chin lift (suspected cervical injury – jaw twist only)

⇩

Compression to ventilation ratio- 30:2 (1 or 2 rescuers)

⇩

When rescuer untrained -> compression only

⇩

Ventilation with advance airway:
- 1 breath every 6-8 seconds (8-10 breaths per min)
- About 1 s per breath
- Visible chest rise
- Asynchronics with chest compression

⇩

Defibrillation : as soon as AED is available

AMBU BAG VENTILATION (WITH OR WITHOUT OXYGEN)	
1.	Position yourself facing top of patient's head
2.	Insert oropharyngeal or nasopharyngeal tube. In some unconscious patients, the mouth or nose will close during bagging.
3.	Spread the mask, mold it over the mouth and nose, clamp it to the face with one hand, tilt the head backward and squeeze bag until the chest rises. Ask assistant to squeeze bag if using both hands to fit the mask.
4.	Release the bag to allow for complete passive exhalation. Abrupt release is needed for the valve to function.

Figure C-2. Bag Mask Device

Fig. C-2 (a) Ambu Bag Ventilation, Single Operator

Fig. C-2 (b). Ambu Bag Ventilation, withAssistant

Figure C-3. External Cardiac Compression

Fig. C-3(a). Hand Position for External Cardiac Compression Point, Lower Half of Sternum

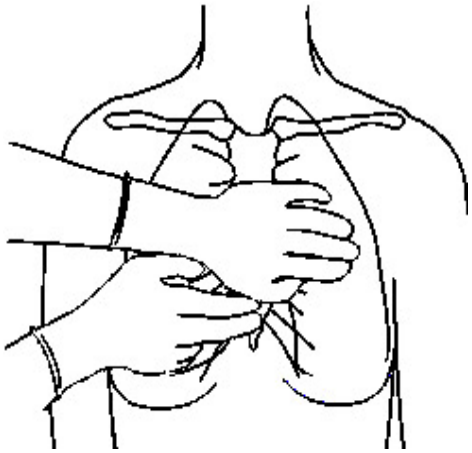
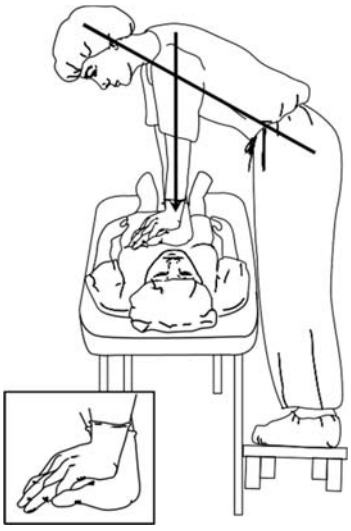
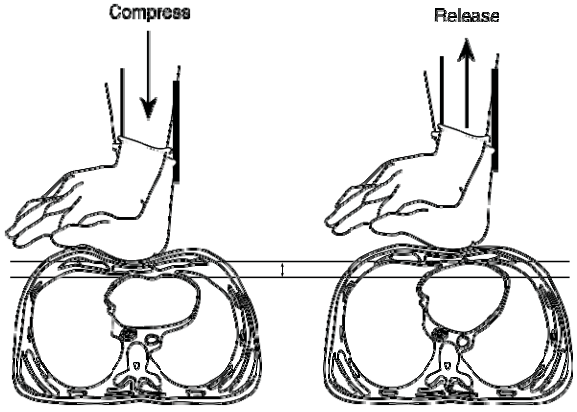


Fig. C-3(a). Hand Position for External Cardiac Compression Point, Lower Half of Sternum



C-3(c). Compression, with Enough Force to Push Down Sternum 1½–2 Inches



RESTORATION OF SPONTANEOUS CARDIOPULMONARY FUNCTION

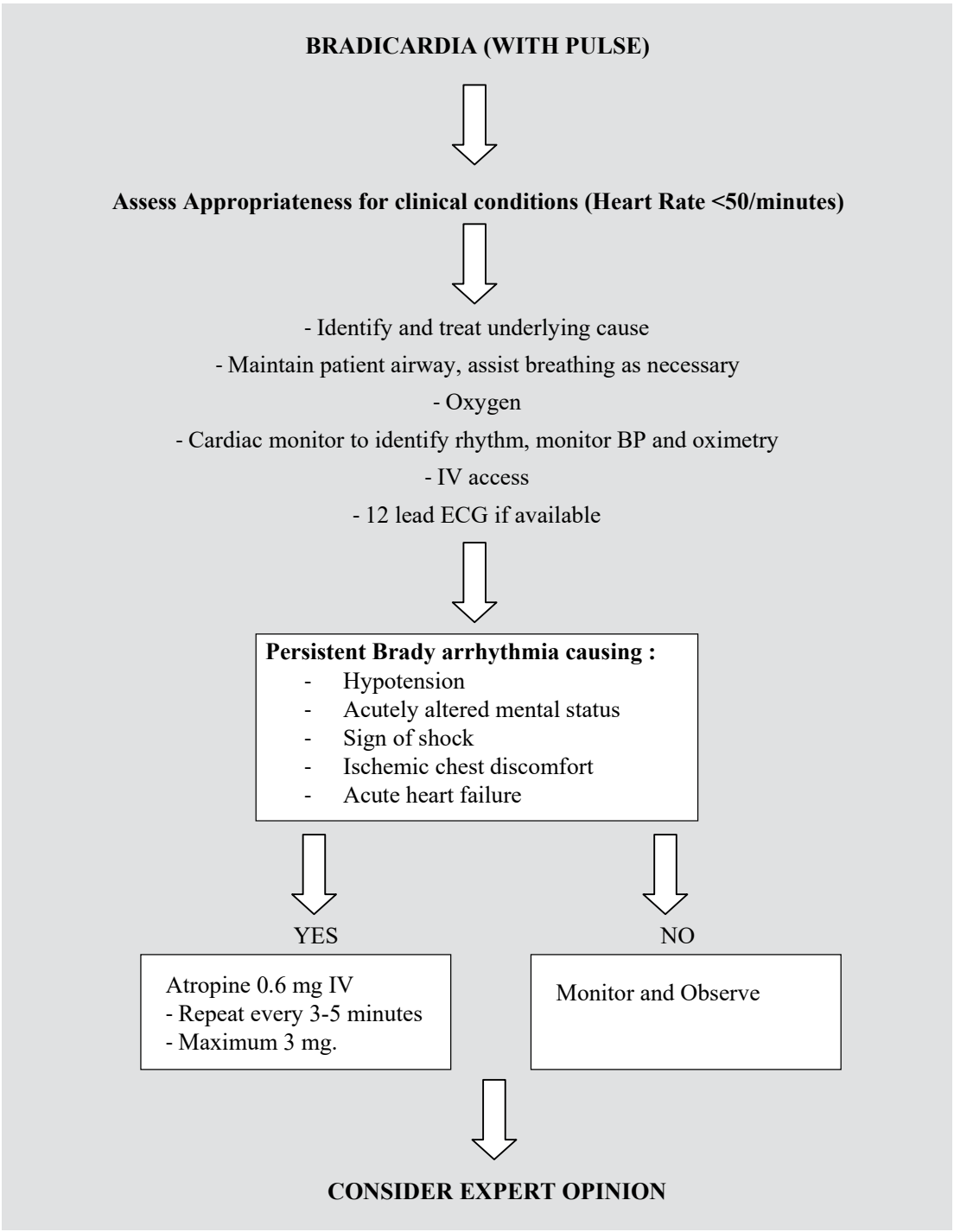
During cardiac arrest, medications take second place to airway management and basic CPR. With additional capable health workers, however, intravenous line and emergency medications may be initiated.

- Peripheral lines may be started so as not to interrupt with CPR. Drugs require 1 to 2 minutes to reach circulation if given peripherally. IV medications should be given rapidly by bolus injection followed by a 20 ml bolus of IV fluid.
- Intravenous fluids are used either to keep IV lines open for drug administration or volume expansion. Normal saline or lactated Ringer's is preferred fluid.
- Drugs such as naloxone are given to reverse respiratory embarrassment caused by narcotics. Give adrenaline (epinephrine) 1.0 mg IV every 3-5 minutes until spontaneous pulse returns.

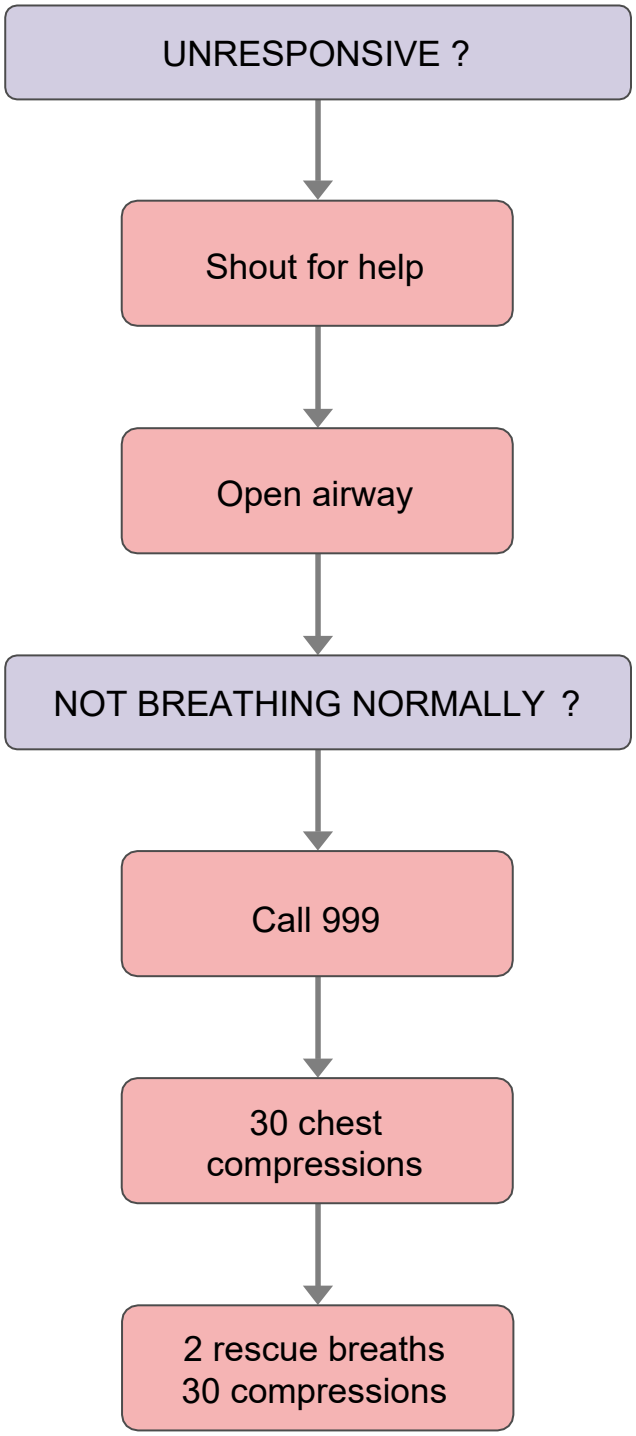
REASSESSMENT

The client's condition must be monitored to evaluate the effectiveness of the CPR. The person ventilating the client assumes responsibility for monitoring the pulse and breathing. Pulse is checked during compression.

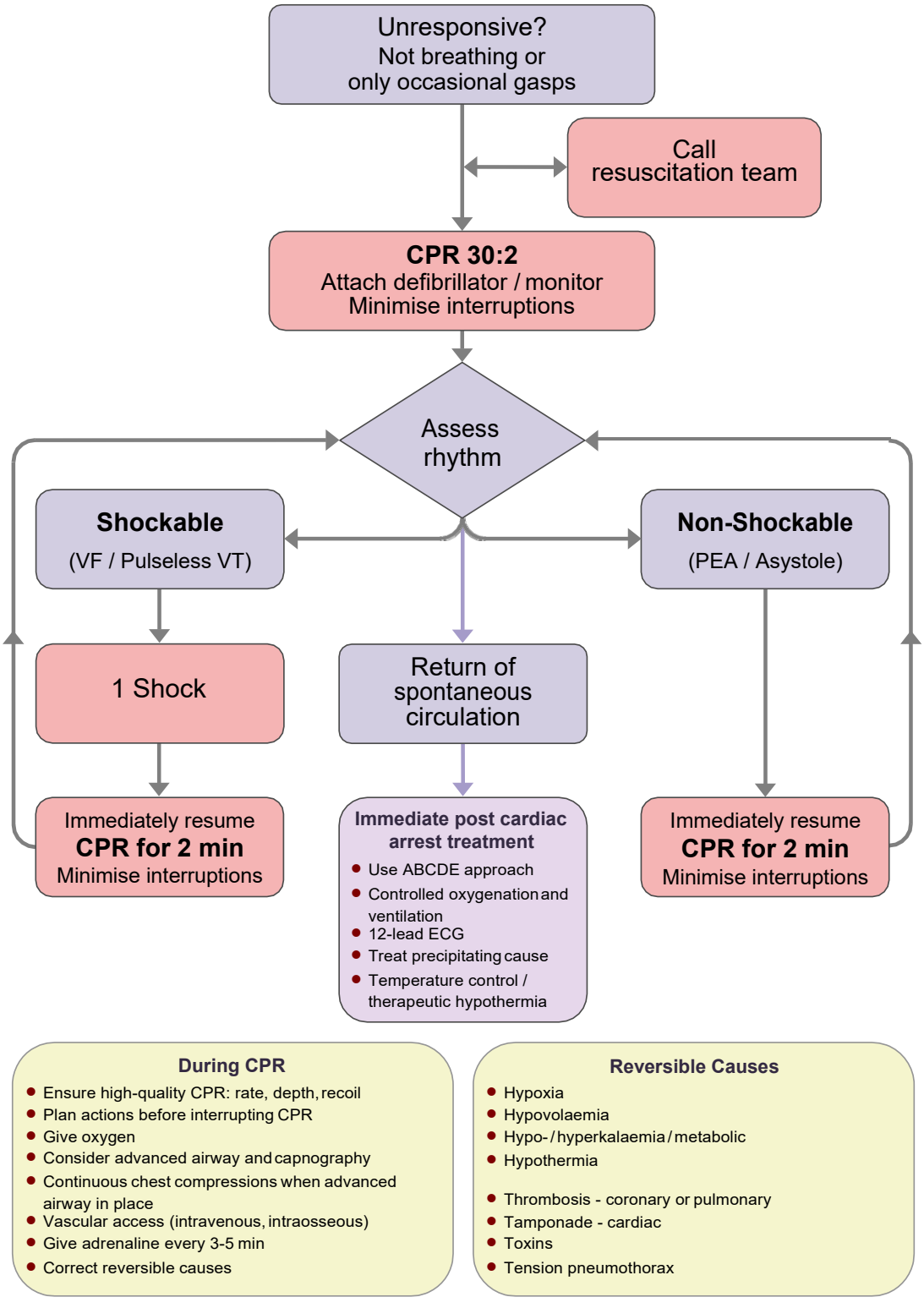
After five cycles of compression and ventilation (after 2 minutes), the emergency team checks the carotid pulse for 10 seconds. CPR is resumed if pulse is absent. Continue resuscitation until spontaneous pulse returns, more qualified personnel arrive, the emergency team is exhausted after about 30 minutes or the client is pronounced dead by the doctor.


BRADICARDIA (WITH PULSE)
Assess Appropriateness for clinical conditions (Heart Rate <50/minutes)
- Identify and treat underlying cause
- Maintain patient airway, assist breathing as necessary
- Oxygen
- Cardiac monitor to identify rhythm, monitor BP and oximetry
- IV access
- 12 lead ECG if available
Persistent Brady arrhythmia causing :
- Hypotension
- Acutely altered mental status
- Sign of shock
- Ischemic chest discomfort
- Acute heart failure
YES
NO
Atropine 0.6 mg IV
- Repeat every 3-5 minutes
- Maximum 3 mg.
Monitor and Observe
CONSIDER EXPERT OPINION

Adult Basic Life Support



Adult Advanced Life Support



APPENDIX D

VASECTOMY (NSV) KIT

ITEMS	QUALITY	DESCRIPTION
1.	1 each	Kidney tray, 10" (250mm x 100mm)
2.	1 each	Iodine Cup, 6 oz 2" high
3.	1 each	Ringed Forceps for NSV (3.0 mm, 3.5 mm or 4.0 mm)
4.	1 each	Dissecting Forceps for NSV
5.	1 each	Scissors, Operating, small straight
6.	1 each	Disposable Syringe, Hypodermic, 5 ml with hypodermic needle, 22/23 gauze x 1”
7.	1 each	Sponge holding forceps, 24cm - 9½"

APPENDIX E

LONG TERM EFFECTS ASSOCIATED WITH NSV

Because vasectomies are usually performed on men who are in their late twenties and thirties to forties at the time of the procedure, several decades of life remain after vasectomy during which long-term effects on health might manifest themselves. Because large numbers of men are exposed to such a risk for a long period of time, an adverse effect of vasectomy on health could have far-reaching negative consequences for public as well as individual health.

There have now been nearly four decades of intense research on potential long-term health effects of vasectomy. Potential physiological effects and long term sequel of vasectomy have been the subject of extensive research. This research provides reassurance that vasectomy does not have any significant long-term negative physical or mental health effects.

Results of large-scale, well-designed epidemiological studies in men have consistently shown no adverse effects of vasectomy in terms of heart disease, a major cause of morbidity and mortality in men in developed and most developing countries (World Health Organization, Non-communicable diseases country profiles 2014), testicular or prostate cancer, immune complex disorders, and a host of other conditions. Vasectomy appears to be a largely safe and highly effective method of contraception, certainly with risks no greater than those for any of the contraceptive methods used by women.

COMPREHENSIVE STUDIES OF DISEASE INCIDENCE AND DISEASE PREVALENCE

Four large-scale, retrospective cohort studies have examined comprehensively the incidence of a number of diseases in vasectomized men and a comparison group of non-vasectomized men (Nienhuis H, et al, 1992; Petitti DB, et al, 1983; Walker AM, et al, 1981).

Of greatest importance, in all four studies, vasectomy was not significantly associated with increased risk of hospitalization for most disease categories. The studies are reassuring that vasectomy does not increase the risk of adverse health outcomes. No studies have examined specifically the possibility of an association of vasectomy with joint pain or swelling and back trouble, although the occurrence of arthritis (Petitti DB, et al, 1982) or the risk of hospitalization for arthritis (Schuman LM, et al, 1993; Nienhuis H, et al, 1992) have not been shown to be higher in vasectomized than in non-vasectomized men.

American Urological Association (AUA) in its 2012 Guideline Statement 3 has mentioned “Clinicians do not need to routinely discuss prostate cancer, coronary heart disease, stroke, hypertension, dementia or testicular cancer in pre-vasectomy counseling of patients because vasectomy is not a risk factor for these conditions”.

EFFECTS ON CARDIOVASCULAR FUNCTION

Reports that vasectomized monkeys developed atherosclerosis more rapidly than un-vasectomized controls (Clarkson & Alexander, 1980; Alexander & Clarkson, 1978) led to extensive research into the potential effects of vasectomy on cardiovascular disease in men. Since the early 1980s, most of the cohort, case-control, and cross-sectional studies that were conducted have found no association of vasectomy with acute myocardial infarction, other ischemic heart disease, stroke, peripheral vascular disease, hypertension, coronary artery disease, or hypertensive and atherosclerotic retinal vascular changes (Goldacre et al, 2005; Rosenberg et al., 1986; Schuman et al., 1993; Giovannucci et al., 1992; Nienhuis et al., 1992; Massey et al. 1984; Petitti et al., 1983; Rimm et al., 1983; Walker et al., 1981; Goldacre and Vessey, 1979 & 1978). Even in men with vasectomies of long duration (20 years or longer), no association of vasectomy with an increased risk of cardiovascular disease has been found (Goldacre et al, 2005; Giovannucci et al, 1992; Chi et al, 1990; Petitti et al, 1983). Taken together, the experimental studies in monkeys (Clarkson TB, et al, 1986 and 1988) and accumulated epidemiologic studies in men provide strong reassurance that vasectomy has no adverse effect on the cardiovascular system nor does it increase the risk of atherosclerosis in man. And we can conclude that there is no evidence to support and association between vasectomy and cardiovascular disease.

IMMUNOLOGIC EFFECTS AND ANTISPERM ANTIBODIES

The clinical significance of anti-sperm antibodies in men after vasectomy has been the subject of many investigations, and a number of potential mechanisms whereby they might lead to diseases (Anderson DJ, et al, 1982; Alexander NJ, et al, 1978).

However, numerous studies conducted over the past few decades have shown no evidence of any immunologic or other diseases related to development of anti-sperm antibodies following vasectomy (Goldacre MJ, et al, 2007 and 1983; Coulson AH, et al, 1993; Massey FJ Jr, et al, 1984). Anti-sperm antibodies may be associated with decreased fertility following vasectomy reversal (Barratt CLR, et al, 1992; Clarke GN, 1988) but opinion of the Vasectomy Guideline Panel of the American Urological Association (AUA) 2008 is that, after vasectomy, impaired fertility due to anti-sperm antibodies is infrequent and that the presence of serum anti-sperm antibodies should not be considered a deterrent to vasectomy reversal. Medical guidelines on vasectomy reversal therefore do not recommend routine use of anti-sperm antigen titres as a predictor of the vasectomy reversal outcomes, although the titers may be relevant when the couple is considering assisted reproductive technology (The Practice Committee of the American Society for Reproductive Medicine: Vasectomy reversal. 2008).

Anti-sperm antibodies

Sperm are auto-antigenic. Normally, sperm antigens are not exposed to the immune system because of the blood–testis barrier and other epithelial barriers along the reproductive tract. Development of anti-sperm antibodies after vasectomy is thought to be related to breakdown of the blood–testis barrier (Gubin DA, et al, 1998) and leakage of sperm antigens from the epididymis (Mullooly JP, et al, 1993). Anti-sperm antibodies are found in between 8% and 21% of men in the general population and in 9% and 36% of infertility patients (Gubin DA, et al, 1998). In contrast, circulating sperm agglutinating antibodies are found in 50–80% of men in the first year after vasectomy (Lenzi A, et al, 1997; Gupta I, et al, 1975) and approximately 3% of non-vasectomized men have sperm-immobilizing antibodies (Mullooly JP, et al, 1993) whereas anywhere from 25 to 60% of men develop sperm-immobilizing antibodies in the first year after vasectomy (Hellema HWJ, et al, 1978).

One small case–control study reported that vasectomy may be a risk factor for dementia (specifically primary progressive aphasia--PPA: Weintraub S1, et al, 2006). But results of a subsequent small study found no association between anti-sperm antibodies and Alzheimer's disease, another form of dementia (Han C1, et al, 2010). Additionally, no increases in any mental disorders were reported in three large epidemiologic studies (Petitti DB, et al, 1983;WalkerAM, et al in JAMA, 1981).

Other auto-antibodies

Several investigators have studied this possibility by examining the presence of various autoantibodies including rheumatoid factor and anti-thyroid, anti-nuclear, anti-mitochondrial, anti-parietal cell, anti-thyroglobulin, anti-liver, anti-kidney, and anti-smooth-muscle antibodies in men before and after vasectomy or in vasectomized compared with findings in non-vasectomized men (Rumke P, et al, 1979; Rose NR, et al, 1979; Crewe P, et al, 1976;). Results of these studies indicate that vasectomy is not associated with clinically significantly increased levels of autoantibodies other than anti-sperm antibodies.

Finally, results of several large-scale epidemiologic studies have not shown an increased incidence or prevalence of autoimmune disease in vasectomized compared with findings in non-vasectomized men (Goldacre MJ, et al, 2007; Schuman LM, et al, 1993; Nienhuis H, et al, 1992). Thus, all these studies provide convincing evidence that vasectomy does not lead to development of autoantibodies in man other than anti-sperm antibodies.

Circulating immune complexes

It has been suggested that continuous production of anti-sperm antibodies after vasectomy could lead to the formation of circulating immune complexes with subsequent development of various diseases. Several investigators have demonstrated the presence of circulating immune complexes in small percentages of men following vasectomy (Witkin SS, et al, 1983; ICMR Task Force, 1983). In the study with the longest follow-up after vasectomy, no differences were found in the level of circulating immune complexes in vasectomized men (mean time since vasectomy nearly 16 years) compared with those in non-vasectomized men (Mullooly JP, et al, 1993).

Results of a number of large-scale epidemiologic studies have not shown increased incidence or prevalence of various diseases that could be related to immune complex deposition, including atherosclerosis and glomerulonephritis in vasectomized compared with non-vasectomized men (Schuman LM, et al, 1993; Nienhuis H, et al, 1992).

PROSTATE CANCER

Globally, prostate cancer is the second most common cause of cancer in men (Ferlay J, et al, 2010). Since the mid-1980s, more than a dozen epidemiological studies of the risk of prostate cancer after vasectomy have been reported in the literature. Results have been difficult to interpret because of conflicting study findings, lack of a convincing biological mechanism for an association between vasectomy and prostate cancer, and generally weak associations when they have been found. Also, the potential for bias in some studies was high and likely led to an overestimation of any effect (Bernal-Delgado et al., 1998). Results from a population-based survey in New Zealand confirmed that vasectomy does not increase the risk of prostate cancer, even after 25 years or more (Cox et al., 2002).

Recently, as part of the process of updating their vasectomy guidelines, the American Urological Association (AUA) found that there was no statistically significant difference in relative risk of prostate cancer in vasectomized men compared to men without a vasectomy and no relationship between time since vasectomy or age at time of vasectomy and prostate cancer (Sharlip et al 2010).

But the most recent and largest cohort study results of long-term (24 years) follow-up of the cohort first described by Giovannucci in 1993 were published (Siddiqui MM, et al, 2014). Siddiqui et al made a point that vasectomized men were at higher risk for lethal (aggressive) and advanced prostate cancer. There was no significant link between vasectomy and risk of low-grade cancer. The Siddiqui et al analysis of the long-term follow-up has potential for confounding, information and selection bias thus raising doubts about the validity of the results. The authors however note that the relative risk of lethal prostate cancer translates into a small increase in absolute risk (Siddiqui et al 2014).

While not specifically addressing prostate cancer, the current European Association of Urology guidelines recommend that prospective vasectomy clients should be told that available data indicate that vasectomy is safe and is not associated with any diseases (Dohle GR, et al, 2012).

Based on a careful review of vasectomy literature from 1949 to 2011 (including the 1992 and 1993 papers by Giovannucci and co-author Stampfer et. al.), the AUA Vasectomy Guideline Committee concluded in 2012 that there is no association between vasectomy and prostate cancer or other significant health risks. The 2012 AUA vasectomy guideline goes further by stating that there is no need for physicians to routinely discuss prostate cancer in their preoperative counseling of vasectomy patients.

In conclusion, the risk of vasectomy-associated prostate cancer, if any, is small. Additional analyses in this population and studies in other populations might help clarify these results. Men should not be unduly influenced by a weak and unproven hypothesis when deciding whether to undergo vasectomy.

TESTICULAR CANCER

Some studies have linked vasectomy with an increase in risk of testicular cancer. However, with one exception (Cale et al., 1990) in these studies conducted between the 1970s and early 1990s the increased risk of testicular cancer was not statistically significant (Goldacre et al., 1978; Swerdlow et al., 1987; Strader et al., 1988; Thornhill et al., 1988). These studies included only small numbers of vasectomized men with testicular cancer and were subject to confounding and/or misclassification bias. Giovannucci and coworkers (1992) found no cases of testicular cancer among nearly 15,000 vasectomized men. Additional studies, which included the largest numbers of cases of testicular cancer among vasectomized men, found no increased risk (Goldacre MJ, et al, 2005; Lynge E, 2002). Taken together, results of these epidemiologic studies provide convincing evidence that vasectomy is not associated with an increased risk of testicular cancer.

CHRONIC SCROTAL PAIN (POST VASECTOMY PAIN SYNDROME: PVPS)

A small percentage, no more than 2–3%, of vasectomized men have reported chronic pain in the testis following vasectomy (Leslie TA, et al, 2007; Manikandan R, et al, 2004; Choe and Kirkemo, 1996; Ehn and Liljestrand, 1995; McMahon et al., 1992). This syndrome can begin immediately after the vasectomy or many months or even years after the vasectomy has been completed. At nearly 4 years of follow-up of a study, 6% of vasectomized men had pain severe enough to seek medical

advice compared to 2% of the men without a vasectomy (Morris C, et al, 2002). However, none of the vasectomized men in the study reported that they regretted having had a vasectomy because of the pain. The cause of chronic scrotal pain (PVPS) after vasectomy is poorly understood, but may be related to infection, epididymal or vas congestion, back pressure-induced epididymal tubule rupture with subsequent interstitial fibrosis, sperm granuloma formation, or nerve entrapment (Tandon S, et al, 2008; Granitsiotis P, et al, 2004; Christiansen CG, et al, 2003; Myers SA, et al, 1997; McMahon et al, 1992). Conservative therapy such as non-steroidal anti-inflammatory drugs, sit baths, antibiotics, or spermatic cord nerve blocks is sufficient treatment in most cases (Tandon S, et al, 2008; Strebel RT, et al, 2005; Granitsiotis P, et al, 2004). When these fail, vasectomy reversal, epididymectomy, denervation of the spermatic cord, or excision of sperm granuloma may be helpful (Tandon S, et al, 2008; Strebel RT, et al, 2005; Granitsiotis P, et al, 2004; Myers SA, et al, 1997; Ahmed I, et al, 1997). Most recently published reports of surgical therapy for chronic scrotal pain (PVPS) following vasectomy involve epididymectomy (Lee JY, et al, 2011; Hori S, et al, 2009; Sweeney CA, et al, 2008; Siu W1, et al, 2007; West AF1, et al, 2000) or vasectomy reversal (Lee JY, et al, 2012; Horovitz D1, et al, 2012; Huang HC, et al, 2002; Nangia AK, et al, 2000; Myers SA, et al, 1997) with results suggesting that they can be effective treatments for appropriately selected individuals in cases that are not resolved with more conservative measures.

During counselling it is important to mention that a small percentage of men experience chronic testicular pain following vasectomy. The latest AUA guidelines recommend that providers include the following statement in their preoperative counselling: “Chronic scrotal pain associated with negative impact on quality of life occurs after vasectomy in about 1–2% of men. Few of these men require additional surgery” (Sharlip ID, et al, 2012).

EFFECTS ON SEXUALITY AND SEXUAL FUNCTION

After vasectomy, male sexual and reproductive physiology remains unaffected, aside from the desired change in fertility. The nerves involved in erectile function and ejaculation are not affected, and vasectomy does not lead to impotence or other sexual difficulties (Arratia-Maqueo JA, et al, 2010; Smith A, et al, 2010; Bertero E1, et al, 2005). In a large cohort study (Schuman LM, et al, 1993; Massey FJ Jr, et al, 1984) incidence of impotence was 1.9/1000 man-years (MY) of observation in men with vasectomy and 1.7/1000 MY in men without vasectomy, a difference that was not statistically significant.

In one large study, the number of men reporting loss of sexual interest was identical in vasectomized *versus* non-vasectomized men (Petitti DB, et al, 1982).

Production of seminal fluid, the major component of semen, by the accessory sex glands is unaffected by vasectomy. Thus, the client will not notice any reduction in the amount of semen ejaculated after vasectomy has been performed. Sperm production continues, even though the sperm's passage through the reproductive tract has been blocked; sperm are broken down by macrophages in the lumen of the epididymal tubule (Ball RY, et al, 1984; Phadke AM, et al, 1964). Sometimes the blockage in the reproductive tract after vasectomy causes pressure to build up in the epididymis, which leads to distension in the tubules and, in time, rupture. Ruptures are usually asymptomatic and not problematic. Sperm granulomas that can form at the site of the rupture do not usually require treatment. Some vasectomy providers believe that this buildup can be avoided by leaving open the testicular end of the vas.

ENDOCRINE/HORMONAL EFFECTS

Although some early prospective studies suggested that mean plasma levels of testosterone, luteinizing hormone (LH), and estradiol increased after vasectomy when compared with mean hormone levels measured before vasectomy, the changes were found to be within the normal range for adults (Smith KD, et al, 1975).

In nearly all longitudinal studies (Glavind et al, 1990; Fisch et al, 1989; de la Torre et al, 1983) and all of the cross-sectional studies (Peng et al, 1987; Skegg et al, 1976; Varma et al; 1975), no significant association of vasectomy with changes in the concentrations of testosterone, LH, or follicle-stimulating hormone (FSH) was found. Thus, despite isolated findings of a significant association of vasectomy with changes in some hormones, the bulk of the extensive research on the subject provides strong evidence that vasectomy has no effect on testosterone or the pituitary gonadotropins at least up to 25 years after the operation.

CHANGES IN TESTES

Histological and morphometric examination of seminiferous tubules and testes of vasectomized men showed that some of the normal ultrastructure was maintained (Sun F, et al, 2008; Xiang Y1, et al, 2013) such as the blood supply to the tubules was intact, seminiferous tubules were normal in terms of patency, diameter and basement membrane, Sertoli cells appeared to be intact and the normal stages of spermatogenesis were evident.

Some histological abnormalities noted, however, how these changes occur and their significance remain unclear. Some men with these changes have been able to produce offspring following vasectomy reversal (Mehrotra R, et al, 1985; Jarow JP, et al, 1985) or assisted reproduction (McVicar CM, et al, 2005). Long-term spermatogenic damage has not been seen in men up to 39 years after vasectomy and there is no increase in sperm aneuploidy (an abnormal number of chromosomes) following vasectomy (Sun F, et al, 2008; Xiang Y1, et al, 2013).

EFFECTS ON THE EPIDIDYMIS

The mechanism whereby sperm can be accommodated in the human epididymis following vasectomy is still not known.

Epididymitis in vasectomized men has been referred to as 'congestive' epididymitis. It is rarely of infectious origin, instead it is caused by distension of the epididymis owing to continued passage of sperm from the testis into the epididymis with no outflow given the occluded vas (Appell RA, et al, 1980; Barnes MN, et al, 1973). Epididymitis following vasectomy is uncommon, with most studies reporting rates of approximately 1–3% of men who have had a vasectomy (Sharlip ID, et al, 2012).

Some degree of epididymal dilatation or distension has been reported in 70–100% of the men undergoing vasectomy reversal, but most men do not have any symptoms (Errey BB, et al, 1986; Pardanani DS, et al, 1976). On ultrasound examination, vasectomized men had a significantly higher incidence of thickened epididymides, epididymal tubular ectasia (when the normally invisible epididymal tubules are visible), sperm granulomas and mobile echogenicities (thought to be clumps of sperm trapped within dilated epididymal tubules) compared to non-vasectomized controls (Frates MC, et al, 2011;Reddy NM, et al, 2004). Histological changes have also been noted (Légaré C1, et

al, 2001 and 2010; McDonald SW, 2000) but it is unclear if these changes are clinically significant (Reddy NM, et al, 2004).

The epididymis plays a critical role in sperm maturation; it is during transit through the epididymis that sperm gain their full fertilizing potential. Vasectomy has been shown to affect gene expression and the synthesis of various proteins in the human epididymis, alterations that in some cases appear irreversible following vaso-vasestomy (Belleannée C1, et al, 2013; Sullivan R1, et al, 2011; Légaré C1, et al, 2010). Some of these proteins may play a critical role in sperm maturation and may be responsible, at least in part, for the fact that pregnancy rates following vaso-vasestomy are consistently lower than rates of appearance of sperm in the ejaculate after vasectomy reversal.

EFFECTS ON PROSTATIC FUNCTION

Thakur and colleagues studied (1975) maltase activity in semen, which reflects the secretory activity of the prostate, in vasectomized men. They found that maltase activity in the semen of vasectomized men was significantly lower than in nonvasectomized men, and concluded that prostatic function was diminished by vasectomy. These findings were confirmed by Naik and associates (1980). However, total prostatic volume and growth rate do not appear to be affected by vasectomy (Jackobsen H, et al, 1988).

The implications of these findings on changes in the secretory function of the prostate after vasectomy remain unknown. Further epidemiologic research on noncancerous prostatic disease in vasectomized men, in particular the relationship of the changes noted already to benign prostatic hypertrophy, would be of interest.

HUMAN IMMUNODEFICIENCY VIRUS AND VASECTOMY

Human immunodeficiency virus (HIV) can be found in semen as free-floating virus, HIV infected seminal white blood cells (WBCs), and in association with sperm, with all three potentially playing an important role in the sexual transmission of HIV (Le Tortorec A, et al, 2010; Gupta K1, et al, 2006; Miller CJ, et al, 2003).

Preliminary data from Anderson and coworkers (1991) indicated that infectious HIV could be found in semen from some HIV seropositive vasectomized men. Although levels of cell-free virus in the semen remained stable after vasectomy, cell-associated HIV was detected in significantly more men after vasectomy (Krieger JN, et al, 1998). Additionally, although the exact origin of the cell-free HIV and HIV infected WBCs in semen is unclear, it appears that HIV in the ejaculate arises from prostatic and seminal vesicle secretions, as well as the urethra (Le Tortorec A, et al, 2010; Coombs RW, et al, 2003). Taken together, these results provide good evidence that vasectomy provides no protection against HIV transmission. This underscores the importance of counselling vasectomized men that vasectomy does not provide any protection against transmission or acquisition of HIV and other sexually transmitted infections (STIs) and those men need to use condoms consistently and correctly if they are at risk of transmitting or acquiring HIV/STIs.

APPENDIX F

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 give 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 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

* Further explanation of A, C, D and S categories:

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.

Male surgical sterilization

MALE SURGICAL STEILIZATION		
Sterilization does not protect against sexually transmitted infections (STIs), including HIV. If there is a risk of STI/HIV, the correct and consistent use of condoms is recommended. When used correctly and consistently, condoms offer one of the most effective methods of protection against STIs, including HIV. Female condoms are effective and safe, but are not used as widely by national programmes as male condoms.		
CONDITION * additional comments after this table	**CATEGORY** A = accept, C = caution, D = delay, S = special	**CLAFIFICATIONS/EVIDENCE**
PERSONAL CHARACTERISTICS AND REPRODUCTIVE HISTORY		
YOUNG AGE	C	**Clarification**: Young men, like all men, should be counseled about the permanency of sterilization and the availability of alternative, long-term, highly effective methods. **Evidence**: Men who underwent vasectomy at young ages were more likely to have the procedure reversed than those who underwent vasectomy at older ages.
DEPRESSEIVE DISORDER		
DEPRESSIVE DISORDERS	C	
HIV/AIDS		
HIGH RISK OF HIV	A	**Clarification**: No routine screening is needed. Appropriate infection prevention procedures including universal precautions must be carefully observed with all surgical procedure. The use of condoms is recommended following sterilization.
ASYMPTOMATIC OR MILD HIV CLINICAL DISEASE (WHO STAGE 1 OR 2)	A	Clarification: No routine screening is needed. Appropriate infection prevention procedures, including universal precautions, must be carefully observed with all surgical procedures. The use of condoms is recommended following sterilization.
SEVERE OR ADVANCED HIV CLINICAL DISEASE (WHO STAGE 3 OR 4)	S	Clarification: The presence of severe or advanced HIV clinical disease may require that the procedure be delayed.

ENDOCRINE CONDITIONS		
DIABETES*	C	Clarification: If blood glucose is not well controlled, referral to a higher-level facility is recommended.
ANAEMIAS		
SICKLE-CELL DISEASE*	A	
OTHER CONDITIONS RELEVANT ONLY FOR MALE SURGICAL STEILIZATION		
LOCAL INFECTIONS a) scrotal skin infection b) active STI c) balanitis d) epididymitis or orchitis	 D D D D	
CAUGULATION DISORDER*	S	
PREVIOUS SCROTAL INJURY	C	
SYSTEMIC INFECTION OR GASTROENTERITIS	D	
MALE SURGICAL STERILIZATION		
Sterilization does not protect against sexually transmitted infections (STIs), including HIV. If there is a risk of STI/HIV, the correct and consistent use of condoms is recommended. When used correctly and consistently, condoms offer one of the most effective methods of protection against STIs, including HIV. Female condoms are effective and safe, but are not used as widely by national programmes as male condoms.		
CONDITION * additional comments after this table	**CATEGORY** A = accept, C = caution, D = delay, S = special	**CLARIFICATIONS/EVIDENCE**
LARGE VARICOLCELE*	C	
LARGE HYDROCELE*	C	
FILARIASIS; ELEPHANTIASIS*	D	
INTRASCROTAL MASS*	D	
CRYPTORCHIDISM	S	
INGUINAL HERNIA*	S	

ADDITIONAL COMMENTS FOR MALE STERILIZATION

Diabetes: Individuals with diabetes are more likely to get postoperative wound infection. If signs of infection appear, treatment with antibiotics needs to be given.

Local infection: There is an increased risk of postoperative infection.

Coagulation disorders: Bleeding disorders lead to an increased risk of postoperative infection.

Systemic infection or gastroenteritis: There is an increased risk of postoperative infection.

Large varicocele: 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: The vas may be difficult or impossible to locate; a single procedure to repair hydrocele and perform a vasectomy decreases the risk of complications.

Filariasis; elephantiasis : If elephantiasis involves the scrotum, it may be impossible to palpate the spermatic cord and testis.

Intrascrotal mass: this may indicate underlying disease.

Inguinal hernia: Vasectomy can be performed concurrent with hernia repair.

Sickle cell disease: There is an increased risk of pulmonary, cardiac or neurologic complications and possible increased risk of wound infection.

APPENDIX G

Quality Improvement Tools for Service Site Strengthening

FP 01: Counseling

1	Facility(Name, Place) :				
2	Assessed Quarter	First	Second	Third	
3	Date of assessment (dd/mm/yy)				
4	Name of Assessor	1	1	1	1
		2	2	2	2
5	Designation of Assessor	1	1	1	1
		2	2	2	2

Scoring Key: Y=Yes, N=No, NA=Not Applicable

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
1. The facility has counseling room	**Observe where counseling is conducted:**				
	• Has separate counseling room				
	• Is set up so that other waiting clients cannot hear what is being said OR has a door or partition that can be closed/drawn. (Any alternative to provide privacy is acceptable)				
	• Has a desk/table to put counseling kit and IEC materials				
	• Has chairs for client and provider				
	• Has samples of all FP methods in the room for counseling:				
	- COCs, IUCD, injectable, implants, condoms, emergency contraception				
	• Has FP flipchart or Decision Making tools				
	Score: All "Yes"=1 point; Any "No"=0 points				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
2. The FP client is greeted cordially and respectfully, then asked about her FP needs	**Observe if the provider:**				
	• Greets the client warmly				
	• Offers client a seat				
	• Asks client's name, calls her by name and introduces self				
	• Obtains or confirms personal information (name, address, etc)				
	• Confirms purpose of the visit				
	• Assures client of confidentiality				
	• Assures necessary privacy during the visit:				
	- Ensures that the information during the visit will not be shared with anyone				
	- Maintains privacy(visual and sound)				
	- Minimizes people coming in and out of the room during the visit				
	• Asks the client her reproductive goals and needs for contraception.				
	Score: All "Yes"=1 point; Any "No"=0 points				
3. Adequate interpersonal communication skills are used during the entire visit	**Observe if the provider:**				
	• Encourages client to ask questions				
	• Addresses client's questions and concerns				
	• Uses active listening and questioning techniques (e.g. open-ended questions)				
	• Maintain eye contact				
	• Uses body language that shows interest and concern for the client				
	• Uses simple language that client understands				
	Score: All "Yes"=1 point; Any "No"=0 points				
4.The FP client is given information about the contraceptive methods available in the facility and confirms clients choice	**Observe if the provider:**				
	• Asks if the client is interested in one specific contraceptive method				
	• Tells the clients what are the other methods available and gives information according to her interest				
	• Confirms the contraceptive method that s/he wants to use or helps the client to choose an appropriate method				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments: _____

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
5. Pregnancy is ruled out	**Observe that the provider:**				
	• Explains to the client that it is important to check that she is not pregnant				
	• Asks that client is within seven days of onset menstrual period				
	• Rules out pregnancy if beyond day seven:				
	- Abstinence since last menses Or				
	- Is within seven days post- abortion OR				
	- Less than six months postpartum, is exclusively breastfeeding and has not had any menses				
	- Have a baby in the last 4 weeks				
	- Has been using a reliable FP method consistently and correctly				
	Score: All "Yes"=1 point; Any "No"=0 points				
Method specific counseling					
6. Method specific reproductive and medical history are taken and assess the client for chosen method and recorded once the client has selected a method (go to method specific tool)	**Observe that the provider:**				
	• Takes a reproductive and basic medical history using the language the client will understand				
	• Assesses the client for the specific method chosen and if indicated refers the client for further evaluation				
	• Confirms medical eligibility for chosen method using screening checklist				
	• Ensures all the precautions are considered regarding the use of the chosen method.				
	• If necessary, helps the client to find a more suitable method.				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments: _____

FP 01: Counseling services				
Total standards	6	6	6	6
Total standards assessed				
Total standards met				
Percent achievement	%	%	%	%

APPENDIX H

Health Facility level
Quality Improvement Tools for Service Site Strengthening

GN 01: General Physical Facilities

1	Facility(Name, Place) :				
2	Date :				
3	Name of Observer:				
4	Designation of Observer:				

Scoring Key: Y=Yes, N=No, NA=Not Applicable

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
1.The health facility has adequate functioning basic amenities	Observe that the health facility has:				
	• Regular power supply (Grid or Solar)				
	• Running water source in facility premises				
	• Telephone				
	• Refrigerator				
	• Emergency Transport (stretcher, bicycle ambulance, ambulance				
	Score: All "Yes"=1 point; Any "No"=0 points				
2.The health facility has adequate physical facilities to provide the quality services	Observe that the health facility has:				
	• Separate registration area				
	• Separate room/area for counseling service with auditory and visual privacy				
	• Separate rooms for check- up				
	• Separate room for examination and procedure for FP				
	• Separate instrument processing and autoclave area				
	• Separate area for washing and drying				
	Score: All "Yes"=1 point; Any "No"=0 points				
3. Working toilets are available near the waiting area for clients.	Observe if the toilets are:				
	• Clean				
	Have:				
	• Doors that can be locked				
	• Sinks with running water (or bucket with taps)				
	• Soap				
	• Toilets with running water (flush or bucket)				
	• Rubbish bin				
	Score: All "Yes"=1 point; Any "No"=0 points				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
4. The facility has client friendly waiting area	Observe that the health facility has:				
	• Designated waiting area				
	• Protected from sun and rain				
	• Adequate benches/chairs tosit				
	• Clean drinking water for clients				
	• Different audio-visual aids (related to FP/ MNCH)				
	Score: All "Yes"=1 point; Any "No"=0 points				
5. The Health Facility displays FP/MNCH IEC materials in the waiting area (visible area)	Observe that health facility has:				
	IEC materials displayed as follows:				
	• Family Planning related Poster				
	• ANC/delivery (RH) related poster				
	• Informed choice poster				
	• Immunization Poster				
	• Diarrhea/ARI Poster				
	• Newborn related poster				
	• GESI related poster				
	• Nutrition related poster				
	Score: All "Yes"=1 point; Any "No"=0 points				
6. The facility has functioning basic equipments	Observe				
	• Salter scale				
	• Pan scale				
	• Adult weighing scale				
	• Mercury Thermometer				
	• Stethoscope				
	• BP instrument				
	• ARI Timer				
	Score: All "Yes"=1 point; Any "No"=0 points				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
7. The facility has all the relevant guidelines, protocol, standards, job aid	Observe that the health facility has:				
	• National Medical Standard Vol. 1				
	• National Medical Standard Vol. III				
	• FP counseling Flip chart				
	• FP Counseling kit box				
	• IMCI Chart Booklet				
	• Cotrim Dose Card				
	• Home Therapy Card for ARI cases				
	• Zinc counseling card				
	• Storage Guideline for health commodities				
	• HFOMC Guideline				
	• FCHV Fund Guideline				
	• HMIS recording and reporting guideline				
	• MNH Job-aid				
	• BPP flip chart				
	• HF QA Guideline				
	Score: All "Yes"=1 point; Any "No"=0 points				
8. The site maintains proper recording and reporting system	Review records and files:				
	The clinic maintains following recording and reporting system as per HMIS				
	• Master Register				
	• Maternal Health Service Register				
	• ANC card				
	• T.T Register				
	• Multipurpose contact card				
	• Family Planning				
	• Service Register				
	• Family Planning Card				
	• FP face sheet 3.1,				
	• Pills Depo service register				
	• IUCD Implant service register				
	• Under 5 children Nutrition Register				
	• Immunization register and card				
	• Laboratory Examination Register				
	• Outreach Clinic Register				
	• Medical Record Card				
	• Monthly Reporting Forms				
	• Aama program monthly reporting form				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments: _____

GN 01: General Physical Facility				
Total standards	8	8	8	8
Total standards assessed				
Total standards met				
Percent achievement	%	%	%	%

APPENDIX I

Health Facility level
Quality Improvement Tools for Service Site Strengthening

GN 02: Infection prevention and Health Care Waste Management

1	Facility(Name, Place) :				
2	Date :				
3	Name of Observer:				
4	Designation of Observer:				

Scoring Key: Y=Yes, N=No, NA=Not Applicable

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
1. The health facility has available running water.	**Observe if there is running water (sink or plastic bucket with faucet) in:**				
	• Registration area/ Waiting area				
	• Examination room				
	• Procedure room				
	• Laboratory				
	• Toilet				
	If it provides delivery services				
	• Admission room				
	• labor room/delivery room				
	• Post natal room				
	Score: All "Yes"=1 point; Any "No"=0 points				
2. The health facility area is kept clean	Observe that the HF maintains cleanliness:				
	• Around the health facility area				
	• Waiting room/area				
	• Examination rooms				
	• Procedure room (IUCD/Implant)				
	• Utility room				
	• Instrument processing area				
	• Store room				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
2. The health facility area is kept clean (contd…)	**If the HF is Birthing center**				
	• Delivery room				
	• Post-delivery room				
	• Toilets				
	Score: All "Yes"=1 point; Any "No"=0 points				
3.The health facility has equipment for standard precautions for infection prevention	**Observe during the visit :**				
	• Sterilization equipment (i.e. autoclave with energy source)				
	• Puncture proof container and burning pit				
	• Disinfectant (Chlorine)				
	• Single use – standard disposable syringes				
	• Soap or hand disinfectant (alcohol + glycerin)				
	• Latex gloves				
	• Gloves				
	• Masks				
	• HF level guidelines for standard precautions				
	Score: All "Yes"=1 point; Any "No"=0 points				
4. There is an appropriate system for collecting waste	**Observe during the visit whether:**				
	• The health facility has available and properly uses puncture proof sharps containers				
	The collectors are located in:				
	• Examination room				
	• Procedure room				
	• Antenatal check up room				
	If the HF is Birthing center :				
	• labor room/delivery room				
	• Postnatal ward				
	• Neonatal Unit				
	Score: All "Yes"=1 point; Any "No"=0 points				
5. Staff properly disposes sharps in each room.	**Syringes with needles are:**				
	• Immediately placed in sharp container without recapping.				
	• Containers are closed and disposed of when filled (3/4 full).				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments _____

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
6. The health facility prepares, uses and stores Antiseptic solutions properly	**Observe whether**				
	• Antiseptics are stored in cool, dark/shade place and away from direct sunlight				
	• Antiseptic solution is stored in airtight container				
	• Antiseptics are kept in small, closed and reusable containers for daily use.				
	• Appropriate antiseptic solution is used(as per the standard)				
	• Antiseptic solution is used in intact skin only				
	• Gauze and cotton are stored in containers without antiseptics.				
	• Spirit swab is prepared and used everyday				
	• Reusable containers are washed with soap and water and dried before being refilled with antiseptic solution				
	Auxiliary instruments such as thermometers, probes and other materials are stored in dried containers without antiseptic or disinfectant solutions.				
	Score: All "Yes"=1 point; Any "No"=0 points				
7.The health facility performs decontamination process properly	**Observe the provider:**				
	• Prepares 0.5% chlorine solution daily as per IP guidelines				
	• Chlorine solution is in place in the procedure room/area				
	• Soaks used instruments 10 minutes only in chlorine solution				
	• Then materials and instruments are transferred to soap water solution for cleaning				
	• Cleans the procedure room with chlorine solution				
	• Stores chlorine powder in safe container in a safe place				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments _____

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
8. The support staff cleans instruments properly	**Observe during cleaning , the staff:**				

	• Uses utility gloves and other protective barriers
	  • Utility gloves
	  • Plastic apron
	  • Visor/protective goggles
	  • Closed shoes
	  • masks				

	Uses detergent, clean water and soft brush to clean instruments properly				
	• Disassembles instruments with multiple parts				
	• Rinses thoroughly with clean water until detergent is removed				
	• Dries the instruments with clean towel and dries in air				
	Score: All "Yes"=1 point; Any "No"=0 points				
9. The health facility performs sterilization properly	**Observe the provider:**				
	• Schedules to do sterilization regularly/ periodically				
	Sterilizes the instruments after cleaning properly				
	• Wraps or puts the instrument open in surgical drum				
	• Opens all holes of the drum and puts in the autoclave				
	• Sterilizes 30 minutes for wrapped instruments and 20 minutes for unwrapped at 121 degree centigrade and 106 kPA (15 lb/in2) pressure				
	Score: All "Yes"=1 point; Any "No"=0 points				
10. The health facility performs high-level disinfection (HLD) properly according to the standards.	**Observe the provider:**				
	• While using boiler or pot (dekchi) with lid				
	Cleaned, disassembled instruments are totally immersed in water.				
	- Lid is closed.				
	- Boils for 20 minutes (after rolling boiling starts)				
	• While using momo cooker				
	- Puts all instruments and gloves in separate compartment				
	- Steams for 20 minutes after steam starts tocome out				
	• No additional instruments are added after timingbegins.				
	• After 20 minutes, instruments are removed with high-level disinfected or sterile forceps or gloves, dried and stored in HLD containers.				
	Score: All "Yes"=1 point; Any "No"=0 points				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
11. The health facility stores sterile instruments in the sterile container	**Observe the provider:**				
	• Stores the sterile/HLD instruments/gloves in sterile/ HLD container				
	• Stores double wrapped sets in dry and clean racks				
	• Labels the dates of sterilization on the sterile instrument				
	Score: All "Yes"=1 point; Any "No"=0 points				
12. The health facility collects wastes properly	**Observe the provider :**				
	• Staff members use utility gloves when handling or transporting waste				
	• Collects medical wastes and other wastes separately in different dust-bins				
	• Collects sharps in puncture proof container				
	• Collects glasses in separate container				
	Score: All "Yes"=1 point; Any "No"=0 points				
13. The health facility disposes wastes properly	Observe the facility				
	• Burns all burnable wastes				
	• Burns or disposes sharps/syringes separately				
	• Bury other unburnable wastes in a big pit or send to municipality				
	• Bury placenta in the placental pit				
	• Throw used chlorine solution in the separate pit				
	Score: All "Yes"=1 point; Any "No"=0 points				
14. The health facility promotes good practices for waste disposal	Observe if :				
	• There are dustbins outside the health facility for general waste to reduce littering				
	• The surroundings are free of litter and waste				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments _____

GN 02: Infection Prevention and Health Care Waste Management				
Total standards	**14**	**14**	**14**	**14**
Total standards assessed				
Total standards met				
Percent achievement	%	%	%	%

APPENDIX J

Quality Improvement Tools for Service Site Strengthening
GN 02: Infection prevention and Health Care Waste Management
C. Hand Hygiene

1	Facility(Name, Place, Code) :				
2	Observed Quarter	First(1)	Second(2)	Third(3)	
	Date : dd/mm/yy				
3	Name of Observer:				
4	Designation of Observer:				

Scoring Key: Y=Yes, N=No, NA=Not Applicable

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	Quarter			
		1	2	3	
1. The provider prepares for hand washing.	Observe if :				
	• Service provider's nails are cut				
	• Service provider's nails are without false nails				
	• Service provider's nails are without polish				
	• Removes ornaments and watch (ring, bangles)				
	• Ensures necessary item for hand washing: (soap, soap case, running water and towel)				
	• Rolls up sleeves				
	Score: All "Yes"=1 point; Any "No"=0 points				
2. The provider washes hands in 6 steps (40-60 secs) (Simple hand washing)	Washing with soap and water				
	Washes hands in six steps:				
	• Wets hands in running water				
	• Applies enough soap to cover all the surfaces of hands				
	• Paying close attention to areas under fingernails and between fingers.				
	6 steps				
	• Rubs hands palm to palm				
	• Right palm over left dorsum with interlaced fingers and vice versa				
	• Palm to palm with finger interlaced				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	Quarter			
		1	2	3	
Contd….	• Back of fingers to opposing palms with fingers interlocked				
	• Rotational rubbing of left thumb clasped in right hand and vice versa				
	• Rotational rubbing backwards and forwards with clasped finger of right hand in left palm and vice versa				
	• Rinses hand under running water thoroughly				
	• Dries hands with a clean and dry towel (personal), paper towel or air dry				
	Score: All "Yes"=1 point; Any "No"=0 points				
3. The provider cleans his/ her hands with alcohol-based formulation (20-30 secs, 6 steps) (Handrub with antiseptics)	If the hands are not visibly soiled: Observe:				
	• Applies a palmful of the product in a cupped hand, covering all the surfaces				
	6 steps				
	• Rubs hands palm to palm				
	• Right palm over left dorsum with interlaced fingers and vice versa				
	• Palm to palm with finger interlaced				
	• Back of fingers to opposing palms with fingers interlocked				
	• Rotational rubbing of left thumb clasped in right hand and vice versa				
	• Rotational rubbing backwards and forwards with clasped finger of right hand in left palm and vice versa				
	• Lets hands to dry				
	Score: All "Yes"=1 point; Any "No"=0 points				
4. Before surgery the provider washes hands in 6 steps (3-5 mins) (Surgical hand scrub)	Observe:				
	• Wet hands in running water				
	• Cleans nails with nail cleaner				
	• With soap and water washes hands thoroughly covering all the surfaces of hands, especially between fingers and forearms to the elbows				
	• Rinses hands and forearms with water				
	• Applies an antiseptic agent to all the surfaces of both hands and forearms to the elbows and rub vigorously in circular motion for at least 3-5 minutes				
	• Holding the hands higher than the elbows, rinses hands forearms thoroughly with clean water				

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	Quarter			
		1	2	3	
Contd…..	• Keeps hands up and away from the body, do not touch any surface or article and dry hands and forearms with a clean dry towel or air dry				
	• Scrubs hand with 2-4% Chlorhexidine or 7.5-10% povidone iodine for 1 min				
	• Puts sterile surgical gloves on both hands				
	Score: All "Yes"=1 point; Any "No"=0 points				
5. The service provider dries his/her hands after hand washing.	Observe:				
	• Dries hands thoroughly with single towel, paper towel or allows air dry				
	• Uses towel to turn off the faucet (tap)				
	Score: All "Yes"=1 point; Any "No"=0 points				
6. Moments for hand hygiene are maintained during the service provision (Observe at least in five moments)	Maintains hand hygiene in these eight moments				
	• Before touching a patient				
	• Before clean/aseptic procedure				
	• After body fluid exposure risk				
	• After touching a patient				
	• After touching patient surroundings				
	• Before and after any procedure				
	• After removing gloves				
	• After handling waste				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments: ----------

GN 02/C– Hand Hygiene				
Total standards	**6**	**6**	**6**	**6**
Total standards assessed				
Total standards met				
Percent achievement	%	%	%	%

External verification:

Name: _____

Date: _____

Percentage achieved (%) : _____

APPENDIX K

Quality Improvement Tools for Service Site Strengthening
FP 05: No Scalpel Vasectomy (NSV)

1	Facility(Name, Place) :				
2	Date :				
3	Name of Observer:				
4	Designation of Observer:				

Scoring Key: Y=Yes, N=No, NA=Not Applicable

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
The provider helps client to choose method of choice					
No Scalpel Vasectomy Chosen					
1.The facility has an area with essential equipment to conduct VSC service (if applicable)	**Observe that the health facility has**:				
	• Enclosed well- ventilated area				
	• Private space for client to change clothing				
	• Sink and running water for surgical hand scrub				
	• Procedure table with mattress				
	• Directed light source (goose neck lamp)				
	• Bucket and safety boxes for waste/needle segregation, disposal, respectively				
	Score: All "Yes"=1 point; Any "No"=0 points				
2.The client receives counseling on No Scalpel Vasectomy procedure	**Observe if provider**:				
	• Asks the client what he already knows about NSV and corrects any misinformation.				
	• Briefly explains				
	How it works				
	Advantages, disadvantages				
	Precaution				
	Common side effects				
	No protection against STI/HIV/AIDS				
	• Emphasizes that if procedure is successful, it prevents the client to have more children in future and it cannot be reversed				
	• Tells that client can decide anytime against the procedure before it takes place				
	• Ensures that client has decided to use the method without any coercion and incentives				
	• Maintains privacy during counseling				

Comments _____

PERFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
2.The client receives counseling on No Scalpel Vasectomy procedure (contd..)	• Explains about use of condom or other contraceptive method by the couple for 3 months after vasectomy				
	• Explains regarding the need of semen analysis after 3 months.				
	• Ensures/counsels that the couple are using reliable method of contraceptive or ensure that his wife is not pregnant				
	Score: All "Yes"=1 point; Any "No"=0 points				
3. The provider receives written informed consent from the client	**Observe the provider:**				
	• Explains that there are temporary methods of contraception available to the client and his partner.				
	• Explains that the procedure to be performed is a surgical procedure, the detail of which has been explained.				
	• Explains that this surgical procedure involves risks, discomfort and complication in addition to benefits, both of which have been explained.				
	• Explains that if the procedure is successful and the client will be unable to have any more children.				
	• Explains that the procedure is less than 100% effective.				
	• Explains that the effect of the procedure is permanent.				
	• Explains that he can decide against the procedure at any time before the operation is performed (and no medical, health, or other benefits or services will be withheld from him as a result).				
	• Takes written sign on informed consent form.				
	Score: All "Yes"=1 point; Any "No"=0 points				
4. The provider assesses client's eligibility for NSV	**Provider takes medical history of:**				
	• Heart disease, respiratory problem, asthma				
	• Hypertension (should be controlled before surgery)				
	• Diabetes				
	• Convulsions				
	• Scrotal surgery				
	• Genitourinary infections				
	• Allergies to medications				
	• Bleeding disorders				
	• Sexual impairment and scrotal abnormalities				
	• History of recent trauma to genital area				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments _____

_____

PEFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
5. The provider carry out screening	**Observe the provider performs general physical examination:**				
	• Temperature				
	• Blood pressure				
	• Pulse				
	• Auscultation of heart and lungs				
	• P/A lower abdomen mass and Inguinal region for surgery and hernia				
	• Problems with genitals such as infections, swelling, injuries or lumps on penis				
	• Un-descended testicles				
	• Skin infections or mass or swelling (Large varicocele, Hydrocele, Filariasis) (elephantitis) in the scrotum				
	Score: All "Yes"=1 point; Any "No"=0 points				
6. The service provider prepares for the procedure	**Observe the provider:**				
	• Prepares necessary supplies including medicines as well as emergency drugs				
	• Prepares necessary sterile or HLD instruments needed for procedure				
	• Asks client to clean genital area				
	• Helps client to put on OT gown				
	Score: All "Yes"=1 point; Any "No"=0 points				
7. The facility has complete set of instruments for NSV	**Observe that the site has:**				
	• Black silk or cotton thread 2/0				
	• Galli pot 4 oz 1.5" high				
	• Forceps, Artery, Straight, 51/2"				
	• Ringed Forceps, 4.0 mm ring				
	• Ringed Forceps, 3.5 mm ring				
	• Sharp dissecting Forceps for NSV				
	• Small straight Scissors				
	• Sponge Holding Forceps				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments _____

_____

PEFORMANCE STANDARDS	DEFINITION (VERIFICATION CRITERIA)	1	2	3	4
8. The service provider performs NSV procedure	**Observe if the provider**				
	• Positions the client to the operation table				
	• Interacts with client to make him at ease				
	• Uses proper infection prevention practices				
	• Identifies, isolates and fixes the right vas deferens using 3-finger technique				
	• Gives injection of local anesthesia (1% of xylocaine 3-10 ml)				
	• Uses 3-finger method to isolate the ~~right~~ vas and applies ringed clamp.				
	• Use the dissecting curved forceps to punctures scrotal skin and expose the vas deferens				
	• Delivers a loop of vas through the puncture hole.				
	• Ligates and removes 1 cm of vas.				
	• Ensures hemostasis				
	• Creates facial interposition and returns vas to original position				
	• Repeats steps for next vas				
	• Uses adhesive bandage or sterile gauze dressing and tape to cover puncture site				
	• Puts client on rest for 20-30 minutes.				
	Score: All "Yes"=1 point; Any "No"=0 points				
9. The clients receives post procedural counseling	**Observe the provider:**				
	• Asks to avoid strenous (hard) physical exercise for 1 week				
	• Suggests client to take analgesic at intervals of 4-6 hours, if he experiences pain or discomfort.				
	• Advises to wear snug underwear for 2-3 days to help support the scrotum				
	• Suggests keeping puncture site clean and dry for 1-2 days.				
	• Advises not to have intercourse for at least 2-3 days or until he feels comfortable and use condoms or another family planning method for 3 months.				
	• Asks client to return in 3 months for semen analysis.				
	Score: All "Yes"=1 point; Any "No"=0 points				

Comments _____

_____

FP 05: NSV				
Total standards	**9**	9	9	9
Total standards assessed				
Total standards met				
Percent achievement	%	%	%	%

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

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In cooperation with the Government of Nepal, Ministry of Health and Population, National Health Training Center (NHTC) and the Family Health Division (FHD), JHPIEGO conducted a workshop in January 1999 to standardize No Scalpel Vasectomy an Individual Training Package. A draft copy of the Individualized Training Package was initially field-tested in March 1999 at CFWC. Since that time, the Technical Working Group and the Experts Advisory Group have reviewed and provided feedback on the original draft versions. During this period, a number of agencies and individuals have invested time and effort in refining the materials for the course, including this reference manual.

This reference manual was adapted from the *No Scalpel Vasectomy* reference manual for Nepal, which was developed, jointly by JHPIEGO and AVSC. It has been updated with data from new international and Nepal-specific technical guidelines (*National Medical Standard for Reproductive Health* 1995).

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Second Edition (2006):

In the process of clinical update it was felt that this manual should be revised based on latest and complete scientific understanding to improve the family planning services and information. This second edition is revised, based on the ***National Medical Standard for Reproductive Health. Volume I: Contraceptive Services.*** Second Edition published in 2001, Medical eligibility criteria, Male Sterilization, WHO; ***Contraceptive Technology*** (18th Revised Edition), ***No-Scalpel Vasectomy Curriculum, A Training Course for Vasectomy Providers and Assistants*** (Draft)**,** Engender Health**,** published in March 2003 and the many valuable suggestions from those with experience using the manual.

In the preparation process of this edition, a review workshop with key stakeholders was held on February 1-3, 2006 and a final revision workshop was held on February 15-16, 2006 in cooperation with National Health Training Center, Family Health Division and Nepal Family Health Program. The need for a second edition reflects, in part the unexpectedly large request from various agencies and individuals (trainers/managers) for the first edition and the need to incorporate the many valuable suggestions and comments received from them. In addition, there is new information on:

- Anatomy and Physiology
- Pre-counseling
- Family Planning Status of Nepal

Besides, chapter on "Quality of Care in NSV Service" is rewritten in order to incorporate the latest concepts on quality of care. Our sincere thank goes to [redacted] Team Leader/QA, Nepal Family Health Program for his tired less effort in updating this chapter in accordance with Nepalese context.

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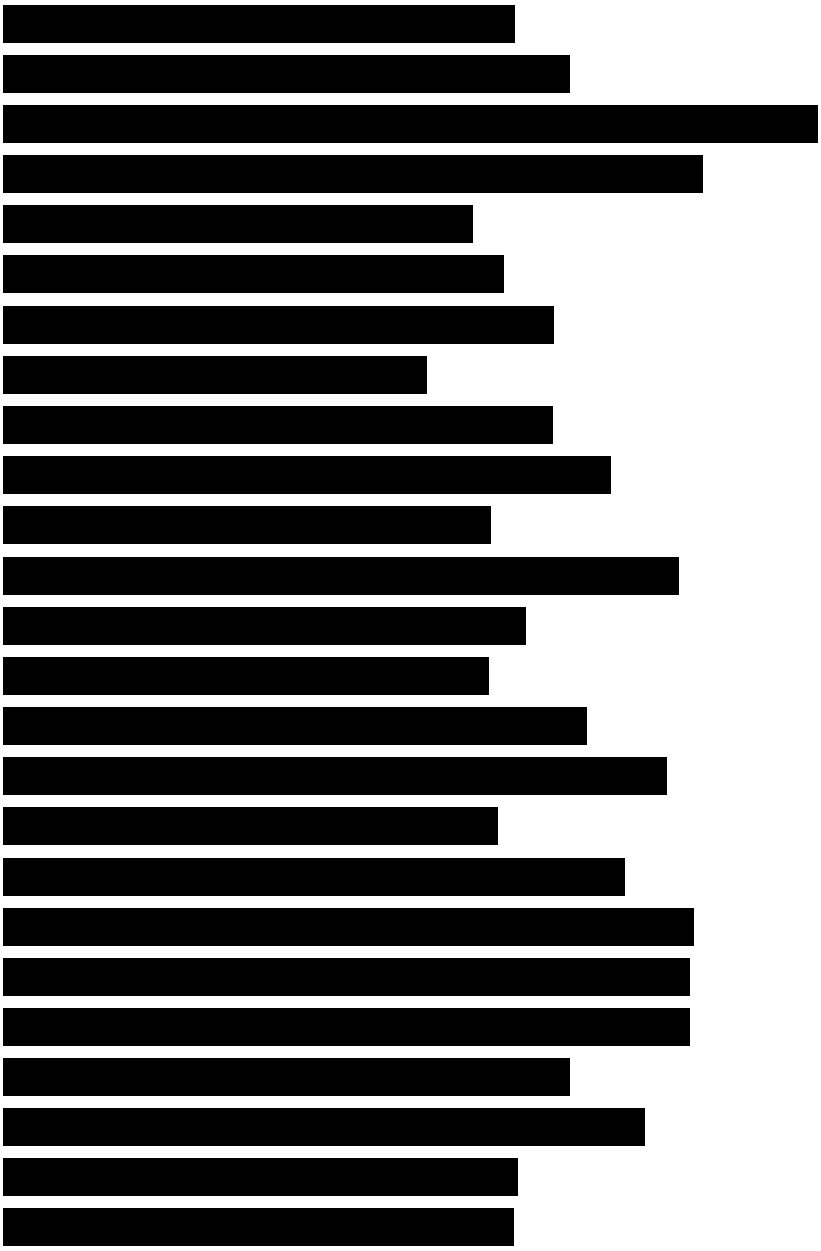
Amir Khati
Director
National Health Training Center

Name of Contributors in Developing and Finalizing
No Scalpel Vasectomy Training Package



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