

Technical and Managerial Guidelines for Vasectomy Services



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GENEVA**

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Front cover: "Family planning," a sculpture in wood by the Colombian folk artist Juan de la Cruz Saavedra.

Optimal birth spacing, as represented by the ages of the two children, is seen to be supported by breast-feeding, and by "the pill" (represented in the hand of the older child). Aware of potential conflict and of the need for the cooperation of the male partner in family planning, the artist emphasizes the joint responsibility of the couple.

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Preface

The primary purpose of these guidelines is to assist those responsible for the development and management of family planning and health programmes in initiating or expanding vasectomy services. They are designed to serve the needs of various types of personnel, including programme managers, administrators, and service providers. Basic technical information about the procedure, its effects, and related medical issues is included so that programme staff will have the necessary background and understanding. Although this publication is not intended to be a manual for training in the surgical technique of vasectomy, it includes information that will be useful to those responsible for establishing and administering training programmes for vasectomy.

Every attempt has been made to make these guidelines of practical value for those starting programmes for the first time. Thus, a separate chapter on organizing and managing programmes is included, along with several annexes that provide suggestions and examples that can be adapted to local needs.

These guidelines are particularly timely because of the growing interest in and demand for vasectomy services in many parts of the world. As a family planning method, vasectomy achieved prominence in the 1960s when it was first offered on a widespread basis in India, the United Kingdom, and the United States of America. However, with the introduction of simplified female sterilization methods in the 1970s, acceptance of vasectomy declined in most countries where it had been introduced. Today, professionals and the public alike are taking a fresh look at vasectomy, because of its proven simplicity, safety, and cost-effectiveness. As an effective family planning method, vasectomy can make an important contribution to the health and family planning goals of countries.

The guidelines attempt to show how to extend, through different types of programmes and delivery channels, the

accessibility of vasectomy, and how to promote awareness of it as a contraceptive option. They are a synthesis of experiences in successful vasectomy programmes around the world. The views summarized here represent a consensus of the members of an informal group that met at WHO headquarters in Geneva from 25 to 27 June 1984, and of experts from around the world who have reviewed the manuscript. The guidelines are meant to be flexible; the aim is to present important issues and to make suggestions that can be readily adapted to specific programmes within the social and cultural context of each country. This publication addresses only surgical methods of vasectomy, although it is recognized that methods involving percutaneous injections of chemicals are being developed.

The first four chapters address programme issues, including the roles of vasectomy, its advantages and disadvantages, service-delivery channels, the initiation of programmes, and the importance of accurate information and effective communication. Chapters 5–12 cover medical and technical topics such as surgical techniques, preoperative and postoperative care, complications, effectiveness, reversal, equipment, and training. The final chapter describes evaluation and research issues related to vasectomy.

These guidelines are part of a series of technical documents on family planning that have been published by the World Health Organization since 1976. The other publications deal with female sterilization,¹ induced abortion,² oral contraceptives,³ injectable contraceptives,⁴ intrauterine devices,⁵ and barrier contraceptives and spermicides.⁶

¹ *Female sterilization: guidelines for the development of services.* Geneva, World Health Organization, 1976 (WHO Offset Publication No. 26)

² *Induced abortion: guidelines for the provision of care and services.* Geneva, World Health Organization, 1979 (WHO Offset Publication No. 49)

³ *Oral contraceptives: technical and safety aspects.* Geneva, World Health Organization, 1982 (WHO Offset Publication No. 64)

⁴ *Injectable hormonal contraceptives: technical and safety aspects.* Geneva, World Health Organization, 1982 (WHO Offset Publication No. 65)

⁵ *Intrauterine devices: their role in family planning care.* Geneva, World Health Organization, 1982 (WHO Offset Publication No. 75)

⁶ *Barrier contraceptives and spermicides: their role in family planning care.* Geneva, World Health Organization, 1987.

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1. Programme considerations

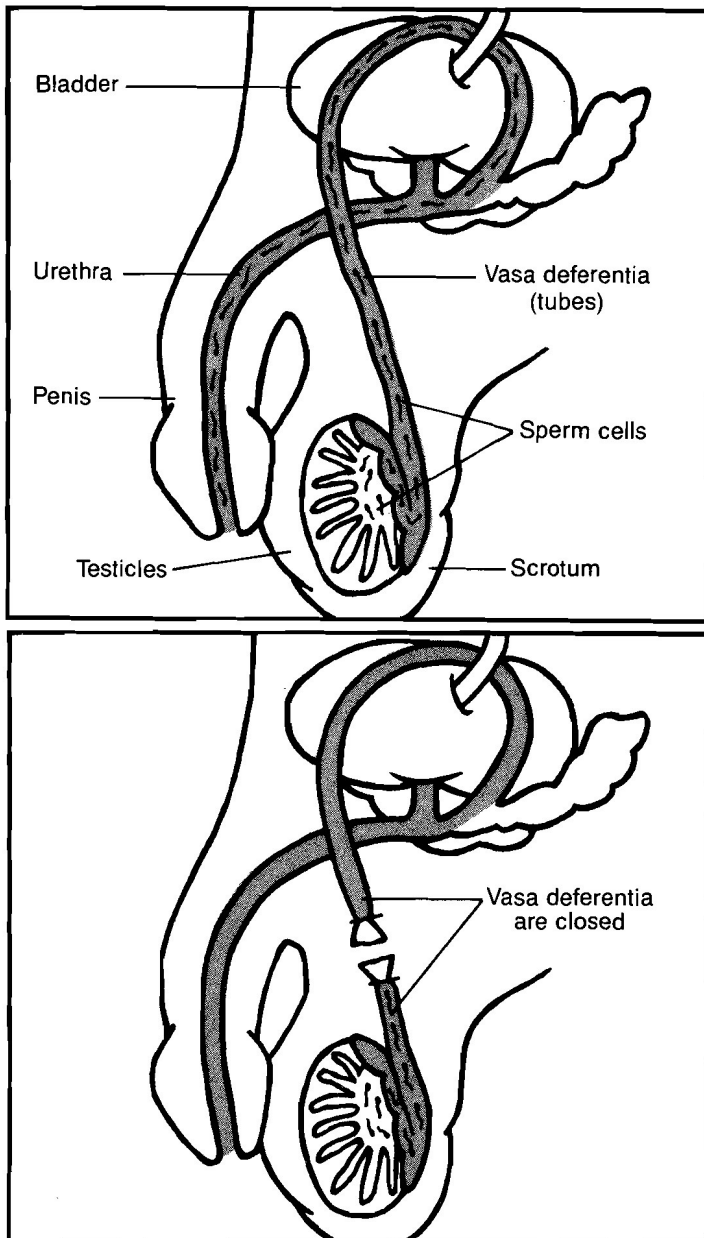
Introduction

Vasectomy is a permanent method of contraception for men involving a minor surgical procedure that usually takes 5–20 minutes to perform. Preoperative preparation and local anaesthesia require only a few minutes. The procedure (Fig. 1) usually involves one or two small incisions in the scrotum to isolate the vasa deferentia (the tubes that carry sperm from the testes to the urethra), which are then blocked (occluded) by one of several techniques. Vasectomy is minor surgery, and is relatively simple, safe, and inexpensive. It is highly effective, does not affect sexual performance or masculinity, and does not have any known associated health risks.

The role of vasectomy

Vasectomy is a contraceptive option for individuals, couples, family planning programmes, and community health programmes. For individuals, it is one of the few methods that allows men to take personal responsibility for contraception. For couples who definitely want no more children, it offers an alternative to female sterilization. On a broader scale, vasectomy increases the effectiveness of national family planning programmes by expanding the range of contraceptive methods offered. If vasectomy is easily available to people who want no more children, then the total number of couples practising effective contraception may increase, thus extending coverage.

Fig. 1. Side views of the male reproductive organs illustrating the site and principles of vasectomy.



- A. Before vasectomy sperm pass freely through the male reproductive tract.
 B. After vasectomy the vasa deferentia are blocked, and sperm cells are prevented from reaching and joining female egg cells.

For countries and communities, vasectomy is compatible with primary health care strategies and programmes. As a contraceptive method, it is a preventive measure that does not require continuing conscious involvement on the part of the client. It can be incorporated into the existing health care system using available personnel, equipment, and facilities. Vasectomy can be performed in the lowest-level facility of the health system. Because the techniques and skills involved are relatively simple, vasectomy is a low-cost option appropriate for all countries. Paramedical staff can be involved extensively in providing information, counselling, selecting clients, and conducting follow-up; in some cases, they may perform actual procedures, permitting physicians to provide other services that require their skills and training. Finally, the community may participate by referring clients and organizing services. Couples and/or men who are satisfied with the method can be very effective in providing information to other members of the community.

History and current trends

Today, virtually all vasectomies are done for contraceptive reasons. However, the first vasectomies, performed in the 1890s and the early 1900s, were done mainly for noncontraceptive reasons. Some early proponents proposed vasectomy to cure urinary and prostatic disease, to treat impotence, or, alternatively, to lower sex drive. However, medical research has clearly demonstrated that vasectomy has no such effects (1, 2).

Vasectomy was also championed in the first half of this century by followers of the eugenics movement, who erroneously believed that sterilization, forced or voluntary, of men and women with particular diseases and undesirable traits could reduce the occurrence of such diseases or traits in future generations. Thus, in some countries, involuntary vasectomy was advocated and legalized for the feeble-minded, the insane, criminals, and any others who were viewed by society as unacceptable. As a result of these excesses and abuses, the use of involuntary vasectomy for eugenic purposes is now forbidden or legally restricted in nearly all societies (1).

As the eugenic role for vasectomy receded, vasectomy became increasingly appreciated and popular in some

countries during the 1960s as a permanent method of voluntary contraception. This was particularly true in India, the United Kingdom, the United States of America, and the Sichuan Province of China. By 1970, nearly 1.5 million American men had voluntarily undergone vasectomy for contraceptive purposes.¹ India was the first country to include vasectomy in organized family planning programmes. Nearly 5.5 million vasectomies were performed in India between 1965 and 1974 (3).

During the 1970s and 1980s, vasectomy was introduced into national family planning programmes in a number of other countries. It became an important contraceptive method in Bangladesh, China, Nepal, the Republic of Korea, Sri Lanka, Thailand, and, to a lesser extent, in Brazil, Guatemala, the Philippines, and some European countries. However, the annual number of vasectomies performed has been erratic in many countries. For example, vasectomy had a promising beginning in the Republic of Korea and the Philippines but numbers performed levelled off or declined as simplified female sterilization techniques were introduced and became popular (4).

Throughout the world, and especially in the United States of America, the number of vasectomies performed dropped in the late 1970s and early 1980s after researchers published reports describing immunological responses following vasectomy in animals. Epidemiological studies have since failed to demonstrate any relationship between vasectomy and disease in men (5, 6). The resurgence in the number of vasectomies performed since 1983 in the United States¹, and possibly in other countries as well, is credited, to some extent, to these reassuring findings.

Although the number of vasectomies performed is significant in only a few countries, and although the overall rate in these countries has tended to be irregular, there are an estimated 33 million couples in the world who are protected from pregnancy by vasectomy (5). China and India each have an estimated 12 million vasectomized inhabitants. Other Asian countries, notably Bangladesh, Nepal, the Republic of Korea, Sri Lanka and Thailand, account for an additional 1.6 million. In the United States

¹ ANTARSH, L. & RUBEN, M. U.S. sterilization trends, 1982-1983. Paper read at 112th Annual Meeting of the American Public Health Association, 11-15 November, 1984, Anaheim, California.

and the United Kingdom, 5 million and 1.1 million couples, respectively, rely on vasectomy for contraception. Another 1.2 million couples are protected by vasectomy in a few additional developed countries, including Canada, the Netherlands, and New Zealand. In most other countries, the number of vasectomies performed is very low or negligible. Table 1 provides data on the percentages of people who

Table 1. Percentage of men who have undergone vasectomy, in selected countries and territories^a

Country or territory	Year	Percentage ^b
<i>Asia</i>		
Bangladesh	1981	0.8
	1983	1.2
China	1983	6.9
Hong Kong	1979	1.1
	1981	1.2
Nepal	1976	1.7
	1981	2.9
Republic of Korea	1971	2.3
	1982	5.2
Sri Lanka	1975	0.7
	1982	3.6
Thailand	1975	2.2
	1981	4.2
<i>Latin America</i>		
Colombia	1978	0.1
	1980	0.3
El Salvador	1978	0.2
Guatemala	1978	0.4
Panama	1979-1980	0.4
<i>North America and Europe</i>		
Canada	1984	12.9
Netherlands	1971	0.3
	1976	4.2
	1981	10.0
	1982	10.4
United Kingdom (England and Wales)	1976	8.5
United States of America	1965	3.3
	1970	5.1
	1982	10.4

^a Adapted from References 7 and 8.

^b This is calculated as the percentage of currently married women of reproductive age whose spouse has been vasectomized.

have been vasectomized, for selected countries and territories.

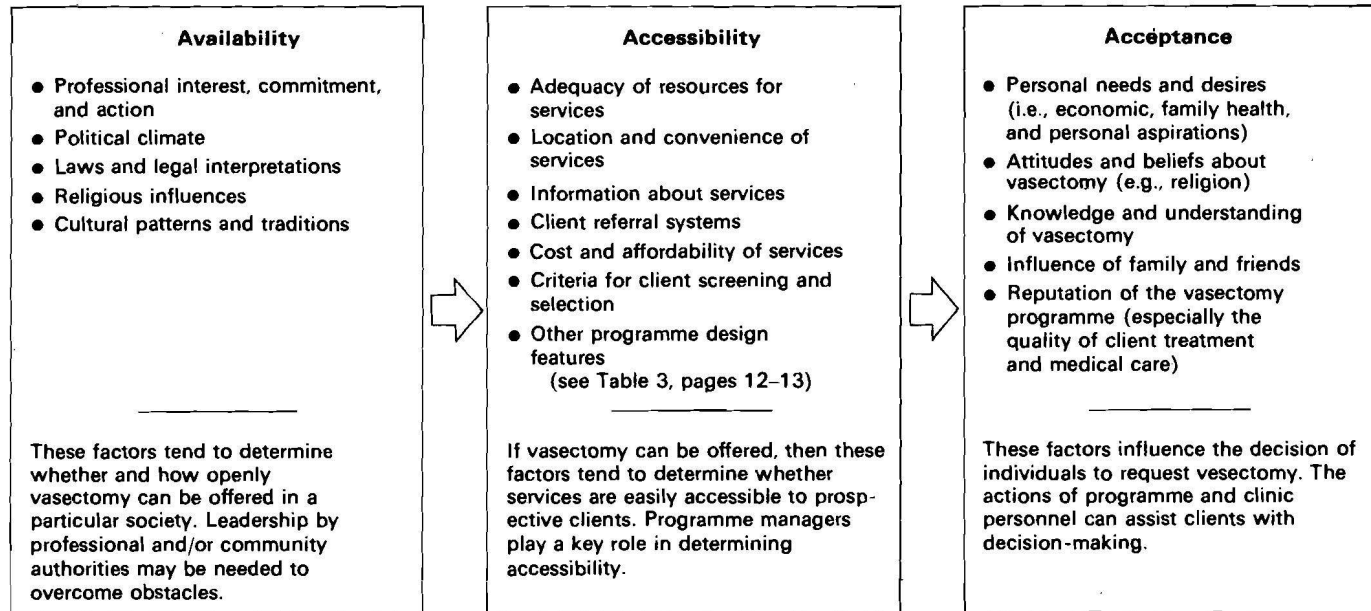
In general, vasectomy is currently a prominent contraceptive method in most of Asia and many developed countries. While the number of vasectomies performed in Latin America has been relatively modest, family planning programmes in several countries (including Brazil, Colombia, El Salvador, Guatemala and Mexico) have begun to make vasectomy more easily available and accessible. In recent years, the numbers have been reported to be increasing in these Latin American countries. Vasectomy programmes have not been introduced in most of Africa and south-west Asia.

Factors affecting availability and acceptance

There are two frequently given explanations as to why men resist vasectomy: firstly, cultural patterns of male dominance or "machismo" discourage men from choosing vasectomy; and secondly, men mistakenly believe that vasectomy will negatively affect their masculinity and/or sexual performance. In recent forums, public health professionals have examined these two explanations as well as other factors that may affect the acceptance or nonacceptance of vasectomy, and account for fluctuations in the numbers performed. They have found that, while cultural patterns and inaccurate information undoubtedly influence the acceptance of vasectomy, *the single most important factor is the availability of good quality services*. Experience has shown that, when a well-run vasectomy service is offered, eligible men do come forward and request the procedure (9, 10).

The availability of vasectomy depends on the interest and commitment of health professionals who, in turn, may be affected by legal, political, religious and other considerations. Fig. 2 illustrates the interplay of various factors affecting availability and individual acceptance. Some of these factors are discussed in more detail in the following pages.

Fig. 2. Some factors affecting the acceptance of vasectomy*



* This figure was developed by the Association for Voluntary Surgical Contraception (AVSC) and has been distributed at meetings but never published. It is reproduced with their permission.

Laws and regulations

The legal status of voluntary sterilization can be classified in four broad categories as shown below. These categories and the classification of countries according to their legislation are shown in Table 2. Legal status is not always an absolute guide to practices, since restrictive laws may be generally ignored if there is a strong policy favouring the implementation of voluntary sterilization services (8).

(a) *Voluntary sterilization legal—specific laws or regulations*
(23 countries)

In these countries the law explicitly permits sterilization for contraceptive purposes, and there may be varying regulations regarding the practice of surgical contraception.

(b) *Voluntary sterilization allowed for contraception—
interpretation of laws or regulations* (52 countries and territories)

In this, the largest category, no specific laws permit sterilization. However, interpretation of other laws and regulations allows voluntary sterilization for contraceptive purposes to be performed.

(c) *Legal status not clear* (29 countries and territories)

In these countries the language of laws and regulations is open to different interpretations.

(d) *Voluntary sterilization allowed only for therapeutic,
eugenic, medical, or health reasons* (28 countries and territories)

In some countries, these conditions are interpreted broadly, thereby permitting moderate availability of voluntary sterilization. Moreover, both doctors and patients may have difficulty distinguishing between a sterilization done for contraceptive intent and one done for therapeutic reasons.

Table 2. Legal status of voluntary sterilization in selected countries and territories^{a, b}

Status	Country or territory
(a) Voluntary sterilization legal—specific laws/regulations	Austria (1974); Cuba (1968); Czechoslovakia (1966, 1971, 1972); Denmark (1973); Dominican Republic (1968, 1972); Ecuador (1982); El Salvador (1974, 1979); Finland (1970); Federal Republic of Germany (1964, 1976); Iceland (1975); New Zealand (1977, 1978); Norway (1977); Panama (1941); Philippines (1973, 1976); Poland (1969); Singapore (1974); Spain (1983); Sweden (1975); Tunisia (1973); Turkey (1983); United Kingdom (1972); United States of America (1960, 1970); Yugoslavia (1951) (Croatia, 1978; Slovenia, 1977)
(b) Voluntary sterilization allowed for contraception—interpretation of laws/regulations	Australia (1977); Bangladesh; Barbados (1968); Botswana; Bulgaria (1968); Canada (1979); Central African Republic; China; Colombia (1979); Costa Rica (1976); Cyprus; Ethiopia (1976); Fiji; France (1983); Ghana; Grenada; Guatemala; Guyana; Honduras (1964); Hong Kong; India (1963); Iraq (1980); Ireland; Israel; Italy; Jamaica; Kenya (1968); Lesotho; Luxembourg (1978); Malawi; Malaysia; Mexico (1973, 1980); Monaco; Mozambique (1980); Nepal; Netherlands; Nigeria; Pakistan; Papua New Guinea; Portugal (1977); Puerto Rico (1974); Republic of Korea (1973); Saint Lucia; South Africa (1980); Sri Lanka; Sudan; Switzerland; Trinidad and Tobago; Uganda; Viet Nam; Zambia (1965); Zimbabwe
(c) Legal status not clear ^c	Afghanistan (1976); Albania (1952); Angola; Argentina (1973); Benin (1958); Bolivia (1972); Burkina Faso; Burundi (1970); Cameroon (1965); Côte d'Ivoire (1982); Gambia; German Democratic Republic (1963); Guinea (1965); Haiti; Hungary; Indonesia (1980); Lebanon; Liberia; Mauritius; Morocco; Niger (1961); Paraguay; Romania; Senegal (1965); Sierra Leone; Swaziland; United Republic of Tanzania; USSR (1960); Zaire (1930, 1940)
(d) Voluntary sterilization allowed only for therapeutic, eugenic, medical, or health reasons	Algeria (1966); Bahrain; Belgium (1958); Burma (1963); Chad; Chile (1974, 1975, 1977); Democratic Yemen; Egypt; Greece (1950); Iran (Islamic Republic of) (1976, 1980); Japan (1948); Jordan (1959); Kuwait; Madagascar; Mali (1961); Malta; Mauritania; Mongolia; Nicaragua (1949); Oman; Peru (1977); Rwanda; Saudi Arabia (1975); Somalia (1962); Syrian Arab Republic; Togo; Venezuela (1971, 1977); Yemen

^a Modified with permission from Reference 8.^b Years of known important changes are given in parentheses.^c Status not clear because information on laws and regulations is lacking, obscure or contradictory.

Supportive legislation has a positive effect on vasectomy programmes

Nearly three-quarters of the world's population live in areas where laws are favourable to the practice of voluntary sterilization (all the countries and territories listed under (a) and (b) of Table 2 plus Belgium and Japan). Yet surgical practices may differ in countries with similar laws. Medical and legal attitudes to voluntary sterilization can be quite important, particularly for the physician providing sterilization services. It is also true that laws often follow, rather than initiate, new medical practices, especially in a field such as voluntary sterilization where technology and social policy are changing rapidly.

Changes in legislation in recent years have mostly been in the direction of making voluntary sterilization more accessible. From 1973 to 1983, 24 countries changed their laws and regulations to make voluntary sterilization legal for contraceptive purposes or more readily available for other indications. There were only four countries during this period that made changes resulting in greater restrictions on various sterilization services.

Religion

Numerous studies have shown that, where vasectomy is available, religious beliefs or practices have not affected the probability that men will request the procedure (11). Vasectomy has been accepted by followers of many different religions. However, when religion is an important distinguishing factor among ethnic or minority groups, request rates for vasectomy may differ among the groups.

Although religion seems to have little effect on individual decisions about vasectomy, it does affect the general availability of relevant services. In countries where a single religion predominates, its opposition to vasectomy may encourage restrictive laws and regulations, or may influence public opinion so that health providers are unwilling to be involved in vasectomy programmes. There is, however, no clear pattern, and health care managers must assess for themselves the importance of religion in the country and local community.

Sociocultural factors

Long-standing cultural patterns and traditional attitudes, especially those relating to the customary roles of men and women, can influence the availability and acceptance of vasectomy. In many societies, women have primary responsibility for contraception; men seldom participate in decisions about family planning and rarely practise contraception themselves. Traditions of male dominance often work against men choosing vasectomy. A man's reputation and value may be measured by his ability to father many children. Misinformation (for example, erroneously equating vasectomy with castration or impotence) can greatly influence acceptability. In such situations, family planning programmes have a responsibility to educate men and the community at large about the role of men in family planning decision-making and practice, and to provide accurate information about the nature of vasectomy.

Professional commitment and client perspective: two vital aspects of programmes

Professional commitment

The involvement and leadership of professional providers are prerequisites of vasectomy services. Certainly, the involvement of health providers is conditioned by laws, regulations, religious factors, public opinion, and other sociocultural elements. However, because health professionals are respected community members, often having positions of influence, they can affect public policy and take the lead in initiating and organizing services. In addition, since health professionals formulate regulations and guidelines about client eligibility and the use of facilities, they can enhance or restrict access to vasectomy services. The importance of professional commitment and leadership cannot be overstated. An analysis of local vasectomy programmes revealed that energetic professionals with personal involvement are key elements in programme success (9). Chapter 3 provides further information about the health care community and the categories of professionals involved in vasectomy services.

Table 3. Selected programme design features that may influence the accessibility of vasectomy services and the performance of vasectomies

Programme design feature	Comment	Additional information
Information sources	Accurate information is provided to potential clients and their spouses in the community in order to correct erroneous information, allay concerns and fears, and inform men where and when services are available. Sources and techniques used are word of mouth, printed materials, community group meetings, social marketing, and mass media.	Chapter 4
Client referral systems	These systems guide interested clients to vasectomy clinics and are often linked with community-based family planning programmes, women's groups, the local medical community and health care system, and community groups.	Chapter 4
Number of service sites and convenience of services	The programme has a sufficient number of service points in relation to the number and location of eligible clients. Various types of service-delivery sites can be used, including hospitals, outpatient clinics and mobile teams. Location, frequency, and scheduling of services affect convenience and, thus, accessibility of services.	Chapter 2
Client eligibility criteria, screening procedures, and counselling	To ensure client satisfaction and to ensure the efficacy and acceptability of vasectomy in the community, the programme takes special care to promote safety and to prevent regret. Client eligibility criteria are defined. Screening procedures identify clients who are high-risk candidates for medical or psychological reasons. Individual client counselling provides an opportunity for both the client and the provider to consider the appropriateness of the decision.	Chapter 1 (page 14), Chapter 4, Chapter 5

Client treatment standards	If clients are treated with respect and concern, they are more likely to be satisfied; this will in turn, enhance the programme's reputation and acceptability. Signs of respect and concern include well-mannered staff; organized, clean, and attractive facilities; maintenance of schedules; and an orderly and efficient system for flow of clients through the clinic.	Chapter 3
Medical service standards and medical quality-assurance systems	To minimize complications and discomfort, the programme follows strictly appropriate medical procedures. The programme standardizes medical practices, establishes training programmes that teach those practices, and implements monitoring systems to ensure that standards are followed.	Chapters 5-12
Cost to client	The expense of vasectomy can be a significant barrier to acceptability. The programme decides whether clients are to be charged and, if they are, determines a fair fee structure. Some programmes compensate clients for the personal expenses associated with vasectomy (e.g., transportation to the clinic, clean clothing to wear after surgery).	Chapter 1 (page 16), Chapter 3 (pages 33-34), Chapter 4
Special attention to men's needs	Programmes that cater for the special needs of men may be more successful. This special attention may be reflected in several ways. For instance, the vasectomy programme may offer other health services for men, may schedule clinic hours to accommodate the work hours of men, and may hire only male staff.	Chapter 3 (pages 35-36)
Data collection and programme evaluation	The programme constantly seeks ways to correct problems and deficiencies and to improve client satisfaction. Data collection and evaluation systems are indispensable tools for maintaining and improving programme quality.	Chapter 13

Programme design features: the client perspective

In countries where vasectomy is available, the design characteristics of vasectomy programmes significantly affect the accessibility and acceptability of services. Family planning and health personnel have the most direct and important influence on how programmes are designed, and their attitudes are, therefore, an important factor.

Table 3 summarizes the major programme design factors discussed in these guidelines, which are based on the principle of client satisfaction—the basis of all successful vasectomy programmes. A user/client-oriented perspective should be the common reference point in designing vasectomy service programmes.

Advantages and disadvantages

There is no ideal contraceptive method suitable for all clients. Consequently, family planning programmes typically offer a wide range of methods to potential clients. Every method, including vasectomy, has advantages and disadvantages. It is important to know and understand both the benefits and drawbacks of vasectomy when designing and offering services. The advantages and disadvantages of vasectomy and female sterilization, the other permanent option, are compared in Table 4.

Client eligibility

Vasectomy should be considered permanent and provided only to couples who have definitely decided to have no more children. It should be offered as only one of several family planning methods, with other alternatives available to couples who wish only to delay the next birth, or who are still uncertain whether or not they want more children. Potential vasectomy clients must be carefully screened in terms of age, mental status, age of wife, and number of healthy living children. Good counselling is vital in order to minimize the possibility of subsequent regret. It is essential that informed consent be obtained.

Table 4. Comparison of vasectomy and female sterilization^a

	Vasectomy	Female sterilization
Effectiveness	Very effective; failure rate low, some risk of spontaneous recanalization Effective 6-10 weeks after surgery	Very effective; failure rate very low Effective immediately
Complications	Risk of serious internal injury or other life-threatening complications very low Risk of serious infection very slight No anaesthesia-related deaths reported	Risk of serious internal injuries or other life-threatening complications slight Risk of serious infection slight Few anaesthesia-related deaths reported
Acceptability	Minute scar Slightly more reversible Less expensive	Scar can be small but still visible Slightly less reversible Expensive but more acceptable in many cultures
Personnel	Can be performed by one trained person with or without an assistant Can be safely performed by trained paramedical personnel	Team needed, including one doctor, one trained anaesthetist, and at least two well-trained assistants Difficult for paramedical personnel to learn and to perform. Usually only physicians with training in gynaecology can perform laparoscopy and laparotomy. Minilaparotomy is simpler
Time	Can usually be performed in half the time of most methods of female sterilization	Takes longer to perform than vasectomy
Equipment	Requires no specialized equipment—the equipment needed is readily available Can usually be performed under local anaesthesia	Laparoscopy requires expensive, complex equipment, which needs to be carefully maintained. Minilaparotomy requires only simple standard surgical instruments Systemic sedation necessary as well as local anaesthesia
Back-up facilities	No back-up facilities needed for immediate complications	Back-up facilities needed in case of damage to abdominal organs and blood vessels or other complications that require laparotomy
Possible long-term side-effects	None demonstrated; uncertainty about effect of increase in sperm antibodies	Slight risk of ectopic pregnancy

^a Adapted from Reference 5.

Costs

Vasectomy has a favourable cost-benefit ratio compared with temporary contraceptive methods. Although the initial expense of vasectomy is relatively high compared with temporary methods, there are no recurring costs, whereas the cost of using most temporary methods accumulates over time. Thus, the sooner couples with completed families choose vasectomy, the greater the potential savings to programmes and couples alike.

Vasectomy is less expensive than female sterilization. It requires less elaborate preparation; training is easier; personnel costs are lower; and surgical supplies, anaesthetic substances, and medications are fewer.

Use-effectiveness

Properly performed, vasectomy is highly reliable and has a very favourable use-effectiveness, compared with temporary contraceptives. Inconvenience, side-effects, and forgetfulness can easily contribute to the failure of temporary methods. With vasectomy, the user must be highly motivated during the initial decision-making and must continue to practise temporary contraception immediately after surgery until no spermatozoa remain in the vasa deferentia (see page 66). However, once the last spermatozoa have been eliminated, no further conscious participation by the couple is required.

Table 5 shows the failure rates for various contraceptive methods in the United States of America. In theory, the effectiveness of the nonsurgical methods is higher than the figures given in the table. However, the theoretical figures have little relevance to actual practice because the effectiveness of the methods depends upon the behaviour of the user. In developing countries, where supplies are often inadequate or inaccessible, the failure rates of the client-dependent methods are even higher than portrayed in the table. Effectiveness of family planning methods such as vasectomy, tubal ligation, hormonal implants, and injectable contraceptives do not depend upon the client, in that the client has no day-to-day responsibility to "use" a method. Therefore, the failure rates remain stable.

Table 5. Failure rates of various contraceptive methods in the United States of America^a

Method	First year failure rates (%) ^b
Tubal ligation	0.4
Vasectomy	0.4
Oral contraceptive	2.4
Intrauterine device	4.6
Condom	9.6
Spermicide	17.9
Diaphragm	18.6
Ovulation method (natural family planning)	22.5

^a Based on data from References 12 and 13.

^b Estimated percentage of currently married women who became pregnant within first year of contraceptive use.

Impact on the health care system

While vasectomy is compatible with primary health care approaches, it does place certain demands on the existing health care system. It is essentially a clinic-based method since it involves surgery. Because vasectomy is elective rather than curative, programme planners must take care to integrate it into the health care system without negatively affecting the personnel, facilities, and materials needed for more urgent services. Vasectomy is less complex and less expensive than female sterilization, and is less demanding of the health system (see Table 4). Because it is simpler it may be offered in a wider variety of settings (see also Chapter 2).

The pregnancies and births averted by vasectomy (as with any family planning method) result in fewer demands and less stress on the health care system. These benefits can offset the needs created by the vasectomy programme itself.

Technology and resource requirements

Although vasectomy involves surgery, the technology required is relatively simple. The pharmaceuticals, supplies, instruments and equipment needed are basic, inexpensive, and readily available. Vasectomy can be performed in virtually any health facility.

2. Vasectomy and the health care system

Vasectomy programmes should be well integrated into the health care system of the country or community. The service-delivery channels and personnel chosen for programmes are crucial for ease of access to vasectomy. Maximum appropriate use should be made of existing facilities, service-delivery opportunities, and the various categories of health care personnel who are qualified to perform vasectomy. In addition, systems for client referral and follow-up need to be established within the health care system. In large programmes, certain facilities may be designated as centres of excellence for training, research and reversal services.

Service-delivery channels

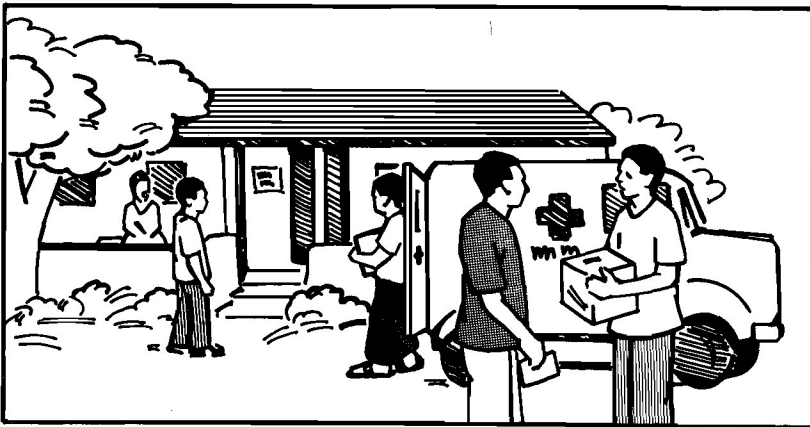
Because it is a surgical procedure, there are limitations to where and how vasectomy can be offered and delivered. Obviously, it is not a contraceptive method that can be obtained, like pills and condoms, from retail outlets or from community-based field agents. On the other hand, because it is less complex than female sterilization, it may be offered in a greater variety of settings by more types and therefore larger numbers of personnel. Consequently, vasectomy has the potential of extending surgical contraception services to areas where female surgical contraception is difficult or inappropriate.

Permanent and temporary arrangements

Table 6 describes the range of medical facilities and service-delivery channels through which outpatient vasectomy

may be provided. Vasectomies can be performed with very little additional investment in nearly any permanent health facility, on a continuous, year-round basis. Examples of permanent service sites include hospitals, multipurpose health care centres and clinics, specialized family planning clinics, and the treatment rooms of private physicians. In addition, mobile teams (see Fig. 3) may be specially organized and deployed to perform vasectomy where it is not available, as for example in permanent health facilities where no staff are trained in vasectomy, in nonmedical facilities where special vasectomy camps are organized, or in vehicles specially equipped as surgical centres.

Fig. 3. A mobile vasectomy team.



Special considerations for temporary locations

Several countries including India, Indonesia, Nepal, and Thailand have successfully used mobile teams to offer vasectomy services to rural, remote or underserved communities. However, it is important to note that mobile teams cost more and require more resources than services provided continuously in permanent facilities. Extra attention must be given to quality assurance because it may be more difficult to maintain cleanliness and asepsis, to screen and counsel clients, and to provide postoperative follow-up, treatment of complications, and semen analysis. Also, working in mobile teams places extra burdens on personnel;

Table 6. Comparison of permanent and temporary locations for providing outpatient vasectomy services^a

Permanent locations	Advantages of permanent locations	Disadvantages of permanent locations
<i>Hospitals</i> Any inpatient health care facility (whether general purpose or specialized, public or private) can provide vasectomy services on an outpatient basis.	Vasectomy can be offered in nearly any existing and functioning medical facility. Vasectomy can be offered with a minimal investment in equipment, facilities, or other capital needs.	Vasectomy services must compete with curative, emergency, and preventive health services. Project staff, facilities, and other resources are often shared with the other health services.
<i>Multipurpose outpatient health centres</i> Any community or rural health centre with sufficient space for a minor surgical theatre can provide vasectomy services.	Vasectomy can be provided on a continuous, year-round basis if trained staff are available.	
<i>Family planning clinics</i> Any family planning clinic with sufficient space for a minor surgical theatre can provide vasectomy services.	Follow-up of clients is usually easier than with mobile teams. Costs are usually lower than with mobile teams.	
<i>Private physicians' treatment rooms</i> Training, a surgical assistant, minor instruments and supplies, an examination table, and clean, private space are the essentials.	Continuous information and referral programmes with the local community are possible. Programme personnel usually reside in the local community.	

Temporary locations	Advantages of temporary locations	Disadvantages of temporary locations
<p><i>Mobile teams operating in existing health facilities</i></p> <p>Specially organized and trained teams travel to permanent health facilities where vasectomy surgeons are not available.</p>	<p>Large numbers of vasectomies can be performed in a relatively short time; if client volume is very high, the higher operating costs associated with these locations may be offset.</p>	<p>Costs are generally high; additional expenditures may need to be made for vehicles, portable equipment and supplies, transportation of surgical teams, and <i>per diem</i> costs.</p>
<p><i>Camps (mobile teams operating in nonmedical facilities)</i></p> <p>Specially organized and trained teams set up functioning, equipped surgical spaces in nonmedical facilities such as schools, churches or government facilities.</p>	<p>Programme personnel are usually dedicated exclusively to provision of vasectomy services; this feature coupled with high client volume can lead to high competency and efficiency.</p>	<p>Extensive coordination is required between the local community, the mobile surgical team, and the vasectomy-programme headquarters.</p>
<p><i>Clinics in mobile vans</i></p> <p>Specially organized and trained teams travel and operate in specially equipped vehicles fitted out as surgical centres.</p>	<p>Services are made more accessible by taking them closer to clients' homes.</p> <p>Services can be offered where there are no resident trained staff or where health services are not regularly available.</p>	<p>Logistics (client scheduling, arrival times of the team, provision of sterile supplies, etc.) can be complex and difficult.</p> <p>Field conditions may make it difficult for the team to maintain medical quality (e.g., proper preoperative screening, postoperative care and follow-up, treatment of complications, and semen analysis).</p> <p>Services for the local community are not continuous.</p> <p>Programme personnel are usually not from the local community.</p>

^a Reproduced by permission of the Association for Voluntary Surgical Contraception.

because of fatigue and pressure of work, they must take greater care to avoid mistakes.

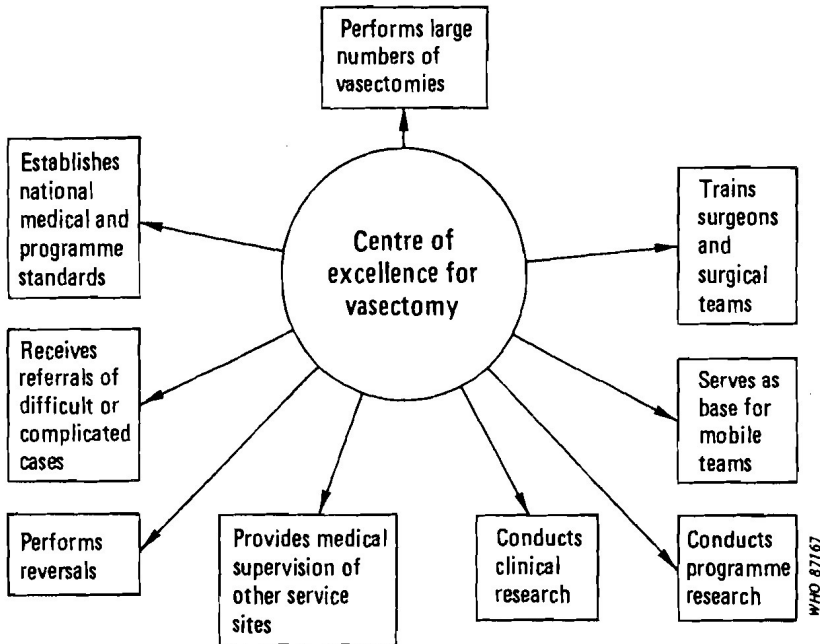
There is a danger that, because resources are allocated to mobile teams, there may be no training of personnel in the areas served by these teams, and efforts to establish the infrastructure needed to provide vasectomy services on a permanent basis in local communities may be neglected or delayed. Thus, where the case-load for mobile teams is relatively high and constant, programme managers should consider establishing a permanent centre. Each country must study its own conditions and priorities to determine whether mobile teams are compatible with national health needs and objectives. Mobile teams should probably be viewed as short-term, temporary expedients—useful tools while developing trained manpower, building infrastructure, and expanding local capabilities for delivering vasectomy services on a permanent basis.

Integrated versus vertical programmes

While vasectomy programmes can be integrated into existing health services, they may have to compete with more urgent curative and emergency services, and overworked personnel may not have sufficient time to devote to them. Programmes organized in specialized family planning clinics can often sustain a high level of performance over an extended period of time. If resources are expressly allocated for vasectomy, there is less likelihood that they will be diverted to other purposes. In such settings, the surgical team becomes expert, and services can be offered efficiently and safely. However, unless there is an adequate case-load, such vertical services may prove expensive, as they require an extensive infrastructure.

Even in a busy family planning clinic, vasectomy may suffer. This is because family planning clinics are heavily oriented toward women. Female services, especially female sterilization, are more complex and require significantly more personnel, time, and resources than male sterilization. Staff members may easily become preoccupied with keeping the female services well organized and functioning; consequently the male programme may be neglected. Vasectomy programmes often require special planning and supervision; at times, they may need to be separate from other health and family planning services.

Fig. 4. The function of a centre of excellence for vasectomy^a.



^a Reproduced by permission of the Association for Voluntary Surgical Contraception.

Centres of excellence

In national or multiple-site vasectomy programmes it is advisable to consider the designation of one or more of the sites as a centre or centres of excellence, which establish and maintain the standards for high-quality services in a national programme and serve as models for other service facilities. They should be staffed with the most proficient and expert vasectomy surgeons who also may serve as trainers, perform reversals, and conduct clinical and programme research. The centres would usually perform a large number of vasectomies.

Because they attract the best personnel and emphasize high quality, centres of excellence are often the nerve centres of a multiple-site programme, fulfilling many, but not necessarily all, of the important functions illustrated in Fig. 4.

Centres of excellence should be strategically located in relation to other service sites. For example, a centre may be located in a model family planning clinic, a national

training centre, a university teaching hospital, or a facility where there is a high case-load and the best vasectomy surgeons are available.

Surgical personnel for vasectomy

Medical doctors

Vasectomy can be learned and performed by general practitioners, specialist surgeons and other physicians. In all cases, operators must be carefully selected to ensure high-quality service delivery. Knowledge, technical skill, and surgical proficiency are, of course, prerequisites. Moreover, it is important that the physicians chosen be committed to the task in hand.

Specialists, including some urologists, may be too preoccupied with more complex surgery and medical problems to take an active interest in vasectomy, an elective procedure that can become tedious and boring for the surgical expert.

Interestingly, some of the most successful vasectomy programmes have been organized and conducted by specialist obstetrician-gynaecologists who are closely involved with and committed to family planning.

Vasectomy may appeal to private practitioners because it requires little capital investment and can be done on an outpatient basis in the physician's treatment room. As private practitioners are a primary source of health care in many countries, programme managers should consider instituting training programmes for this important sector.

Paramedical personnel

A number of countries have successfully trained and used paramedical personnel to perform vasectomy. Medical assistants, medical students, nurses and community health workers have performed the procedure competently and safely (14). Where it is legal and permitted by local regulations, this can free physicians to do other work. Paramedical staff may find the surgical task challenging, interesting and rewarding and, thus, may be motivated to remain involved with the programme. It has been reported from some programmes that paramedical staff empathize

closely with clients and that this has led to better community and client acceptance. However, consideration should be given to the concerns of the community and other health care providers about provision of vasectomy by paramedical staff.

It is advisable that paramedical personnel work under the supervision of responsible physicians who themselves are competent in performing vasectomies (15). A physician must be available and ready to intervene in case problems are encountered.

Clearly, paramedical workers must be selected with great care for aptitude, surgical skill, dexterity, interpersonal skills and judgement. Their training must be more comprehensive than that provided to a physician. They should be required to perform a larger number of training cases to establish proficiency, and they should receive instruction in relevant anatomy, physiology and pharmacology (see Chapter 12).

Important links: client follow-up and medical referrals

When vasectomies are not provided in permanent locations, and when clients travel long distances, or find it difficult to return to the service site, arrangements must be made for follow-up. If mobile teams are used, local physicians or specially trained community health personnel may conduct follow-up examinations. Paramedical staff must be trained to identify problems and to refer clients to the nearest health centre when serious complications are encountered. Clients themselves must be instructed to seek assistance if they encounter postoperative problems.

In many settings, semen analysis may be difficult. Programme managers must carefully consider at which levels it should be offered, since special training and microscopes are required. For some programmes, it may prove less expensive and more convenient to arrange for semen analysis to be done under contract by an independent laboratory or other health facility.

Programmes must always be prepared to refer clients to the next or higher levels of the health system, when it is appropriate. In the event of rare, life-threatening complications, the client may need to be referred to another facility better equipped to handle the situation. If unrelated

medical problems are discovered during medical screening or the preoperative examination, the vasectomy team must be prepared to treat or refer the client. Occasionally, screening and counselling may identify psychological problems that require referral for further counselling or psychiatric treatment.

Vasectomy reversal: some programming considerations

Vasectomy should not be offered or promoted as a reversible method. It is intended to be a permanent procedure. While it is feasible to perform reconstructive surgery to reverse a vasectomy, the surgery is expensive, time-consuming, difficult and not guaranteed to result in subsequent pregnancy. Every programme should therefore include a client assessment or counselling component to help identify and screen out clients who are likely to regret their decision.

Despite all precautions, a few clients will regret their choice because of remarriage, death of a child, or some other unanticipated event. A comprehensive vasectomy programme may, consequently, make available vasectomy reversal services. However, each country or programme should establish clear guidelines on what constitutes sufficient reason for reversal.

Because the number of requests for reversal should be few, the number of centres where reversals are performed, and the number of specialists trained to perform them, should also be few. In many countries one centre will be sufficient to handle the requests. Additional centres may be needed in large countries where many vasectomies are performed. Experience has shown that one reversal request can be expected for every 400–700 vasectomies.

Finally, an adequate case-load is necessary to maintain surgical proficiency and success in vasectomy reversal. By restricting the number of reversal centres and of surgeons trained in reversal techniques, programmes will help to protect surgical skills and effectiveness (see also Chapter 10).

3. Organizing and managing a vasectomy programme

Essential steps in organizing services

Systematic and thoughtful planning will greatly enhance the smooth functioning of a vasectomy programme and will increase the likelihood of success. Table 7 provides a checklist that can be used for planning purposes. The table also indicates where additional information on each of the steps can be found in this publication. Organizational steps and requirements not treated elsewhere in these guidelines are discussed below.

Identifying potential obstacles

Before launching a vasectomy programme, the organizers must consider the environment or community in which it is to be implemented. Political, cultural, and religious obstacles, if any, should be identified and taken into account. In addition, relevant local laws, regulations, medical norms, and codes of ethics should be investigated to determine their application to the vasectomy programme. The characteristics of the population to be served should be known. In particular, programme managers should have a clear understanding of the population's knowledge of and attitudes to vasectomy and of current acceptance patterns. Misinformation about vasectomy should be identified so that relevant corrective actions can be taken in the information and counselling components of the programme. Such a preliminary study should not be limited to the general public, but should also include the attitudes and practices of health professionals.

Table 7. Checklist for starting a vasectomy service programme^a

Activity	Additional information
1. Survey community (communities); identify potential obstacles.	Page 27
2. Investigate laws, legal issues, and regulations; obtain necessary approvals.	Pages 8–10
3. Estimate potential demand and expected case-load.	Page 29
4. Arrange programme financing; develop budget.	Pages 33–34
5. Develop a community information and education programme:	Chapter 4
(a) Strategies for marketing, advertising, and mass media.	
(b) Client-referral channels: links with other medical, family planning, and community institutions and professionals.	
6. Develop clinic facilities:	Pages 18–22 and 30–31
(a) Selection of sites.	
(b) Preparation and renovation of sites, if necessary.	
7. Arrange for equipment, supplies, and services:	Chapter 11
(a) Procurement of required equipment, instruments, medicines, and supplies.	
(b) Storage and inventory control by medical, family planning, and community institutions and professionals.	
(c) Procedures for autoclaving and sterilizing equipment.	
(d) Laundry services.	
8. Establish essential policies:	Page 14
(a) Client-selection criteria.	Pages 50–55
(b) Voluntarism, counselling, and informed consent.	Chapters 5–10
(c) Medical/surgical protocols and medical service standards.	
(d) Personnel policies.	
9. Develop and print record forms, information materials, and documents:	
(a) Medical history/client record form.	Annex 6
(b) Informed-consent form.	Page 54
(c) Postoperative instructions.	Annex 3
(d) Client brochures (e.g., question-and-answer booklet, fact sheet).	Page 42 and Annex 2
10. Staff the programme:	
(a) Staffing requirements: patterns, types, numbers.	Pages 31–33
(b) Recruitment and selection.	Pages 24–25
(c) Training.	Chapter 12
11. Establish client-flow system and procedures:	Page 31
(a) Reception, intake, registration.	Page 33
(b) Record of patient history.	
(c) Client assessment or counselling.	Pages 50–55
(d) Informed consent.	Page 54
(e) Physical examination and medical screening, including laboratory examinations.	Pages 56–57
(f) Referral for medical reasons, psychological reasons, or temporary family planning.	
(g) Preoperative preparation.	Page 58
(h) Operating theatre procedures.	Pages 60–64
(i) Complications management and emergency treatment procedures.	Pages 69–72
(j) Postoperative recovery.	Page 65
(k) Postoperative instructions and discharge.	Page 65
(l) Follow-up procedures, including semen analysis.	Page 67

Table 7 (*continued*)

Activity	Additional information
12. Other: (a) Financial accounting procedures. (b) Data collection (service statistics) and programme evaluation.	Chapter 13

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Estimating potential case-load

Given a particular population, the programme manager needs to have some estimate of the potential number of men who will request vasectomy over a certain period. This estimate will obviously be helpful in planning the number of facilities, personnel, and other resources that are needed to provide cost-effective services. Unfortunately, there is no sure way to know or predict the actual case-load. Requests for vasectomy are influenced not only by availability but also by factors affecting accessibility (e.g., location, convenience, costs) and by the acceptability and popularity of vasectomy among the general population.

When vasectomy is first introduced into a community, requests for the procedure are likely to be few. However, experience has shown that as the number of satisfied clients grows, as accurate information is disseminated in the community, and as fears are allayed and misconceptions corrected, the case-load usually grows. Programme managers may, therefore, want to begin modestly but anticipate and plan for case-load growth as vasectomy becomes better known, more acceptable, and popular.

For a population for which adequate statistics are available, it is possible to estimate a theoretical maximum number of couples that are eligible to choose vasectomy. A method of doing this is given in Table 8. However, such estimates should only be used for defining the potential market for vasectomy in gross terms—they cannot predict what the actual case-load will be.

Table 8. Estimating the number of couples eligible for permanent contraception^a

Value	Data source
Formula: $n = a - (b + c + d)$	
n = the number of couples who are eligible to choose vasectomy or female sterilization	
a = the total number of couples of reproductive age who express a desire for no more children	Fertility or contraceptive prevalence surveys, plus census data
b = the number of infertile couples	Fertility or contraceptive prevalence surveys
c = the number of couples already protected by either female sterilization or vasectomy	Fertility or contraceptive prevalence surveys
d = the number of couples who are ineligible because of programme criteria (e.g., age and parity requirements)	Depends on programme criteria (age and parity data may be obtained from the national census)

^a This method yields an estimate for the number of couples eligible for either vasectomy or female sterilization.

Facilities

Vasectomy can be offered in a number of different permanent and temporary locations, as discussed in Chapter 2. However, regardless of where vasectomies are done, there are certain space requirements that must be met to provide a high-quality, comprehensive service:

- A comfortable waiting-room, or holding area, for new arrivals and follow-up clients.
- Space for counselling, preferably isolated or private.
- An examination room, for preoperative and follow-up examinations.
- Arrangements for storage and retrieval of records.
- Arrangements for laboratory investigations (blood, urine, and semen analysis).
- A clean room for surgery, isolated from the outside and from clinic traffic.
- Areas where surgical personnel can scrub and change clothes.

- Toilet and washing facilities for clients.
- Recovery room and rest area for clients after surgery.
- Facilities for sterilizing and autoclaving surgical instruments, equipment, linens, and dressings.
- Laundry.

Several of these functions may share a common space, especially in facilities that are not very busy. As the case-load increases, a separate area may need to be assigned to each function. The accommodation should be planned to permit an orderly flow of clients through the clinic, particularly as their number increases. Some of the components listed above, such as laboratory tests, laundry, and autoclaving, may be contracted out or, in multiple-site programmes, handled by a central supply unit. If sterile disposable materials are used, then disinfection and sterilizing services are not needed.

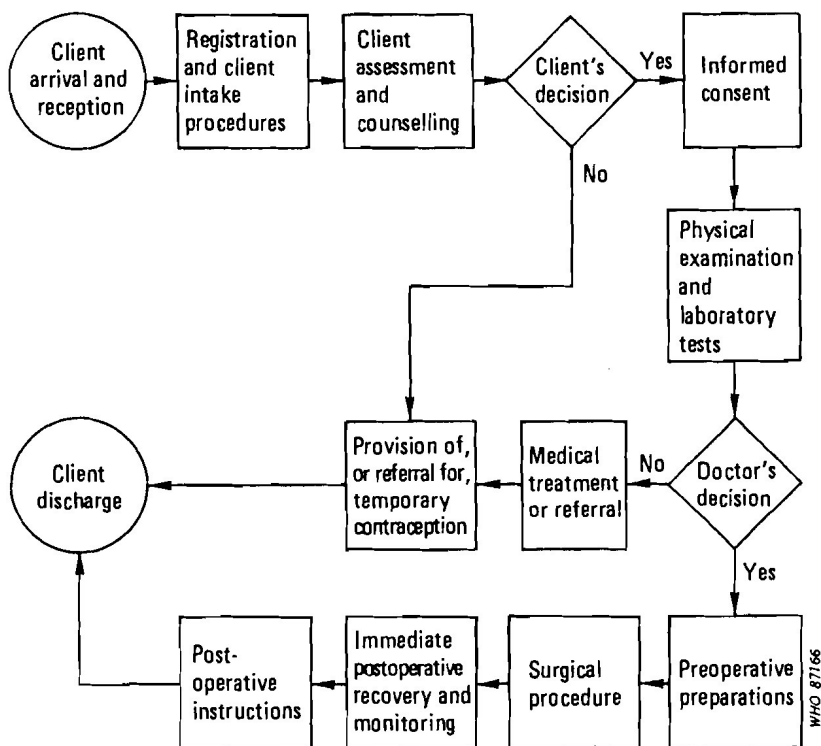
Client flow

An orderly flow of clients through any vasectomy service site must be established in order to ensure a comprehensive, cost-effective service and to enhance client satisfaction. A diagram depicting the typical flow of clients at a service site is given in Fig. 5, and some of the stages are illustrated in Fig. 6. It is important to note that a certain number of clients entering the service site for vasectomy may be rejected on medical grounds, or may refuse vasectomy after receiving additional information and counselling. Consequently, the programme must be able either to provide alternative contraceptive methods and other medical treatments, or to refer clients for these services.

Staffing

There are no simple formulae to determine exactly what types and number of personnel are required to staff a vasectomy service. Programme managers must arrange for sufficient staff to handle the following essential duties:

Fig. 5. Typical client flow in a vasectomy service.^a



^a Reproduced by permission of the Association for Voluntary Surgical Contraception.

- Receiving clients and maintaining records.
- Counselling clients.
- Examining clients, performing surgery, and conducting follow-up.
- Performing laboratory tests.
- Autoclaving and sterilizing equipment and supplies.
- Doing laundry.
- Cleaning and maintaining the facilities.

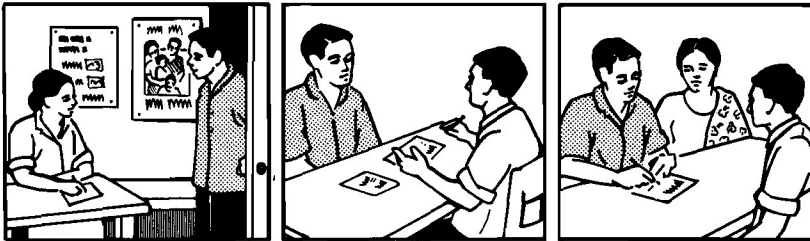
In clinics with a small case-load, only a nurse and a physician may be needed, since one person can handle several of the functions. A well-trained nurse or medical assistant might easily receive the client, take the preliminary medical history, counsel the client, handle the laboratory

tests, assist the surgeon in the operating room, and sterilize instruments. As the case-load increases, more personnel, each responsible for one area, may be needed.

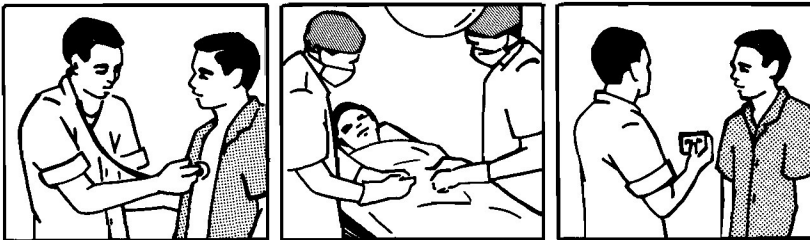
Financing

Personnel responsible for organizing a new programme must determine the initial costs as well as the recurring expenditures. These costs will depend on local conditions and the particular programme design characteristics. For example, budget requirements may be influenced by whether

Fig. 6. Some of the events that take place when a client visits a vasectomy service.



- A. A client is welcomed at reception.
- B. The client receives detailed information from the health worker.
- C. The client, preferably accompanied by his wife, is counselled. If he decides to have a vasectomy, he signs a consent form.



- D. The client is examined, and laboratory tests are carried out.
- E. The surgical procedure takes place.
- F. The client receives post-operative instructions and may be given condoms to encourage the use of contraception for the first 15 ejaculations.

the surgeons receive salaries or are paid on a sessional or per case basis; likewise, the types of public information activity used (e.g., word of mouth, mass media, community field agents) will affect expenses. The cost-benefit implications of these and various other programming decisions must be carefully considered.

A steady source of funds is essential, and programme managers must ensure this at the outset. Ideally, governments will provide for vasectomy programmes in their annual budgets. Donor agencies may offer funds, equipment, or technical assistance to start a programme or to cover expenses for the first few years. A list of some donor agencies is given in Annex 1. However, there should be an in-built component for the long-term self-reliance of the programme. Recovering costs by charging fees to those clients who can pay should be considered. Many programmes have established "sliding fee scales" in which clients are charged according to their ability to pay or by income level. In any case, no client should be denied service because of an inability to pay.

Special characteristics of successful programmes

The above-mentioned activities, including the list of steps given in Table 7, are all essential for the organization of a vasectomy programme. Yet, they may not be sufficient by themselves to launch and manage a successful programme that truly meets the needs of the community. Public health professionals have considered the question of what makes the difference between a lacklustre or unsuccessful vasectomy programme and one that is obviously dynamic and successful. A few characteristics that seem to be shared by successful programmes have been identified (9, 16) and these are summarized below.

Client satisfaction is of paramount importance

Emphasis on quality and client satisfaction

Satisfied clients are an important source of referrals for a vasectomy programme. A programme cannot afford mistakes, especially in the early stages.

When services are being introduced into a community, a few centres should perform most of the procedures. Centres of excellence characterized by high volume, refined vasectomy technique, and special attention to vasectomy clients are likely to be the most successful in ensuring the acceptability of vasectomy in a particular community.

Maintaining a service of high quality is of great importance—lowering standards to achieve higher volume is self-defeating in the long run. Negligence and inconsiderate treatment of clients must not be tolerated. A vasectomy programme that has established a reputation for excellent service is likely to produce a self-generating demand through word of mouth from clients and local health professionals.

Good planning is essential if a service of high quality is to be established. Apart from competent, well-trained staff with good surgical technique, special attention must be given to the treatment of clients in nonsurgical situations. The counselling process and the preoperative examination should eliminate clients who are more at risk of having vasectomy-related medical problems or of regretting the operation at a later date. Whenever possible, postoperative semen analysis should be made available to identify failed vasectomies (before unwanted pregnancies occur), and to evaluate the adequacy of surgical techniques.

The way clients are treated by clinic staff will undoubtedly influence their satisfaction with, and perceptions of, the services. If staff members are attentive and compassionate, even in the face of medical problems, clients will be more likely to leave with a favourable impression and to share that impression with potential clients.

Attention to the special needs of men

Programmes that specifically take account of the psychological characteristics of men are more likely to succeed. In some societies this may mean that the vasectomy programme should be physically or temporally separate from female family planning services. In some cultures it may be advisable for key clinic staff to be men. Clinic hours should be convenient for clients; evening, weekend, or holiday sessions may be suitable for men who find it inconvenient to leave their jobs on weekdays (17). Finally, educational materials and information programmes

should carefully address the common misunderstandings about vasectomy.

Working within the community

A vasectomy service may be more acceptable and successful when it is located within the community it is intended to serve. Some programmes have had good results by employing staff who reside in the clinic's neighbourhood. As far as possible, staff members should have the same socioeconomic, cultural, and ethnic characteristics as their clients. Finally, the clinic should have good connections with other local institutions, such as social welfare organizations, local health facilities, community-based family planning programmes, and local government councils or groups. In sum, the programme should strive to be part of the local social fabric.

Developing leadership

A successful vasectomy programme is usually headed by a professional who has taken a personal interest in involving men in family planning and who is committed to the success of the project. When vasectomy is being introduced in a locality for the first time, it is especially important for the leader to be patient, persistent, committed, and willing to be a pioneer.

4. Information, communication and counselling

The roles of information and communication

Correct information and good communications create awareness in the general public and allow prospective vasectomy clients to be more knowledgeable about the procedure. They are also important in ensuring that clients are well-informed and satisfied, and thus less likely to regret the operation and more likely to share their positive experiences with others in their community. Because client satisfaction is influenced by the quality of information, and because satisfied clients have proved to be the best and most effective communicators about vasectomy, there is a compelling argument for making client satisfaction the primary aim of nearly all vasectomy information and communication activities.

Accurate, timely and sufficient information and communications are key factors in effective programmes

The most appropriate ways of informing potential clients about vasectomy and the availability of services should be determined for each individual programme. A network for referring clients to the clinic should be established. The specific ways chosen will depend on:

- The nature of the service-delivery system.
- The location and setting of the service sites.

- The sensitivity about vasectomy in the community and the openness with which it can be discussed.
- Local regulations.

While a programme may rely exclusively on one or two methods or approaches, more typically a variety of channels will be developed. Table 9 summarizes the types, methods, and purposes of information and communication used in vasectomy programmes, and these are discussed below.

The client decision-making process

An understanding of the decision-making process that leads someone to request or reject vasectomy can help in designing effective information, communication, and counselling programmes. A number of studies (11, 18) suggest that the decision-making process is similar for most men. One study in particular (18) identifies six events common to most men:

- (1) Became aware of vasectomy.
- (2) Talked to a vasectomized man.
- (3) Decided to have no more children
- (4) Started seriously considering vasectomy.
- (5) Decided that temporary contraceptives were no longer acceptable.
- (6) Decided that vasectomy was the best contraceptive method.

Some of the events leading to a positive decision are illustrated in Fig. 7.

The sequence in which these events occur may differ depending on the country and the individual.

It is important to note that nearly all studies confirm that most vasectomized men were aware of and knew about vasectomy for a relatively long period—very often for years—before having the operation. Knowledge, however, does not necessarily lead to action. Clearly, the factor that weighs most heavily on a couple's decision is the realization that they want no more children. Only when the family is considered complete do couples seriously start listening to messages about vasectomy and seeking more information. Even with the realization that they desire no more children,

Table 9. Major types, methods and objectives of information and communications for vasectomy programmes.^a

Type	Methods and materials	Objectives
Public	<ul style="list-style-type: none"> ● Use of mass media: <ul style="list-style-type: none"> —television —radio —posters —billboards —newspaper advertisements, press releases, and articles ● Distribution of printed materials: <ul style="list-style-type: none"> —brochures —comic books —picture books for illiterate people ● Social marketing 	<p>To create awareness about and promote vasectomy</p> <p>To give simple messages on the nature and effects of vasectomy (e.g., "permanent," "no more children," "minor surgical procedure," etc.)</p> <p>To give messages correcting common misconceptions (e.g., "vasectomy is not castration," "vasectomy does not affect health or sexual performance")</p> <p>To indicate where to go for vasectomy or to get more information</p>
Community and interpersonal referral	<ul style="list-style-type: none"> ● Word of mouth by satisfied clients ● Use of family planning field agents (e.g., promoters, educators, workers) ● Use of health and other community workers (e.g., traditional birth attendants, hospital nurses, social workers, teachers) ● Links with male-oriented or male-dominated organizations (e.g., unions, factories, Lion's Clubs) ● Links with women's groups and organizations ● Referral systems with local professionals ● Accompany or assist clients to service sites 	<p>All of the objectives listed above</p>
Clinic-based	<ul style="list-style-type: none"> ● Group information sessions ● Films, slides, video tapes and audio tapes ● Question-and-answer brochures ● Counselling, client assessment, and informed consent ● Aids for individual counselling and group information sessions (e.g., diagrams, flip charts, anatomical models) 	<p>To provide more detailed, complete, and accurate information to assist clients in decision-making</p> <p>To assist clients (and their spouses) to make informed, voluntary decisions</p> <p>To enhance client satisfaction and prevent regret</p>

^a Reproduced by permission of the Association for Voluntary Surgical Contraception.

Fig. 7. Some of the events that may lead to a decision to have a vasectomy.



A. A man discusses with others who have had vasectomies.



B. A couple decides not to have any more children, and finds temporary methods of contraception unacceptable.



C. A man receives information and counselling at a vasectomy service.

most couples do not request vasectomy immediately. Often the decision for the procedure comes after another pregnancy, or as the couple becomes increasingly dissatisfied with the inconvenience, side-effects, or failure of temporary contraceptives.

Research has clearly shown that information and communication programmes are important to create

awareness among eligible couples. They are even more important for couples who have already decided not to have any more children. This group, who are at a critical decision-making juncture, need detailed facts about the benefits and effects of vasectomy; they also need to have their fears assuaged. In this regard, studies have demonstrated that talking to other vasectomized men is critical to a man's decision (11). In one study, 9 out of 10 vasectomized men stated that talking with a man who had had a vasectomy was essential in arriving at a positive decision (18). The implication for vasectomy programmes is obvious: producing satisfied clients who not only are pleased with the actual procedure, but who also have accurate and complete information about vasectomy and the effects can be one of the most important factors in attracting more clients to the clinic. Client assessment and counselling activities (discussed on pages 50–55) can therefore have a double impact: they help to ensure that vasectomies are performed only on those men who are likely to be satisfied, and they provide correct information that is passed on by vasectomized men to other people in their communities.

In sum, the process leading from vague awareness to the decision to request a vasectomy is typically a long one. In well-designed information, communication and counselling programmes, this is taken into account by providing messages and using methods that are relevant and effective at different times to different prospective clients.

Public information and communication

Public (essentially impersonal) information and communication approaches are useful ways of creating awareness about vasectomy and advertising the availability of services. They help to stimulate interest in the procedure and provide basic information to couples who have decided to have no more children. However, because these approaches are impersonal and cannot cater for individual situations, needs and questions, they may be less effective in motivating clients actually to request vasectomy.

A number of different public information and communication methods and materials may be used in vasectomy programmes as discussed on pages 42–44.

Mass media

If local standards and sensibilities permit, programmes can effectively use mass media to inform the public about the local availability of vasectomy services. Techniques can include posters, billboards, newspaper articles, advertisements on buses and trains and in periodicals, and radio and television announcements (see Fig. 8). The advantage of the mass media is that they can reach a large audience. Disadvantages are that they are impersonal and can be expensive, and, under most conditions, they can deliver only simple messages.

Printed materials

Consideration should be given to the development of some printed materials (see Fig. 9) for every programme. A brochure or question-and-answer sheet written in simple language and in local dialects can efficiently address common concerns about vasectomy. Information should be presented in a straightforward, non-technical, non-condescending manner. Brochures should tell the reader where services are available (see Annex 2 for a sample brochure). They can be given to clients at service sites, distributed in the community, and used in presentations to men's groups and community organizations.

In a number of programmes, pictorial printed materials for semiliterate and nonliterate audiences have been developed. Comic books, for example, have been used in Mexico, the Philippines, and Thailand. These are colourful, contain interesting, attention-grabbing stories, and convey essential facts about vasectomy using drawings and a minimum of words. In other countries, picture books using specially designed and pretested photographs or drawings have been developed to communicate with potential clients who are nonliterate.

Social marketing

In recent years the technique of social marketing (19) has been used with some success in public health and family planning programmes (20), particularly for the sale of oral contraceptives and condoms. Based upon marketing principles developed by profit-making enterprises, social

marketing promotes products and services such as family planning that are considered beneficial to society by: defining and researching target audiences; planning, developing, and pretesting messages and materials; advertising extensively; and selling products or services, often at subsidized or reduced cost. Social marketing has considerable potential for use in vasectomy programmes.

Fig. 8. Media that can be used to inform people about local vasectomy services.

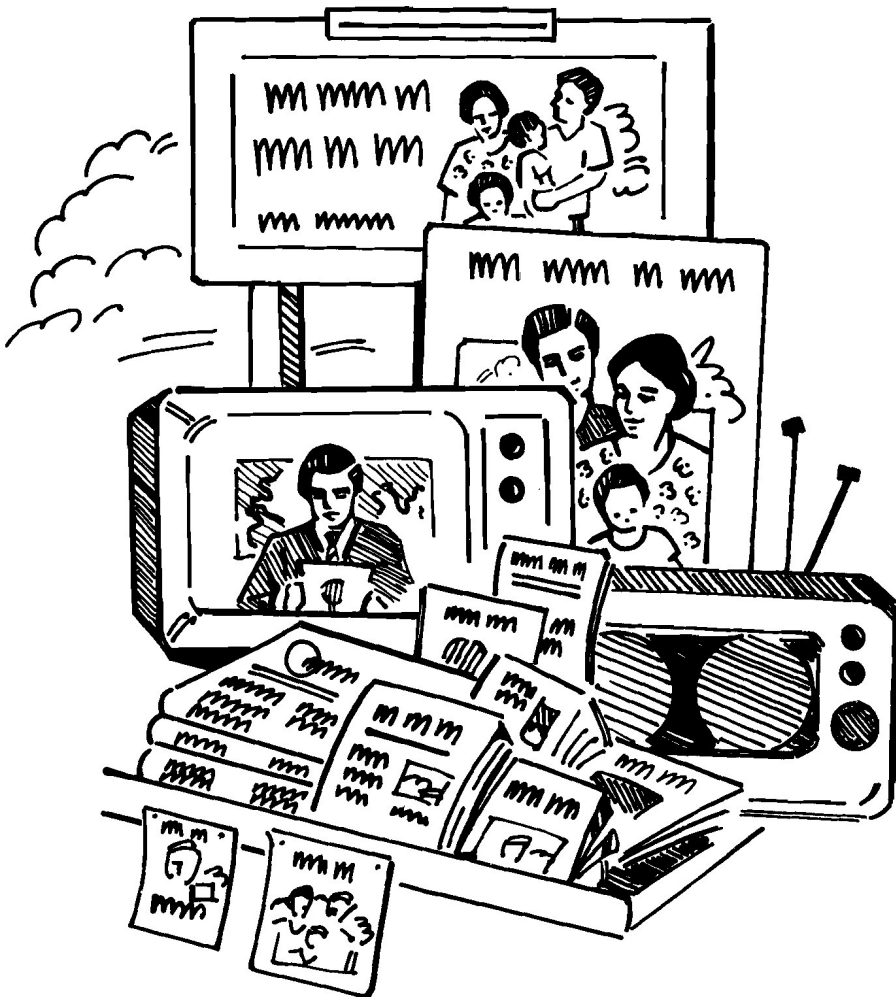
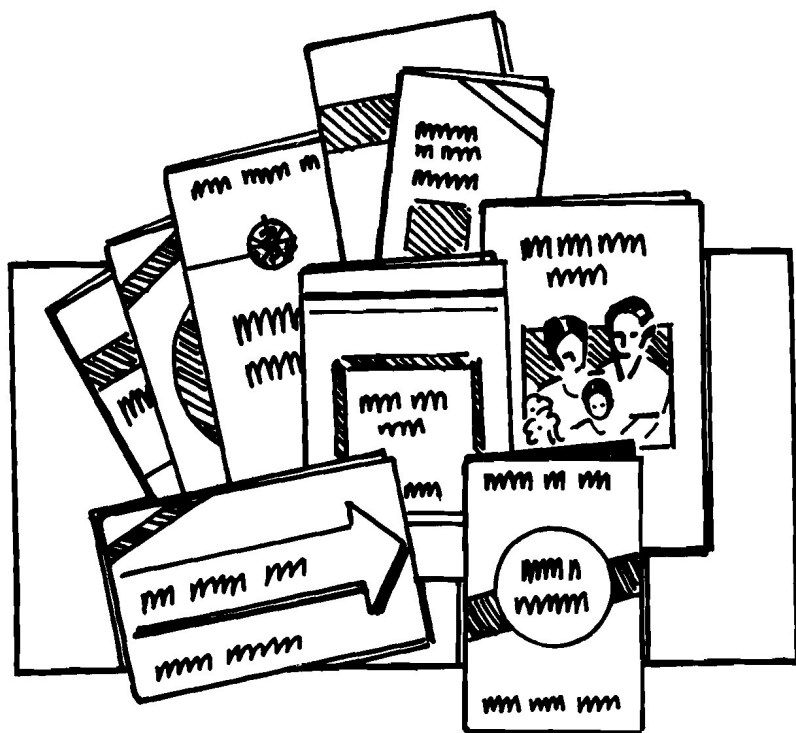


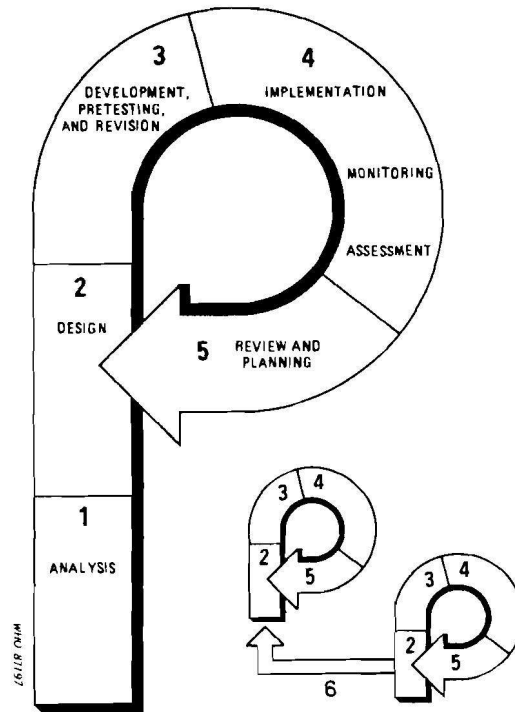
Fig. 9. Written materials about vasectomy should be straightforward, clear and attractive.



Process for developing vasectomy information and communication programmes

Developing an effective information and education programme about vasectomy is not a hit-or-miss matter. Whether a programme is advertised by means of television or radio, posters or brochures, a certain sequence of steps must be followed to transmit clear messages to a well-defined audience. Information and communication activities require careful planning and execution. Programme managers should draw upon the expertise developed over many years in advertising, graphics, marketing, social marketing, and communications research. Fig. 10 summarizes the process.

Fig. 10. The process for developing an effective information and communication programme.^a



1. *Analysis*

Review the potential audiences of the communication project, their characteristics, knowledge, attitudes, and social and traditional biases. Assess the policies and programmes related to the project. Select institutions to carry out the project. Evaluate the resources available for the project.

2. *Design*

Develop a plan that spells out the audiences, objectives, messages, media, activities, timetable, and budget.

3. *Development, pretesting, and revision*

Develop clear messages. Pretest the messages, materials and activities on the intended audiences. Revise as necessary according to test results.

4. *Implementation, monitoring and assessment*

Implement the project. Compare project outputs with original plan. Assess the impact of the communication project on the target audiences.

5. *Review and replanning*

Use the information gathered in Steps 1–4 to make decisions about future activities.

6. *Continuity over time*

As time passes, adjust to the changing needs of the audiences and build on past experiences.

^a Adapted from: Population Communication Services, Population Information Program, Johns Hopkins University.

Referral systems

Client-referral systems provide links for potential clients between the community and the clinic. The purposes of referral systems are primarily to guide interested clients to sources of more information and to assist them in getting a vasectomy. Thus, client-referral programmes are most usefully directed toward those who have decided that they want no more children.

It may be appropriate to develop and maintain a number of different referral systems for each programme; four types of system are described in this section.

(1) *Word of mouth by satisfied users*

As discussed earlier, word of mouth from satisfied clients is perhaps the most potent advertisement for a vasectomy programme. In some settings, the vasectomy programme may have such a good reputation in the community that word-of-mouth communication alone ensures an adequate case-load. In conservative settings, informal oral communication may be one of the few ways available to spread information about vasectomy, since advertising in public would be counterproductive. The key ingredient to a successful word-of-mouth programme is a high-quality and affordable service—clients satisfied with their treatment are more likely to discuss vasectomy and recommend it to friends and relatives.

Some programmes have capitalized on the power of satisfied users by forming clubs of men who have had vasectomies. In a typical arrangement, vasectomized men who accept the invitation to become club members receive additional information and materials to distribute to other people in their communities. They may be given an identifying pin, badge, or certificate that would invite questions from friends and community members. Programme managers may convene occasional meetings of club members in order to give further training in communication skills, to provide a social environment where club members can exchange experiences (see Fig. 11), and to give recognition to those who have referred other clients for a vasectomy.

(2) *Field agents*

In many countries community development, health, and family planning programmes employ field workers who are closely and frequently in touch with the community. After brief training, these workers can give people accurate information about vasectomy and refer interested clients to service sites. Examples of community workers who can serve as referral agents are primary health workers, traditional birth attendants, and agricultural extension workers.

Many family planning programmes have their own special field workers, variously called "promoters," "educators," "motivators," and the like. In addition, programmes for community-based distribution (CBD) of temporary contraceptives employ community-level agents. These workers can also be trained to communicate about vasectomy. CBD

Fig. 11. These men have had vasectomies. They meet together occasionally to share experiences.



workers, in particular, often know who among their customers are dissatisfied with temporary contraceptives or want no more children, and can refer these clients to a site where vasectomy services are offered.¹

(3) Professional referral systems

The local medical community should be informed about the availability of vasectomy services. Physicians who do not themselves perform vasectomies are often willing to refer their clients to a good-quality service (see Fig. 12). Similarly, local hospitals, family planning clinics, and medical societies should be informed about the programme's services. In some programmes non-medical community-service professionals have been used successfully as referral sources. Such groups might include social workers, religious leaders and clergy, and teachers. Ways of informing local professionals include seminars, letters, word-of-mouth, and announcements in professional journals and news-letters.

(4) Groups and organizations

Organizations in which men predominate are suitable sources of potential clients and targets for organized educational activities. In some programmes there has been effective cooperation with factories, unions, agricultural workers' organizations, taxi drivers' associations, policemen's and firemen's organizations, communes, and community service societies. Women's groups are also a good target as women are often interested to learn about vasectomy when considering methods of family planning.

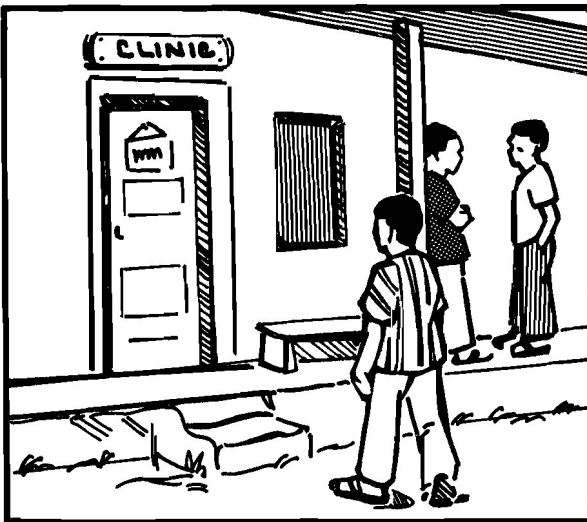
Clinic-based information and communication

Family planning and primary health clinics are primary sources of information and communication about vasectomy.

¹ NIRAPATHPONGPORN, A. & VIRAVAIYA, M. Client referral system of the community-based voluntary sterilization project. Paper read at *5th International Conference on Voluntary Surgical Contraception*, 5-8 December, 1983, Santo Domingo, Dominican Republic.

Couples often come to these clinics when they are thinking about having no more children, or when they have already decided to have no more children. They make this visit because they are seeking accurate and detailed information

Fig. 12. A health worker refers a patient to a vasectomy service.



and want to have their questions answered and their fears allayed.

For those clients who come to request vasectomy, the clinic should offer client-assessment or counselling services and obtain written informed consent. These procedures ensure that the decision is informed and voluntary and minimize the possibility of later regret. These aspects are addressed in greater detail in the rest of this chapter.

Aside from serving those who have already decided to request vasectomy, family planning and primary health clinics offer opportunities to create awareness about vasectomy. Clients who come for temporary contraceptives can easily be given information about vasectomy individually or in group sessions through lectures and discussions, audiovisual presentations, and flip charts. Posters about vasectomy can be displayed and question-and-answer brochures about vasectomy can be made available (see Annex 2).

Client assessment and counselling

The most critical point in the information and communication system is when a man, having made the decision to have no more children, presents himself at the clinic and requests a vasectomy. At this point, the objectives of information and communication activities become narrow and precise: to ensure that the client not only possesses correct and complete information about vasectomy and its effects but also is unlikely to regret his decision at a later date. Programme managers have a special responsibility to guarantee that these objectives are met for every man requesting a vasectomy.

There are two frequently used ways to ensure the quality and correctness of a client's decision. They are client assessment, and counselling. While both methods seek to accomplish the same result, they differ in that counselling is much more interactive, probing, and rigorous. As described below, counselling is the preferred method when there is intensive promotion in a programme, or whenever the correctness or appropriateness of a client's decision is in doubt.

Client assessment is essentially the final stage in the screening process in which the clinic staff member responsible systematically reviews the decision with the client. The staff member reviews the client's background, knowledge, understanding, and motivation by asking a series of questions designed to reveal any potential problem areas. The client is further assessed to determine if he meets the programme's selection criteria (e.g., age, consent of spouse). If the staff member determines that the client meets the programme's criteria, is making a fully informed decision, and is unlikely to regret his decision later, then the client may proceed to have a vasectomy. If this is not the case, the man's request may be refused and he may be referred for provision of temporary contraceptives, or for further comprehensive counselling before a decision to offer him vasectomy is made. In some cases, a man may need further medical or psychological evaluation by a doctor or specially trained staff before a decision is reached (see Chapter 5).

Counselling, while similar to client assessment, is much more thorough. A trained counsellor assists a client in an individualized, patient, and neutral manner to examine carefully the reasons for his request, and to study the facts and implications of vasectomy as well as of other family planning alternatives. The counsellor actively pursues questions and concerns, and works with the man to resolve them before the client is allowed to have a vasectomy. Counselling involves talking, listening, observing, and evaluating. It requires that the counsellor speak in a language and in terms that the client can easily understand, in a supportive, private atmosphere. Whenever it is possible and culturally acceptable, the man's female partner should also receive counselling, either at the same time as the man, or separately.

Effective counselling requires special training and good observational and communication skills. Because of space limitations, it is not possible to discuss thoroughly all aspects of counselling in these guidelines; for further sources of information about how to conduct counselling and how to establish counselling programmes, see page 55.

In many programmes, client assessment is sufficient for most men requesting vasectomy. Only those clients who express serious doubts or fears, who display inadequate or inaccurate knowledge, whose motivations are in doubt, or

who do not meet all programme criteria need to receive comprehensive counselling. However, in many programmes, a cautious and careful approach is preferred and comprehensive counselling is required for all clients, even though it may require more time and staff. Comprehensive counselling for all clients is strongly recommended in vasectomy programmes that aggressively promote vasectomy through saturation advertising, use incentives or disincentives for clients, make per-case payments to referral agents, or establish targets (most often expressed as numbers of clients) for programme personnel. In such cases, it is more likely that clients may not be fully informed, or indeed may feel pressured to accept vasectomy. Therefore, comprehensive, unbiased counselling is essential to guarantee the voluntary nature and quality of the programme.

Programme requirements of client assessment and counselling

The minimum requirements are trained staff and a private area that permits and encourages the client to communicate and express his feelings. Client assessment and counselling may be conducted by any of a wide range of trained personnel, including professional counsellors, health professionals with other specialities, social service or education professionals, field workers, or members of the community. These activities may be assigned as full-time responsibilities or as part of several duties. The responsibilities of client assessment and counselling may be handled by one individual, or they may be divided among a team.

Regardless of who carries out the client assessment and counselling, it is important that these activities be specifically assigned to ensure that they are performed well.

In terms of client flow and processing, client assessment and counselling immediately follow intake and registration in most clinics, and precede the physical examination by the doctor. In some programmes there is a required waiting period before the procedure; in others, clients are given appointments to return to the clinic for surgery. Often client assessment and counselling are done by the staff member who is responsible for client intake and registration. In such circumstances, completing the required registration forms and obtaining information from clients should not detract

from or be a substitute for formal client assessment or counselling. Likewise, obtaining written informed consent is not in itself a substitute for and should not be equated with either client assessment or counselling.

Informed consent

At the conclusion of the client assessment or counselling session, the staff member responsible for the session should obtain written consent from the client, in order to obtain legal authorization for surgery and to document the man's informed and voluntary choice of vasectomy. For nonliterate clients the form must be read aloud and explained. The client can indicate comprehension and consent by a thumb print, rather than a signature. In such cases, the staff member who obtains the man's consent should also sign the form. In addition, the signature or mark of a witness is advised, to attest to the fact that the named individual has received appropriate information and has chosen vasectomy freely. As the spouse's signature is also often required, it is important that she has access to information about vasectomy, and to counselling where possible.

Obtaining written informed consent is an essential requirement in all vasectomy programmes

Opinions vary about the recommended content of the informed-consent form. A sample form is shown in Fig. 13. In general, the form should contain a statement that the client understands the permanence of vasectomy, its irreversibility in most cases, that vasectomy involves surgery and has attendant risks (including a slight chance of failure), that there are temporary family planning alternatives available, and that he may change his mind without penalty. The form should also state that the man's choice of vasectomy is voluntary.

Postoperative counselling

Postoperative information, and sometimes counselling, is usually given just before the client leaves the clinic. Clients need reassurance at this time to alleviate fears of short-term

Fig. 13. Sample informed-consent form for voluntary surgical contraception.^a

<p>Client's statement</p> <p>I, _____, consent to the operation (name of person undergoing operation) of surgical contraception voluntarily and without any pressure or inducement from anyone to do so. I am aware of temporary birth control alternatives available to me. I fully understand that the operation is expected to make me permanently incapable of producing children. I know that there are some risks and a slight chance that the operation could fail. I also know that I may change my mind at any time before the operation. I have been given the opportunity to ask questions, and all questions have been answered to my satisfaction.</p> <p>Statement of counsellor or operating practitioner (to be signed by the health professional who obtains the client's consent before the client undergoes a surgical contraception operation)</p> <p>I, _____, certify that I have: (name and title)</p> <ul style="list-style-type: none">– assessed the client's decision, provided thorough counselling, or ascertained that thorough assessment or counselling has been conducted– explained the surgical procedure and anaesthesia regimen to be followed, including postoperative instructions– explained and read this form to the client (if he or she is nonliterate)– obtained (re)affirmation of the client's voluntary request for surgical contraception <p>Signature or mark of client: _____ Date: _____</p> <p>Signature or mark of spouse or witness: _____ Date: _____</p> <p>Signature of counsellor or operating practitioner: _____ Date: _____ (or other authorized health professional)</p> <p>Date of surgery: _____</p> <p>Facility: _____</p> <p>Operating practitioner: _____</p>
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^a This informed-consent form is reproduced from Reference 21.

and long-term side-effects. Medical instructions regarding wound care, what to do if problems develop, the need to practise temporary contraception for a period of time, and when and where to go for follow-up should also be provided (for details see Chapter 7 and Annex 3). As in

preoperative client assessment and counselling, the man should have the opportunity to ask questions and express his concerns.

The man's emotional adjustment to the loss of fertility should be discussed during follow-up visits. Additional subjects that should be raised include the man's relationship with his wife, and her feelings about the vasectomy. The physician, counsellor, and other staff members should be alert to signs of regret, misunderstanding, or maladjustment related to vasectomy and should refer the client for further counselling whenever necessary.

Additional sources of information

Several specialized organizations help family planning programmes in developing countries with the design and implementation of information and communication activities and materials. Two of these are the Program for the Introduction and Adaptation of Contraceptive Technology and Population Communication Services, the Johns Hopkins University's Population Information Programme. Both agencies can help with the development of mass media vasectomy campaigns and programme materials for literate, semiliterate, and nonliterate audiences.

The information on client counselling (22) and informed consent (21) given in this publication is based largely on the policies and guidelines recommended by the World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception.

The Association for Voluntary Surgical Contraception provides technical assistance and materials for designing, implementing, and evaluating client assessment and counselling programmes.

The addresses of the agencies mentioned above are given in Annex 1.

5. Preoperative care

Psychological screening

All patients must be screened to determine emotional suitability for vasectomy. Most men with psychological problems will be identified by the client assessment and counselling process (see Chapter 4). These men may need further evaluation by a doctor or others specially trained to evaluate such problems. Doctors and other professionals have the responsibility of providing vasectomy to appropriate candidates, but they have the equally great responsibility of denying it in some instances. Caution needs to be exercised in providing the operation to men with a history of impotence or of psychological or psychiatric disorders because they may be seeking vasectomy for the wrong reasons (e.g., a mistaken belief that it may relieve a medical or psychological problem). Men with these disorders may also attribute their subsequent problems to the vasectomy. However, there is no evidence that the incidence of these conditions is increased for men who had no problems before vasectomy.

Medical screening

The client's medical history should be taken and a physical examination conducted before vasectomy is performed. Among the important points in the history are the following: current medications, past illnesses and surgery, bleeding disorders, allergies to local anaesthetics or analgesics, and any evidence of hypertension or heart disease, kidney or bladder infection, diabetes, thrombosis,

anaemia, liver dysfunction, or sexually transmitted diseases. Although important in the medical history, these conditions are not necessarily absolute contraindications to vasectomy.

Sometimes a client may be unable to answer some of the questions. To obtain more information, the staff member should ask questions using signs and symbols and inquire about symptoms indicative of specific problems.

The following are temporary or relative contraindications:

- Infection of the operative area.
- Large hydrocele.
- Elephantiasis.
- Local pathological condition.
- Severe anaemia.
- Bleeding disorders.

Many of these conditions can be treated, after which vasectomy can be performed. If a medical condition makes it more difficult for vasectomy to be performed, the procedure may need to be done in a better equipped facility (23, 24).

Laboratory tests

Many programmes do not include special laboratory tests on a routine basis. However, if the surgeon suspects any clinical abnormality, he or she will need to have access to basic laboratory facilities or to a referral centre for laboratory examinations.

Laboratory tests that should be accessible include the following:

- Haemoglobin and/or erythrocyte volume fraction (haematocrit).
- Analysis of urine for glycosuria and proteinuria determinations.
- Bleeding and clotting time.

Routine preoperative laboratory examinations to be used in the programme for all clients should be consistent with locally available facilities.

Instructions before surgery

The client should be informed about all visits that will be required of him. These may include:

- Preoperative visits for counselling, physical evaluation, laboratory tests, and signing of consent forms.
- Postoperative visits for suture removal or follow-up.
- Submission of semen specimens after 15 ejaculations or 12 weeks.

The client should be prepared to rest at home for the remainder of the day following vasectomy and to refrain from heavy work or strenuous exercise for 48 hours. The client should understand that this rest period is important to decrease the risk of complications.

If a scrotal support is recommended and the client has to provide it, he should be so advised before surgery. In addition, a staff member should clearly explain to the client when he will have to wear the support.

Skin preparation

If the client shaves or clips the pubic and scrotal hairs, he should be told to do so carefully without abrading the skin. The same applies if shaving is performed by clinic staff.

The client should wash the groin area with soap in clean flowing water before coming for the procedure.

6. The vasectomy procedure

This chapter is not intended as a step-by-step guide to the vasectomy procedure; its purpose is to highlight the elements of medical and surgical care that are essential to client satisfaction, safety, and programme effectiveness. (For further information about surgical technique see Reference 23.) For a programme to be successful the vasectomies performed should be free of unnecessary pain, complications, and failures. Surgical techniques that help ensure these factors include small incisions, adequate local anaesthesia, and careful attention to the surgical principles outlined below. Some surgeons may find the small incisions and minimal surgery described here to be very different from the more extensive operations encountered in their regular surgical practice.

Facilities

Vasectomy should be performed in a room that is clean and free of environmental contamination.

Asepsis

The operator should complete a surgical scrub before the procedure and should wear sterile gloves. There is no consensus about whether a cap, mask, and sterile gown are necessary. Some groups consider them important while others do not.

The scrotum, perineum, and thighs should be thoroughly cleansed and swabbed with an effective, nonirritating, topical

antiseptic (usually in a water base). Chlorhexidine solutions (0.5–1 %) and povidone–iodine preparations are nonirritating and highly effective in reducing bacterial flora of the skin. Iodine (1.5 % in alcohol), 70–95 % ethanol, and 60 % isopropyl alcohol effectively reduce bacterial flora but are irritating to the scrotum. Allergic reactions to iodine have been reported. Benzalkonium chloride, the mercurial products (e.g., thiomersal), and lower concentrations of alcohols are less effective. Merbromin is not a sufficiently strong antiseptic. However, there are no published studies comparing infection rates with the different topical antiseptics used for vasectomy.

A sterile drape should be used, and sterile technique maintained throughout the procedure. A single surgical drape with a minimum 5-cm opening can be used to isolate the scrotal operating field. Disposable paper towels can also be used.

Preoperative medication

In most programmes, routine preoperative medication for men requesting vasectomy is not provided. However, if the man is unduly anxious, 5 mg of diazepam may be given orally 30 minutes before surgery.

Surgical procedure

Local anaesthesia

It is generally agreed that general anaesthesia is unnecessary and that vasectomy can be performed using local anaesthesia. However, a preliminary skin sensitivity test for the local anaesthetic should be done. Each vas deferens should be identified in the upper portion of the scrotum where it is easily palpated. The most important step is to locate, isolate, and firmly anchor the vas before injecting the anaesthetic and making the incision. Practice is required to locate and hold the vas without causing discomfort.

Local anaesthesia using 1 % lidocaine without epinephrine has advantages for simplicity and safety. The anaesthetic should not contain epinephrine because it may cause prolonged ischaemia of the testes.

The anaesthetic is first injected under the skin, creating a weal adequate for the skin incision. The needle containing the anaesthetic is then introduced deeper, and 1–2 ml of lidocaine is injected close to the vas, which is held away from other structures in the spermatic cord. The sheath of the vas may also be infiltrated with the initial injection. The total amount of anaesthetic should not exceed 15 ml of 1 % lidocaine. (The maximum safe dose for infiltration for a 60-kg man is 30 ml of 1 % lidocaine.)

Ligation

The operator may make one or two incisions in the skin and the deeper layer (the dartos layer). Each incision need not be longer than 1 cm. Using a single incision, the operator must carefully identify each vas to avoid operating twice on the same structure. The incision should be longitudinal to avoid skin vessels.

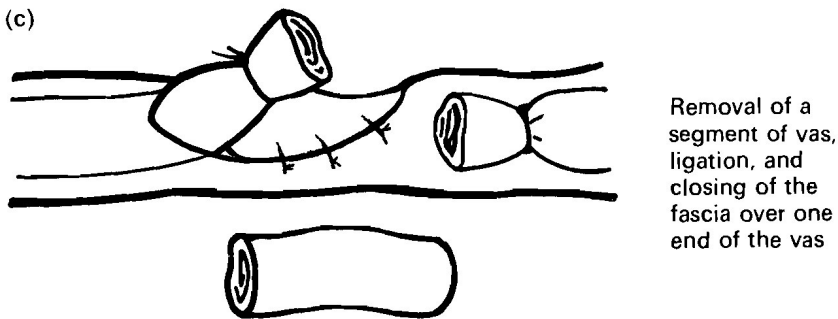
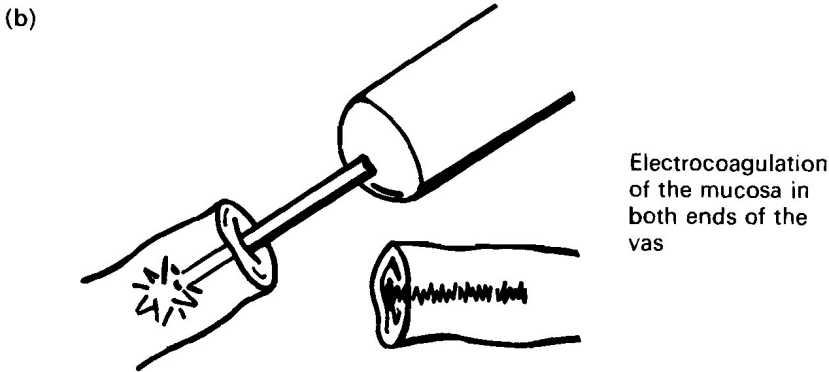
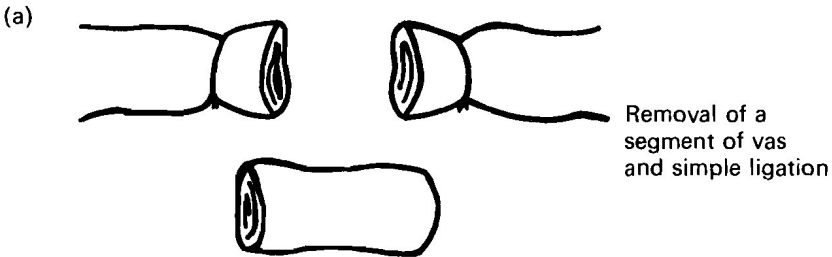
After separating the tissue with mosquito forceps or other blunt dissecting forceps, the vas is grasped with suitable tissue forceps. The sheath of the vas is then incised over the vas in an avascular area. To ensure that the sheath is fully divided, the incision is carried on to the vas itself. A segment of the exposed vas is then held with a second vas forceps or a specially designed vasectomy hook. The vas is then lifted out of its sheath. If at any point the man experiences discomfort, the operator should be prepared to inject additional local anaesthetic into the vas sheath or surrounding tissues.

A segment of the vas is then isolated and divided. It is not necessary to remove a segment of the vas; however, some operators prefer to do so. Up to 1 cm of the vas may be removed. The cut ends are then ligated tightly enough to occlude the vas (see Fig. 14a). Some operators use absorbable suture material, others prefer nonabsorbable silk or cotton. There is no consensus about the best material for ligating the vas.

Coagulation

As an alternative to ligation, coagulation with a needle electrode (electrocoagulation) can create a firm scar which effectively occludes the ends of the divided vas. This method

Fig. 14. Various techniques for sealing the vasa deferentia^a.



^a Reproduced by permission from Kessler (25).

was developed to minimize damage to the muscle of the vas and reduce the possibility of sperm leakage (see Fig. 14b and pages 75–76). On the urethral side of the vas, the needle electrode is inserted 2 mm into the lumen. As the current is turned on, the needle is withdrawn over one to two seconds. On the testicular side, the needle is inserted 4–5 mm into the lumen and the current applied during withdrawal. When coagulation is performed, sutures should not be used in addition, to occlude the ends of the vas.

Fascial barrier

With both ligation and coagulation, a fascial barrier may be created by pulling the sheath over one of the vas ends and suturing it (see Fig. 14c) (5, 23).

Closing the incision

After the operator has checked carefully for bleeding, the vas is returned to the scrotum. Small skin incisions are not sutured by some surgeons, who feel that avoiding sutures helps to prevent haematoma formation. Other surgeons prefer to suture all vasectomy skin incisions. The skin and/or dartos may be closed with absorbable sutures, or nonabsorbable silk may be used if it is convenient for the man to return for suture removal. Nonabsorbable sutures may increase the risk of minor infection (5).

Dressing

It is difficult to keep bandages and dressings on the scrotum. Some surgeons place a small gauze pad on the site and hold it in place with a short length of adhesive tape to keep the edges of the wound together when sutures are not used. An antibiotic powder or spray may be used on the incision, but this is not necessary. The man should be firmly instructed not to wash or bathe the scrotum for 24 hours. The patient should rest at the clinic for 30 minutes if possible, and later, at home. In some programmes it is recommended that the man wear a firm scrotal support for 5–7 days.

Vasectomy technique without scalpel

The conventional vasectomy techniques described above are performed in many countries. In 1974, a modified technique, which does not require the use of a scalpel, was developed in Sichuan Province of China.

This technique reduced men's fears related to the scalpel and resulted in a very low incidence of haematomas. Two different instruments are used, an extracutaneous ringed forceps for fixing the vas, and a sharp pointed curved haemostat used as a dissecting forceps. After grasping the vas with three fingers and infiltrating with a local anaesthetic, the ringed forceps is used to encircle and stabilize the vas without causing injury to the skin. The sharp haemostat punctures the scrotal skin down to the vas, and by spreading the blades of the haemostat, all layers from the skin to the vas are separated, exposing the vas. The vas is then delivered through the puncture opening, and the ringed forceps released and reapplied to the vas. The vas is divided with scissors, a segment removed, the ends ligated, and fascia interposed, similarly to other standard occlusion techniques.

Through the same opening, the vas from the opposite side is delivered and occluded in a similar fashion. The skin opening is about 2 mm and is virtually invisible after the procedure. No sutures are needed for closure. This procedure requires not only special training but also the ringed forceps (manufactured by the Sichuan Medical Instruments Factory). Both the special training and instrument may be available outside China in the near future.^{1,2}

¹ GOLDSTEIN, M. & GOJASENI, P. *Report on Association for Voluntary Sterilization team visit to the People's Republic of China*, New York, Association for Voluntary Surgical Contraception, 1985.

² LI, S. & ZHU, J. *Ligation of vas deferens with clamping method under direct vision*, Chongqing, Chongqing Family Planning Scientific Research Institute, 1985.

7. Postoperative care

Immediate complications

Emergency equipment to deal with complications should be maintained at the surgical centre. Such equipment includes oropharyngeal airways, intravenous fluids, intravenous administration sets with large calibre needles, and emergency drugs for managing adverse reactions to anaesthetic agents and other medications (26) (see Chapter 11).

Postoperative instructions and care

Vasectomy counselling should not end with the decision to undergo surgery. Postoperative counselling may take place just before the client leaves the clinic or office after surgery. Clients may need additional information, reassurance, and support at this time. As in preoperative counselling, the man should have the opportunity to ask questions and express his concerns (see Chapter 4).

Immediately after surgery, men need clear instructions about:

- How to care for the incision.
- What side-effects to expect.
- What to do if complications occur.
- Where to go for emergency care.

They should also understand that minor bruising of the skin is to be expected and does not require medical attention.

Medical attention should be sought if any of the following occurs:

- Fever.
- Blood or pus oozing from the incision site.
- Excessive pain or swelling.

Normal activities and sexual intercourse with temporary contraception may be resumed after 2–3 days, if the man is comfortable (23).

The client should be reminded that he is not immediately sterile and that he and his partner will need to use temporary contraception for the first 15 ejaculations or for 12 weeks, whichever occurs first. The health care facility should give the man 15 condoms or some other method of temporary contraception (23).¹

All postoperative instructions should be given both orally and in writing. If a client is illiterate, staff should give him written instructions to be read by someone in his community. In most cases, the client will know someone who can read the instructions to him if he is unable to recall the information. Sample instructions for clients are given in Annex 3.

Medication

Analgesics may be provided for the first few days after vasectomy. Antibiotics are not indicated unless special trauma or complications occurred during surgery. Prophylactic antibiotics should not be required if an aseptic technique was maintained.

Follow-up

The follow-up visits are opportunities to examine the client's physical recovery from surgery, to remove stitches when necessary, to take a sperm count after an appropriate time in order to establish azoospermia, and to assess the man's adjustment to his loss of fertility.

¹ Association for Voluntary Sterilization, Science Committee, *Minutes: vasectomy seminar, New York, 6 June 1983*. New York, 1983.

Semen analysis

Every man should be offered the opportunity to have a semen analysis after 12 weeks or 15 ejaculations. Ideally, one or two sperm-free semen specimens should be obtained from the man after vasectomy in order to be reasonably sure that the operation has been a success.

A semen specimen may be collected by masturbation into a clean vessel, or from a condom after intercourse. While the latter method is not appropriate when assessing the semen of infertile couples, it is satisfactory for determining whether sperm exist in the seminal fluid after vasectomy.

A comprehensive semen analysis is not required to determine the effectiveness of vasectomy. All that is needed is to determine if sperm are present. This can be accomplished by placing several drops of the collected semen on a slide under a cover slip and looking for sperm with a low-power lens. The examiner does not need to assess the motility, normality, or count of sperm. If the semen specimen has been collected after 15 ejaculations or 12 weeks, the sperm count should be zero (23). If it is not, the possibility of failure must be considered.

In some programmes, two sperm-free specimens are required before it is assumed that the operation has been a success. However, in many cases, men do not return for a follow-up visit or a semen analysis. Health care staff must be sure to emphasize the importance of using contraception during the postoperative period, as semen produced before the vasectomy is stored in the genital tract. It requires, as mentioned earlier, at least 15 ejaculations to clear the genital tract of this sperm-containing semen.

It must also be explained that vasectomy failure is possible, even though the rate is usually less than 1%. Vasectomy can fail as a result of late recanalization, even after one or two sperm-free semen specimens have been obtained. However, most failures attributable to recanalization occur within three months of the vasectomy procedure (23).

Psychological support

During the follow-up visit, staff members should inquire tactfully about the client's marital and sexual relations since

the operation. While examining the incision site and discussing the patient's recovery, the physician should be sensitive to complaints that might indicate the man is reacting negatively to vasectomy. Staff members should try to identify any signs of regret, misunderstanding, or maladjustment related to the vasectomy and should provide for further counselling or referral, whenever necessary.

Long-term follow-up

Negative psychological effects can be delayed. For this reason, community health workers play an especially important role in follow-up, as they do in prevasectomy support and guidance. The community worker is the health professional most likely to be aware of a change in the client's life, such as remarriage or the loss of a child. The community worker is often the best person to counsel or refer the client who experiences regret.

8. Complications and side-effects

Intraoperative complications

Intraoperative complications are not common. There may be a transient drop in blood pressure or dizziness. If the episode is prolonged, the procedure should be delayed while the patient rests. Administration of intravenous fluids is rarely required. Toxic reactions to the anaesthetic lidocaine may be manifested as convulsions; in such cases, sedation and controlled ventilation are required. When intravascular injections are avoided and the recommended doses of lidocaine are not exceeded, toxic reactions are rare.

Short-term effects

Short-term postoperative side-effects are minor, and most subside within one or two weeks. The most common complaints are pain and swelling, usually related to surgical manipulation or to seepage of blood under the skin when small blood vessels have been punctured.

While these symptoms generally disappear without treatment, ice packs, scrotal support, and simple analgesics provide relief.

Postoperative complications

Infections

Generally, less than 2% of men develop infections after vasectomy, but rates as high as 6% have been reported.

The most common are superficial skin infections, which appear 3–4 days after surgery around the incision or sutures. Deeper infections of the scrotum, vas, or epididymis are rare, and some may be secondary to infected haematoma.

Treatment depends on the severity of the infection. Inflammation of the incision site may abate spontaneously, while deeper or more severe infection may require drainage, removal of skin sutures, and antibiotics. Occasionally, an abscess may form, requiring incision and drainage.

Haematoma

In general, less than 1 % of men develop haematomas, but rates as high as 4 % have been reported. When blood vessels are injured during surgery, bleeding into the scrotal sac may result. The expansiveness of the scrotal tissue permits persistent bleeding. Untreated haematoma can cause pain and infection.

Small haematomas usually resorb completely with bed rest. The treatment of large haematomas depends upon the situation and the judgement of the surgeon. Drainage may be appropriate, but the benefits must be weighed against the added risk of infection if sterile conditions are difficult to maintain.

Granuloma

A granuloma is a small nodule of collected sperm that may form at the site of the occluded vas, particularly when ligatures are used. In most studies, physical evidence of granulomas has been found in 0–3 % of men. However, during vasectomy reversal procedures, granulomas at the vasectomy site (usually very small) have been reported in 15–40 % of cases. Granulomas have also been found in the epididymis; these may be more common when the vas is occluded by electrical methods—although electrocoagulation helps to prevent granulomas at the site of occlusion, it may not protect against epididymal granulomas. Granulomas in this location may cause testicular pain and inflammation and also reduce the chances of a successful vasectomy reversal. Each method of occlusion has some benefits and some disadvantages with regard to granuloma formation (5).

The majority of granulomas noticed by patients are symptomless and respond to conservative treatment with simple analgesics or anti-inflammatory drugs. Very occasionally, a persistent and painful granuloma may necessitate surgical intervention.

Epididymitis

Epididymitis can result from vas occlusion. However, epididymitis and orchitis occurring in the first year after surgery could be attributed to vasectomy in only 1.5% of 10 000 vasectomized men recently studied in the United States of America. No evidence was found of an increased rate of epididymitis and orchitis in later years after vasectomy (6). These conditions are generally not related to bacterial infection and usually subside within a matter of weeks or, occasionally, months.¹ When treatment is required, scrotal support and simple analgesics are usually sufficient.

Tetanus

Tetanus has rarely been reported in large vasectomy programmes. Strict aseptic technique combined with proper disinfection and sterilization of equipment are the most appropriate methods for preventing tetanus (26). An initial dose of tetanus toxoid on the day of vasectomy will not provide adequate protection. In most vasectomy programmes, it is not feasible to immunize men fully against tetanus before surgery.

Factors affecting the incidence of complications

Careful attention to haemostasis can help prevent haematomas. Some surgeons take the added precaution of applying pressure to the incision area immediately after surgery; this apparently reduces the incidence of haematomas.

¹ Association for Voluntary Sterilization, Science Committee, *Minutes: vasectomy seminar, New York, 6 June 1983*. New York, 1983.

In cases where the man insists on having intercourse within one day of vasectomy, the likelihood of complications may be increased (27).

Following a one-day vasectomy clinic conducted in Thailand, five major complications of haematoma and/or infection were reported among 650 vasectomies. To reduce this rate of complications, staff members reviewed the causes of haematoma and infection and emphasized careful surgical technique. Following the next one-day vasectomy clinic, no complications in the form of haematoma or infection were reported among more than 700 cases. Experience suggests that already low rates of complication can be reduced even further with careful attention to haemostasis, asepsis, pressure, immobilization of the wound after surgery, and postoperative instructions to the man.

Long-term physical effects

Cardiovascular disease

In 1979, studies reported that vasectomized monkeys were developing atherosclerosis more often than those that had not undergone vasectomy. As a result of this animal research, concerns were raised about the long-term effects of vasectomy on the health of men. However, several recent major studies have assessed the frequency of heart disease, vascular disease, and other medical conditions in vasectomized men and have confirmed that they have no increased incidence of these conditions (5, 6).

Antisperm antibodies

Approximately 40–70 % of men will develop antisperm antibodies in the first year after vasectomy. The significance of these antibodies is unknown. Antibodies also occur in 2–8 % of unvasectomized men. Long-term studies of a number of conditions that could be related to antibody protection have so far failed to identify any adverse consequences (5).

Hormone production

Assessments of long-term hormonal levels have shown no significant changes after vasectomy (5, 28)

Psychological effects

Studies have provided no evidence of adverse psychological reactions to vasectomy. The great majority of vasectomized men report no regrets and would recommend the procedure to others. Men usually report no change in sexual desire or performance. Marital relations and sexual satisfaction sometimes improve, presumably because fears of pregnancy are reduced (5).

In certain studies, some men have reported a deterioration in health or other adverse reactions to vasectomy. However, in these studies, vasectomized men were not usually matched with controls. In other studies, men used as controls have reported similar complaints of reduced energy or ability to work (5). Nevertheless, it is important to identify men who have sexual dysfunction or serious marital or psychological problems before vasectomy. These men may present contraindications for vasectomy which can be elucidated during careful preoperative counselling.

Mortality

Although serious complications of vasectomy are rare, there have been occasional fatalities. Approximately 8 million vasectomies have been performed in the United States of America and only one death has been attributed to vasectomy. The cause of that fatality was apparently hypersensitivity to medications. In one country, a series of complicated and sometimes fatal scrotal infections (not tetanus) were apparently related to inadequate aseptic technique (29). When surgeons in that country began using sterile surgical gloves and paying greater attention to aseptic technique, mortality dropped dramatically (5).

There has been a recent multinational attempt to gather data on sterilization-associated mortality. The study covered 20 countries for the period 1 January 1980–30 June 1982, during which time 55 deaths occurred in both males and females. The single reported death attributed to vasectomy occurred in Asia and was due to tetanus. However, under-reporting makes it impossible to derive reliable mortality rates (30).

Deaths related to vasectomy are avoidable if all preventive measures are taken—these include: absolute asepsis; prompt, proper postoperative attention to symptoms of infection; and follow-up care if required.

9. Effectiveness

Failure rates

Vasectomy is one of the most effective methods of contraception. Pregnancy rates are generally similar to those for female surgical contraception and lower than those associated with use of temporary methods (see Table 5, page 17). Failure rates for vasectomy have ranged from 0 to 2.2% in large studies; however, in most the rate is less than 1%. Combining the results of several studies has yielded a failure rate of 0.4% among almost 25 000 procedures (31). Because there have been few comparative studies of the different vasectomy techniques, and because most reports describe the experience of a single operator, it is difficult to determine the relationship between technique and failure.

Causes of failure

Unprotected intercourse shortly after vasectomy

Failure to use temporary contraception during the first 15 ejaculations or for 12 weeks after surgery is one of the most common causes of pregnancy after vasectomy.

Recanalization

Spontaneous recanalization, or rejoining of the vas, may occur within three or four months of vasectomy, and it has been reported up to three years following the procedure. Recanalization often follows the development of a sperm

granuloma at the site of occlusion of the vas deferens. Epithelialized channels through the granuloma may reconnect the two ends of the vas, allowing sperm to pass. Simple ligation of the vas may lead to sperm leakage and granuloma formation at the ligated end. For this reason, some surgeons prefer to interpose a segment of fascia to act as a barrier against recanalization (see page 63 and Fig. 14). Electrocoagulation of the vas reduces the frequency of sperm leakage. This technique, combined with a fascial barrier, has been reported to reduce failure rates (32).

Technical problems

Failure may also occur if the surgeon does not identify and operate on the correct structure. This can occur either because the vas has been misidentified or because surgery is difficult as a result of scarring, thrombosed veins, or fibrotic lymphatic ducts after filariasis. Congenital duplication of the vas occurs very rarely and is an extremely unusual cause of vasectomy failure (5).

Safeguarding against failure

Recommended actions to safeguard against failure include the following:

- Dividing and occluding the proper structures during surgery.
- Adequately occluding each vas deferens, whether by ligature, electrocoagulation, or other method.
- Separating the vas segments with a fascial barrier.
- Using temporary contraception until no sperm remain in the vasa.
- Giving the client 15 free condoms to encourage him to use temporary contraception.
- Analysing the client's semen after 15 ejaculations or 12 weeks, if at all possible.

10. Reversal

As the number of vasectomies has increased, so too have requests for reversal. Usually these requests are the result of changes in the family, such as remarriage, loss of a child, or an improvement in circumstances, so that another child could be supported and would be enjoyed. Occasionally, a client requests reversal because he believes certain physical problems have been caused by the vasectomy (for example, testicular pain due to pressure, congestion, or inflammation in the epididymis). (See Chapter 2 for programme information about reversal.)

Success rates

Generally, pregnancy is the desired end when a reversal is performed. The percentage of men who achieve reappearance of sperm in their ejaculate can be quite high. Some specialists report that sperm reappear in 90 % of men who have had reversal surgery, but pregnancy rates are lower than this rate of technical success. Reported pregnancy rates after reversal range from 20 % to 80 %.

Factors influencing the success of reversal

While both macrosurgical and microsurgical techniques have been used successfully to anastomose the vasa deferentia, most surgeons prefer some form of magnification, using either an operating microscope or a magnifying loupe. Meticulous technique with absolute control of bleeding and precise suturing is the key to success (33). The surgeon should have specialized training in reversal.

Method of occlusion

Successful reversal may depend on the method of occlusion used. Hence, vasectomy should be performed in a way that optimizes the possibilities of reversal, without increasing the risk of failure. Most investigators agree that the straight portion of the vas deferens should be occluded, as far from the convoluted portion as possible, and with minimum excision of tissue.

Age and time

Success may also depend upon the age of the man and the length of time since his vasectomy. Better results have been obtained in younger men with shorter periods of time between vasectomy and reversal.

Antibodies

Some researchers have suggested that the presence of sperm antibodies and continued hydrostatic pressure on the epididymis may decrease the chances of success for reversal performed long after vasectomy.

Technical difficulties

Technical factors can create problems for the surgeon and prevent successful return of fertility. These may include removal of more than 2.5 cm of the vas during vasectomy, extensive scarring of the ends of the vas, vasectomy performed near the testis, and dilation of the testicular end of the vas preventing proper realignment.

Anastomosis technique

Vasectomy reversal is usually performed under general or regional anaesthesia in a hospital. Some surgeons use long-acting local anaesthesia in outpatient facilities. Reversal procedures may be characterized by the magnification used:

- Macrosurgery without magnification.
- Microsurgery with magnifying loupes or hoods (these optical aids provide a magnification power of 2–4).

- Microsurgery with microscopes (which provide a magnification power of 5–40; they are more expensive than loupes or hoods).

Provision of services

Although vasectomy is provided as a method of permanent fertility termination, service providers are obligated to refer clients who request reversal to centres where the procedure can be performed. Because the skill of the surgeon performing reversal depends so much upon experience, it is best to limit the number of such surgeons and their teams. In centres where expensive operating microscopes are available, it may be practical for one skilled microsurgeon to perform both male and female reversal procedures, thus adding to the operator's experience and utilizing equipment more efficiently.

11. Instruments, equipment and supplies

Annex 4 and Table 10 list all the instruments, equipment and supplies that are needed to set up a clinic for vasectomy. Table 10 is presented according to the various stages of the service: preoperative and postoperative examinations, preoperative preparation, surgery, and recovery. The basic instruments and items of equipment that are specific to vasectomy are discussed below.

Instruments

Basic instruments for ligation

When the vas deferens is to be ligated, the surgeon will require the following:

- One (1) syringe and needle.
- One (1) scalpel or surgical blade.
- Two (2) forceps or clamps.
- Suture material.

The specific types and number of these instruments vary, depending on the surgeon's preference and on local availability. Many readily available and simple surgical instruments may be adapted for vasectomy.

Vasectomy kits

Donor agencies have assembled vasectomy kits for ligation methods, for use in family planning programmes. UNICEF,

for example, has put together a kit which is available to government programmes (see Annex 4). Because these kits are designed to cater for a range of individual preferences and techniques, they provide a greater number and a larger variety of instruments than are usually needed for a single vasectomy procedure.

The kits are an efficient way of distributing standardized instruments within a family planning programme. For example, they can be given to physicians on successful completion of their vasectomy training. Kits are also a convenient way to package bulk quantities of presterilized instruments for use in a day's surgery.

Each clinic should have enough kits on hand to perform a typical day's case-load without interruption of the surgical schedule. When determining the number of kits needed, programme managers should consider the time required to resterilize instruments and to allow them to cool to a comfortable temperature. In low-volume clinics, performing only one or two procedures per operating session, a minimum of two kits should be available. In medium-volume clinics, with case-loads of five to ten operations per day, up to ten kits are recommended so that staff members do not need to resterilize instruments until the end of a day's work. However, in high-volume situations, where case-loads exceed ten operations a day, it may be impractical and too expensive to have one kit for every vasectomy performed.

Electrocoagulation units

When electrocoagulation is used to occlude the vasa deferentia, the surgeon will need, in addition to the basic instruments listed for ligation, a special electrosurgical unit. Manufacturers can supply a wide variety of such units which can be adapted for vasectomy.

Equipment

Basic operating room requirements

The equipment required in the operating room for vasectomy performed under local anaesthesia is basic. The

Table 10. Supplies, instruments, and equipment for vasectomy^a

	Preoperative and postoperative examination	Preoperative preparation	Surgery	Recovery
Instruments	Sphygmomanometer Stethoscope Thermometer	Sponge forceps ^b Stainless steel bowl ^b Instrument pan with cover ^b Dressing jar ^b	Instrument pan with cover ^b Dressing jar ^b Sphygmomanometer Stethoscope Forceps, tissue ^{b, c} Forceps, artery ^{b, c} Forceps, sponge ^b Forceps, towel ^b Scissors ^b Surgical knife handle ^b Electrosurgical unit (optional)	Thermometer
Equipment	Examination table Examination lamp Microscope	Autoclave Antiseptic-solution dispenser	Examination table Examination or operating room lamp Emergency lamp (flashlight) Instrument table	Cot or reclining chair
Supplies	Gloves Table covers Microscope slides	Detergent Sterilizing solutions Antiseptic solutions Razor blades Soap Sponges ^b	Surgical drapes ^b Surgical garments Adhesive tape Talcum powder Diazepam Syringes, 5 ml ^b	

		Swabs ^b	Hypodermic needle ^b	
		Hand brush ^b	Surgical blades ^b	
			Straight triangular needle ^b	
			1/2 circle taper-point Mayo ^b	
			Catgut ^b	
			Gloves ^b	
			Table covers ^b	
			Gauze ^b	
			Flashlight batteries	
			1 % lidocaine (without epinephrine)	
Emergency items	—	—	Oropharyngeal airways	—
			Intravenous fluids and administration sets with large calibre needles ^b	
			Stand for intravenous fluids	
			Manual resuscitator or breathing apparatus	
			Manual aspirator	
			Drugs: antihistamines, epinephrine, lidocaine, etc.	

^a From Reference 34.

^b This item must be sterilized.

^c Annex 4 lists several types of forceps included in a standard vasectomy kit. Some surgeons prefer Soonawalla or Croft forceps to grasp the vas deferens.

items include the following:

- One (1) examination table.
- One (1) examination lamp or operating room light.
- One (1) instrument table.
- One (1) back-up lamp.

Considering these minimal needs, vasectomy can be easily performed in a physician's treatment room. Since it is only necessary for the client to lie in a comfortable position, a complex and expensive operating table is not needed. All operating rooms should have a supplementary light supply, such as a battery-powered flashlight, for use in the event of electrical failure.

Emergency equipment

Emergency equipment and supplies should always be readily available in order to manage life-threatening complications that may arise owing to adverse reactions to anaesthetic agents and other medications. As a minimum, these items should include the following:

- Oropharyngeal airways.
- One (1) manual resuscitator or breathing apparatus.
- One (1) aspirator, manual or otherwise.
- Intravenous fluids and administration sets with large calibre needles.
- Emergency drugs such as antihistamines, epinephrine, lidocaine, etc.

Microscope for semen analysis

In services that offer semen analysis, a microscope will be necessary. A non-electrical microscope with reflecting mirror will suffice. Magnification power should be at least 400.

Maintenance and logistics

Requirements for maintaining asepsis

To ensure the safety of vasectomy, high standards of asepsis must be maintained for surgical instruments and supplies. Table 10 indicates which items should be sterilized.

Linens and most standard surgical instruments can be sterilized in an autoclave (sterilizer) using pressurized steam (see Table 11). The type of autoclave selected will depend on the programme's location, case-load, and availability of power. Dry heat can also be used for surgical instruments. The use of chemicals for high-level disinfection is less reliable in practice, since the disinfectants lose their strength during storage and may be inactivated by organic matter.

Organization of materials for mobile teams

Vasectomy mobile teams may find it difficult to transport large numbers of tables, lights, instrument kits, etc. In particular, arrangements must often be made locally in advance for resterilization of reusable instruments and supplies. In some countries, programmes have resorted to using disposable gloves, surgical drapes, and garments. However, disposable materials are expensive, and programme managers will have to weigh carefully their advantages and disadvantages over reusable materials.

Table 11. Methods of sterilization for equipment used in vasectomy^a

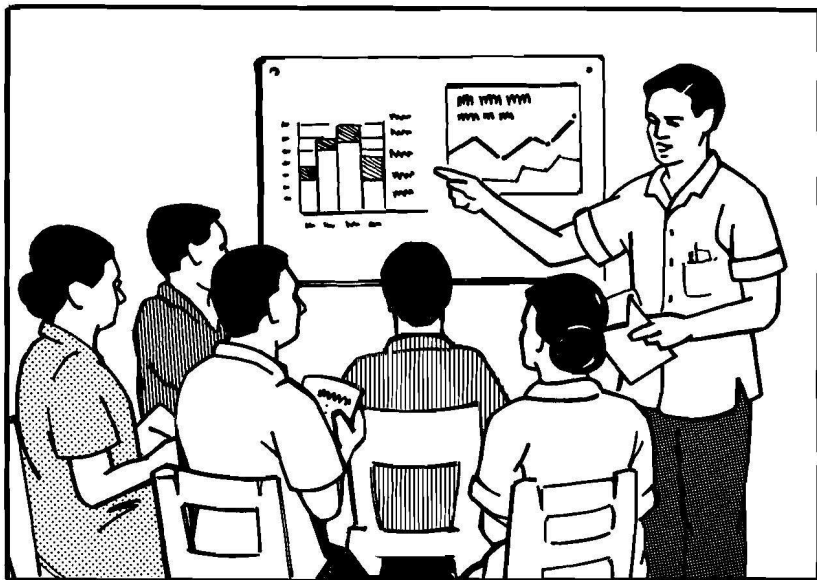
Materials	Method of sterilization	
Linens, drapes, sponges, scrub suits, operating packs, etc.	Autoclave	
	Temperature	120° C
	Pressure	203 kPa
	Time	20 min (minimum)
Rubber goods (gloves, catheters, and rubber tubing)	Autoclave (as above)	
Surgical instruments	Autoclave (as above)	
	Dry heat sterilizer	
	Temperature	170° C
	Time	2 h

^a Adapted from Reference 26

12. Training

A high-quality vasectomy programme depends on well-trained personnel: surgeons, surgical assistants, counsellors, and other staff members (see Fig. 15). Each training programme should focus on assuring the quality of the surgical service, screening, and counselling, careful decision-making, and adaptation of programmes to the community. For a more thorough discussion of training programmes and the evaluation and follow-up of trainees see Reference 35.

Fig. 15. Health workers receive training to work in a vasectomy programme.



Knowledge, skills and tasks

The tasks performed by clinic staff can be grouped into 14 skill areas (35), which are listed in Table 12. The table also indicates the people primarily responsible for each task, based on the typical staffing pattern of a new vasectomy service. It is assumed, for purposes of simplicity, that the service will initially be staffed by a doctor and a nurse (see pages 31–33). In practice, the vasectomy surgeon is usually a medically trained person, although not necessarily one with specialized training in surgery. Duties normally undertaken by nurses can be carried out by medical assistants or shared with other staff, especially as services expand and case-loads increase. In practice, the nurse often receives secondary training from a doctor who has completed a training programme in vasectomy; it is assumed that this is the case for purposes of discussion in this chapter.

Annex 5 outlines a sample training curriculum for doctors to develop the skills described in Table 12. The amount of training time devoted to each of the 14 areas depends on the qualifications of the trainee and the specific needs of the vasectomy programme. The duration of the training programme described in Annex 5 should be at least seven days.

Training institutions

Effective training programmes have been held in a variety of settings, including medical universities, urban and rural hospitals, specialized training centres, and specialized clinics. Training institutions for vasectomy should have:

- An adequate case-load for each trainee to observe and practise.
- Staff who are experienced and qualified in vasectomy training.
- Space dedicated to instruction.
- Facilities for screening, counselling, and postoperative follow-up.
- Adequate space and facilities to perform vasectomy and to observe patients during recovery.

Table 12. Knowledge, skills, and tasks for vasectomy clinic staff^a

Knowledge, skills and tasks	Staff performing tasks
1. Rationale for family planning, including vasectomy	The doctor should understand national health and population statistics as they relate to family planning services (including birth rates, mortality rates, and the effects of timing, spacing, and number of children on the health of mother and children). The nurse should have some grounding in these subjects, particularly the relationship between family planning and health.
2. Current status of family planning, including vasectomy	Both the doctor and nurse should understand the status of family planning in their country, particularly the knowledge about, attitudes toward, and practice of vasectomy. Cultural, social, and policy considerations that affect the provision of services should be understood by both, particularly the doctor.
3. Reproductive anatomy and physiology	Training in this area applies primarily to the doctor. However, as the nurse or medical assistant takes more responsibility for screening, assisting with surgery, and providing postoperative care, he or she will need to understand the basics of this topic.
4. Temporary and permanent methods of family planning	The nurse is usually responsible for accurately describing the range of temporary and permanent methods of family planning. However, both the nurse and the doctor must be familiar with all methods available and be prepared to describe accurately the methods and, in many cases, provide contraceptives to the clients.
5. Client assessment, counselling, and informed consent	The nurse, counsellor, or medical assistant usually provides most of the information to ensure a voluntary decision and informed consent (see Chapter 4). Some programmes prefer that the nurse or counsellor has primary responsibility for this task. The doctor must be fully informed about the components of client assessment, counselling, and informed consent and is usually responsible for the quality of these services, even though the tasks are largely delegated to others.
6. Preoperative patient evaluation	The doctor often performs the physical examination. However, the nurse or medical assistant usually collects information about the client's history and sometimes does the psychological screening. The performance of these tasks is highly variable, with greater responsibility usually given, over time, to the nurse or medical assistant.
7. Preoperative patient instructions	The nurse or medical assistant usually performs the preoperative skin preparation and drapes the man for the procedure. The doctor often designates the preoperative preparations to be done.

8. Asepsis and equipment management	The doctor and nurse both share responsibility for maintaining asepsis. However, the nurse is primarily responsible for certain tasks (i.e., sterilizing instruments, equipment, gloves, and drapes).
9. Anaesthesia, analgesia, and resuscitation	The doctor usually administers local anaesthesia. This task is sometimes performed by a skilled nurse or surgical assistant who assists with the operation or performs the surgery as the primary operator, under the surgeon's direct supervision. Client monitoring is usually performed by the nurse. Both the doctor and nurse must be familiar with resuscitation procedures and emergency equipment.
10. Vasectomy technique	The doctor is responsible for developing the skills to perform vasectomy. However, nurses and other medical staff sometimes learn aspects of the procedure as they gain experience and develop skills in the technique. In some programmes, medical assistants perform complete vasectomies under the direct supervision of the surgeon.
11. Complications: their prevention and management	The doctor is primarily responsible for recognizing and treating complications. The prevention of complications largely depends on the surgical technique of the surgeon, asepsis, and other aspects of pre- and postoperative care. Nurses and medical assistants must be knowledgeable about complications and their significance, primarily so that they can identify symptoms and signs that require medical evaluation or treatment.
12. Postoperative care	Nurses are primarily responsible for postoperative instructions to the man about wound care, rest, bathing, and the need to use contraception after vasectomy. The doctor sometimes performs this task and is responsible for the accuracy and completeness of information provided by others.
13. Reversal of vasectomy	Although reversal is a skill reserved for a few specialists, every doctor should know the principles of reversal and the factors that can influence its success, particularly those factors related to vasectomy technique. Both doctors and nurses should be informed of the success rates of reversal and be prepared to provide accurate information to men about the nature of reversal surgery and the chance for success.
14. Organization, administration and evaluation of the vasectomy clinic	The doctor should know basic principles of managing the clinic, communication, and evaluating programme impact. However, in practice, those tasks may be performed by administrative staff or outside evaluators. The nurse often has considerable responsibility in management, communications, and informal evaluation of the quality of care. The division of these tasks varies widely among programmes.

^a Reproduced by permission of the Association for Voluntary Surgical Contraception.

- All the equipment needed to perform vasectomy and to manage complications.

Mobile surgical units and temporary locations are not appropriate training sites, primarily because they usually lack space for theoretical training. Trainees can, however, undertake part of their clinical practice in such facilities.

The case-load of the training facility is important. Each trainee should be able to participate in at least 20 cases, in which he or she observes, assists, or performs. Unless the facility case-load is exceptionally high, training is usually limited to two or three trainees per week. Practical training in performing vasectomy is essential; it must not be compromised in order to reach the goal of training large numbers of surgeons.

Requirements for surgical trainers

Criteria for those who provide surgical instruction include the following:

- Extensive experience as a surgeon.
- A high degree of competence in performing vasectomy.
- An understanding of the indications and contraindications for female and male sterilization.
- Ability to manage all major and minor complications of vasectomy.
- Ability to perform vasectomy under local anaesthesia.
- Expertise in analgesia and anaesthesia for vasectomy.

To maintain their surgical skills, trainers should have at least six continuous months of experience with a monthly case-load of at least ten procedures.

Criteria for selecting trainees

Various kinds of personnel have been trained in vasectomy, including surgical specialists, for example, general surgeons, urologists, and obstetricians/gynaecologists, general medical practitioners, medical students, and paramedical staff

authorized to perform minor surgery (5, 15). The specific types of trainee chosen will depend upon the current situation in health staffing, and the national regulations concerning the performance of surgery such as vasectomy.

Trainees should exhibit a desire to learn and have a commitment to providing vasectomy as a family planning option. In addition, they should be sensitive to people's feelings and, if necessary, be able to reassure them about their fears. Experience in performing surgery under local anaesthesia is also desirable, since this is an essential aspect of safe and comfortable vasectomies. Trainees should be from institutions with a documented demand for vasectomy services, where they will have the opportunity to perform the procedure frequently after the training programme.

Evaluation and certification of trainees

Each trainee should be issued a certificate of competence after successfully completing theoretical and practical training. The teacher should assess competence by determining whether the trainee has demonstrated adequate knowledge and practical skills.

The number of procedures the trainee observes, assists with, and performs will vary depending on the trainee's background and skills. In some programmes the requirements are ten cases as an observer, ten cases as an assistant, and ten solo procedures under direct supervision. According to an international expert committee (35), each individual trainer or training institution should set the minimum number of procedures, but it is recommended that a minimum of five solo procedures under direct supervision be performed.

For all trainees, competence in the performance of vasectomy should carry more weight than the number of procedures performed. For some trainees, 15 or more solo procedures may be needed while other trainees may not qualify for certification, regardless of the number of cases performed. The judgement of a skilled trainer is the most important factor when determining competence and certification.

It is advisable that graduates of a training programme be observed and evaluated within six months of completion of the training course.

13. Evaluation

Purposes of evaluation

Evaluation is the process of systematically collecting and analysing information about a specific programme or activity, in order to decide on alternative courses of action for the future. Simply stated, the purposes of evaluation in vasectomy programmes are to improve current activities and services and to assist the programme manager in planning for the future.

Evaluation is a decision-making tool and an integral part of the managerial process for vasectomy programme development and implementation.

Evaluation helps managers to develop vasectomy programmes in rational and systematic ways. While the conclusions drawn from an evaluation exercise are valuable, the very process of evaluation may be just as important and useful because it often forces the manager to observe the programme more closely. This, in turn, may yield a better understanding and a more constructive and flexible approach to future programming decisions.

Some basic evaluation principles

The process of evaluation includes three steps:

- Identifying the evaluation subject(s).
- Developing a plan or design for doing the evaluation.
- Implementing the evaluation.

Because evaluation is an integral part of the managerial process, developing and implementing an evaluation scheme

should proceed concurrently with the planning and implementing of the vasectomy programme itself.

Evaluation is the responsibility of the programme manager, regardless of his or her level of responsibility. The local clinic director, the district supervisor, and the national programme manager should all perceive evaluation as part of their duties. Some of the evaluation subjects and indicators that may concern programme managers at different levels are discussed below.

Evaluation designs vary in complexity, depending on the nature of the programme being evaluated, the availability of time and resources, and the sophistication and training of the personnel carrying out the evaluation. The programme manager should not hesitate to call upon those trained in evaluation methodology to assist in the evaluation design and implementation. For a more comprehensive treatment of the general principles and methodologies of programme evaluation that can be applied to vasectomy programming and managerial decision-making see References 36 and 37.

Evaluation topics and indicators

The information provided here is by no means exhaustive; it suggests and illustrates the types of data about programme performance that are of value to the programme manager. The final selection of evaluation topics and indicators depends on what the programme manager considers important for future decisions and planning.

Prevalence

Prevalence is the number, or percentage, of couples of reproductive age who are currently protected by vasectomy. Surveys are the usual means of obtaining prevalence information. Prevalence data are available for many countries from contraceptive prevalence surveys. When studies are conducted both before and after a vasectomy programme has been established, managers can compare the prevalence rates to help determine if the programme has been well received and successful. They can also compare vasectomy with other contraceptive methods, to see if it has

become more widely accepted since the start of the programme.

Programme performance indicators

Programme performance indicators are standard statistical indices or measures that allow managers to review levels, trends, and changes in service outputs and characteristics over a period of time. They help the manager to evaluate and to answer such questions as "Is the programme operating at the desired level of output?" "Is it serving the desired client population?" "How are clients referred for services?" or "Why do clients choose vasectomy?"

Data for certain programme performance indicators are easily collected, tabulated and analysed on a routine, continuous basis. Some of the most frequently used indicators in vasectomy programmes are as follows.

(a) Number of vasectomy clients

Simple tabulations can be done by month, quarter, year, or some other standard reporting period. Figures can be easily displayed in bar charts or graphs.

(b) Number of clients rejected

It is useful to monitor both the number (or rate) of clients who are rejected by the programme and the reasons for rejection. Extremely low rejection rates may indicate that clinic staff are failing to assess carefully or counsel clients or to carry out thorough preoperative physical examinations. On the other hand, if rejection rates are very high, then the programme manager should examine whether client selection criteria are too strict, or whether clients are receiving misleading or inaccurate information about vasectomy from referral agents or the information programme.

(c) Age of vasectomy clients

This can be expressed either as the average age of clients in a standard reporting period, or as a distribution of clients within a series of age intervals (e.g., 25–29, 30–34, etc.).

(d) Age of the clients' spouses

Again, this can be calculated as an average for all clients or as a distribution. The age of a client's spouse is perhaps a more sensitive indicator than the age of the client because it provides an indication of the number of years the woman will be protected from pregnancy.

(e) Number of living children of the clients

Expressed as an average, this information is important because it helps managers to deduce the demographic impact of vasectomy and its effect on the programme patterns. In some programmes, it may be desirable to distinguish between male and female living children as a way of uncovering possible sex preferences for children, by the parents.

(f) Primary information sources

This is a tabulation of clients according to the source of information that was most important in their decision to have a vasectomy. These figures allow managers to identify the most effective methods of information and education. Sources might be categorized as friends, relatives and neighbours; media (e.g., radio, television, newspapers, printed materials); programme personnel (e.g., field workers, clinic personnel, community distribution agents); other health personnel (e.g., non-programme health workers, private practitioners); other. Classifications can, of course, be modified according to local programme characteristics.

The above performance indicators can be derived easily from the medical record forms of vasectomy clients. Thus, each form serves not only as the official history of a performed vasectomy, for medical and legal purposes and future reference, but also as the source document for programme monitoring. Every vasectomy programme, especially a multiple-site or national programme, should develop a standard client medical-record form. Guidelines for developing such a form are given in Annex 6.

Non-routine studies and surveys

In addition to the routine and continuous monitoring of basic service statistics to assess the satisfactory development

of programmes, more sophisticated programme evaluation exercises are sometimes needed to make more refined analyses and to modify programme design for better results. Some of the major types of these studies are briefly discussed below.

Client characteristics

Frequently, the characteristics of clients are studied in order to have a clearer picture of the men programmes tend to attract. Such characteristics include: occupation, income, residence, religion, and education. Often such studies can be done easily with data compiled from client medical-record forms or through interviews conducted before or after surgery. Occasional studies of client characteristics complement the routine analysis of basic service statistics.

Client satisfaction or regret

A major area of concern for all vasectomy programmes is the degree to which clients are satisfied with or regret their decisions. Dissatisfaction among clients can have a serious impact on the future development of the programme. Abnormally high rates of regret often indicate poor client screening, counselling, or treatment. Assessment of client satisfaction is most easily done at the time of client follow-up visits, or, over the longer term, through special surveys involving home visits or mailed questionnaires.

Knowledge and attitudes of clients and providers

Evaluating knowledge and attitudes about vasectomy can be extremely important in identifying fears, misinformation, rumours, and other negative influences on vasectomy acceptance. After identifying such factors, programme managers can design information strategies to correct false impressions and negative attitudes. Because service providers sometimes oppose or resist vasectomy programmes, it is important to assess their knowledge and attitudes as well as those of potential clients. Knowledge and attitude surveys are not only important among providers and clients, but in the community in general.

Availability and accessibility of services

Unavailability or limited availability of services can be a major obstacle to vasectomy acceptance. Several factors are involved in this issue. Policies and legal regulations about age, parity, consent, and medical personnel may have an impact on the availability of services and client eligibility. In addition, the number and location of service sites and the type of service-delivery channels can affect accessibility. Studies of all these factors comprise an important information base when planning or modifying programmes.

Programme design

Different types of service-delivery systems, information and education programmes, client referral systems, and client flow systems can affect the efficiency, effectiveness, and cost of vasectomy programmes. It is important to evaluate programme design features, especially when modifications are being considered. Conducting a small pilot or demonstration project is a useful way of evaluating an idea before it is implemented on a broad scale.

Cost-effectiveness

Very little is known about the total costs of vasectomy services or about the cost-effectiveness of various delivery systems (e.g., clinics versus mobile teams) or information and education approaches (e.g., community referral versus mass media). Cost studies can be difficult, involving sophisticated cost-accounting techniques, but they are essential to determine the most efficient programme designs.

Incentives and disincentives

Another important study area is client compensation payments, incentives and disincentives. Several questions need to be examined, for example: "Are these devices cost-effective?" "Do they have social side-effects?" "When disincentives are first put into place, are people unjustly penalized for children they already have?" These important issues need to be examined and resolved in ways appropriate to the local situation.

Medical research issues

In addition to programme evaluation, there are a number of medical issues that require clinical research in order to deliver better, safer services. For example, there is no "procedure of choice" for performing vasectomy. Methods and approaches vary widely among surgeons. Thus, some questions to be studied include: "Should a fascial barrier be interposed between the divided ends of the vas deferens?" "Which is the better method of occlusion: ligation or electrocoagulation?" "Should a segment of the vas be removed, or is simple division adequate?" "Are new techniques that are being tested better than older methods?" The collection and analysis of comparative data may lead to a more standardized technique, uniform training, and better results.

Studies on the short-term and long-term safety of the procedure are also important. Epidemiological cohort and case-control studies should be done.

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Annex 1. Sources of technical and funding assistance for vasectomy programmes

Agency	Principal type(s) of assistance
Asociación Pro-Bienestar de la Familia Colombiana (PROFAMILIA) Calle 34 No. 14-52 Bogotá 1 Colombia	Training in vasectomy technique and orientation to the organizing of reproductive health programmes for men.
Association for Voluntary Surgical Contraception (AVSC) 122 East 42nd Street New York, NY 10168 USA	Grants and technical assistance for service, training, information and counselling programmes, and for surgical and operating room equipment.
Bangladesh Association for Voluntary Sterilization (BAVS) Road 132, House No. 160 Dhanmondi Residential Area Dhaka 5 Bangladesh	Training in vasectomy technique.
Family Health International (FHI) Research Triangle Park NC 27709 USA	Support for clinical, epidemiological and programme-oriented research.

Family Planning Association
of Nepal (FPAN)
Leknath Marg
P.O. Box 486
Kathmandu
Nepal

Orientation to the
planning and
management of mobile
vasectomy teams.

Family Planning International
Assistance (FPIA)
810 Seventh Avenue
New York, NY 10019
USA

Grants and equipment
for service, training,
and information
programmes.

International Planned
Parenthood Federation (IPPF)
Regent's College
Inner Circle
Regent's Park
London NW1 4NS
England

Grants, technical
assistance, and
equipment for service,
training, and
information
programmes. Assistance
is restricted primarily
to IPPF affiliates.

The Pathfinder Fund
1330 Boylston Street
Chestnut Hill
MA 02167
USA

Grants and equipment
for service, training,
and information
programmes.

Population Communication
Services (PCS)
Population Information Program
The Johns Hopkins University
624 North Broadway
Baltimore, MD 21205
USA

Grants and technical
assistance for
information programme
development; mass
media, print materials,
and person-to-person
communication.

The Program for the Introduction
and Adaptation of Contraceptive
Technology (PIACT)
1255 23rd Street, N.W.
Washington, DC, 20037
USA

Grants and technical
assistance for
development of
information materials
for family planning
users and providers.

Promoção de
Paternidade Responsável
(PRO-PATER)
Rua Margues de Paranagua, 359
01303-São Paulo
SP, Brazil

Training in vasectomy
technique and
counselling.

Thai Association for
Voluntary Sterilization (TAVS)
101 MU3 Prapinklaw-
Nakonchaisri Road
Chimlee Subdistrict
Bangkok 10170
Thailand

Assistance in arranging
orientation to
successful programmes
in Thailand.

United Nations Fund for
Population Activities (UNFPA)
220 East 42nd Street
New York, NY 10017
USA

Support to government
services, training
programmes and
equipment
procurement.

World Federation of Health
Agencies for the Advancement of
Voluntary Surgical Contraception
(WFHAAVSC)
122 East 42nd Street
New York, NY 10168
USA

Technical assistance in
policy development and
education for
professionals.
Educational materials,
policy statements,
standards, and
guidelines for
professionals.

World Health Organization
Avenue Appia
1211 Geneva 27
Switzerland

Technical collaboration
and grants for
development of
programmes and
information materials,
provision of supplies
and equipment,
evaluation and follow-
up.

WHO Regional Office for Africa
P.O. Box No. 6
Brazzaville
Congo

WHO Regional Office for the
Americas/Pan American Sanitary Bureau
525 23rd Street, N.W.
Washington, DC, 20037
USA

WHO Regional Office for the
Eastern Mediterranean
P.O. Box 1517
Alexandria 21511
Egypt

WHO Regional Office for Europe
8 Scherfigsvej
2100 Copenhagen
Denmark

WHO Regional Office for South-East
Asia
World Health House
Indraprastha Estate
Mahatma Gandhi Road
New Delhi - 110002
India

WHO Regional Office for the
Western Pacific
P.O. Box 2932
Manila 2801
Philippines

In addition to the organizations listed in this annex, support may be available from a number of governmental and intergovernmental agencies. For a more complete listing of sources of assistance, see: LEWISON, D. Sources of population and family planning assistance, *Population reports*, Series J, No. 26 (1983); and UNITED NATIONS FUND FOR POPULATION ACTIVITIES, *Guide to sources of international population assistance*, 4th ed., New York, 1985.

Annex 2. Sample question-and-answer brochure/pamphlet for vasectomy clients

Question-and-answer brochures are inexpensive, useful and good additional information for any vasectomy programme. Their purpose is to answer briefly in simple, nontechnical language the questions most frequently asked by men considering vasectomy. Brochures can be made available in family planning clinics or distributed in the community by programme personnel. They help to provide correct information, ease concerns, and reinforce a client's decision.

Brochures or information sheets, are usually designed specifically for each programme, taking into consideration literacy levels and audience sophistication as well as common local misunderstandings about vasectomy. Drawings or pictures may enhance the value and attractiveness of the brochure. A brochure or information sheet should be pretested with a small sample of clients to ensure its appropriateness.

Below are some typical questions and answers frequently included in client brochures or information sheets.

What is vasectomy?

Vasectomy is a minor surgical operation for men who do not want any more children. It should be considered a permanent method of contraception.

How is vasectomy done?

Vasectomy is a safe and simple procedure that takes 15–20 minutes using a local anaesthetic. There is little discomfort, and you do not have to go to hospital. One or

two small incisions are made in the scrotum¹ (sac), and the two tubes that carry sperm¹ from the testicles¹ are closed. After the operation the sperm can no longer mix with the semen¹ and cause pregnancy.

Is the operation effective immediately?

Because there are still sperm in the tube it usually takes 15 ejaculations¹ to clear the passage. You and your partner should, therefore, use some form of contraception for the first 15 times you have sexual intercourse. The doctor may ask you to provide a sample of your semen after 15 ejaculations, or after two or three months, for examination.

How soon can I go back to work after the operation?

Clients are usually recommended to rest for a day or two after vasectomy, especially if their work involves heavy lifting or other strenuous activity.

Does the operation ever fail?

There is a small risk that even after 15 ejaculations the tubes are not clear of sperm, or that the tubes rejoin spontaneously, resulting in failure.

What happens to the sperm after vasectomy?

Sperm continue to be produced by the testicles. Since the tubes through which sperm pass are closed, the sperm are absorbed by the body like any other unused cells. This is a natural process that occurs even in nonvasectomized men who abstain from sex for a while.

¹ Many programmes substitute nontechnical words from local everyday language for body parts and functions so that information is easily understood.

How soon can I have sexual intercourse after vasectomy?

Sexual activity may be resumed one week after the operation, or even earlier if there is no discomfort. However, remember to use contraceptives until your semen is totally free of sperm.

What happens to my sex life after vasectomy?

Vasectomy does not change the nature or enjoyment of sexual intercourse. The testicles continue to produce male hormones, and the man continues to have erections and to ejaculate semen. Since the fear of pregnancy is removed, many people enjoy a better sex life after vasectomy.

How do I know if vasectomy is suitable for me?

You are most likely to benefit from vasectomy if:

- You have all the children you want.
- You are sure that you will not want any more children even if your circumstances change (such as death of a child or remarriage).
- You or your partner do not want to use other methods of birth control.

Vasectomy may not be suitable for you if:

- There is a chance that you or your spouse may change your mind.
- You are not totally convinced of the need for permanent contraception.
- You have strong sexual problems or fears.
- The doctor advises against the operation because of your physical or psychological condition.

What are the benefits of vasectomy?

Vasectomy gives a man control over the size of his family. After sperm have been cleared from the tubes, you

will never have to worry about making your partner pregnant. Vasectomy is a simpler operation than female sterilization.

Where can I get more information?

From your own physician, or _____ .

(add address of vasectomy
programme or family planning
service)

Annex 3. Sample postoperative instructions to clients (oral and written)¹

Written postoperative instructions should be provided for literate and illiterate men. They are especially important to help men recognize complications and to know where to go for treatment. The staff should review each point with each client before he leaves the facility. An illiterate man can usually find someone to read the instructions if he forgets.

Short written instructions specific to each programme will need to be developed. The sample material below is not intended as a model but rather as an illustration of points of information that should be provided.

1. Following surgery, return home and rest for the remainder of the day. You may be able to resume your normal activities after two or three days. Avoid physical work and strenuous exercise for at least 48 hours.
2. Wear the scrotal support for 48 hours during both waking and sleeping hours. After that, you may wear it as long as you are more comfortable with it than without it.
3. You may resume sexual intercourse after two or three days if you feel comfortable, but stop if it is uncomfortable. Also, avoid pulling, rubbing, or otherwise irritating the incision.
4. The stitches will dissolve themselves and do not have to be removed. [Note: This instruction must be modified if nonabsorbable sutures such as silk are used.]
5. Remember, to start with, you can still make your partner pregnant. For most men, sperm will not be cleared from the tubes until after 15 ejaculations. Until then, use another method of family planning to prevent

¹ Adapted with permission, from HATCHER, R. A. ET AL., *Contraceptive technology*, 1984-85, 12th ed., New York, Irvington, 1984.

pregnancy. The most certain way of knowing you are sterile is for a doctor to use a microscope to look for sperm in your semen. You may bring your doctor a specimen of your semen for a sperm count after you have had 15 ejaculations.

6. If you have pain or discomfort, simple pain killers taken at intervals of four to six hours usually give adequate relief. [Note: Dose and name of the analgesic should be specified.]
7. Do not shower or bathe for the first full day following the vasectomy.
8. It is important for you to know what is normal and what is abnormal following your surgery. There will probably be some pain and swelling in the scrotal region; the scrotum may be somewhat discoloured (bruised). This is normal and should not worry you. Occasionally, blood from a tiny blood vessel may escape into the scrotum at the time of surgery, and bleeding may continue. Notify the doctor or the health worker if you have any of the following danger signals or if you notice any unusual body changes:
 - Fever (over 38.0°C or 100.4°F).
 - Blood or pus oozing from the site of the incision.
 - Excessive pain or swelling.

For any of these problems, you should go to the following location for medical care without delay:

(add appropriate address)

Annex 4. Kits available from UNICEF

Vasectomy kit

All of the items listed below can be ordered as one single kit that can be obtained from UNIPAC (UNICEF Procurement and Assembly Centre) Freeport – DK 2100 Copenhagen, Denmark.

<i>Item description</i>	<i>Quantity</i>	<i>UNIPAC catalogue number</i>
Instrument tray, covered, 225 × 125 × 50 mm	1	0270000
Clamp, towel, Backhaus, 75 mm, box lock	4	0712000
Forceps, haemostat, straight, Kelly, 140 mm	4 pairs	0724500
Forceps, haemostat, curved, mosquito, Halstead, 125 mm	2 pairs	0730000
Forceps, tissue, 4 × 5 teeth, Allis, 150 mm	2 pairs	0738000
Knife handle, surgical, for minor surgery, size 3	1	0745000
Knife blade, surgical, for minor surgery, size 10 (5 per pack)	10 packs	0746000
Needle, hypodermic, 0.70 × 13 mm/22 gauge × $\frac{1}{2}$ " (1.3 cm), Luer (box of 12)	1 box	0750600
Needle, hypodermic, 0.50 × 6.3 mm/25 gauge × $\frac{1}{4}$ " (0.6 cm), Luer (box of 12)	1 box	0751100
Needle, suture, abdominal, Keith, straight	2 packs	0758600
Needle, suture, catgut, Mayo, $\frac{1}{2}$ circle	2 packs	0758900

<i>Item description</i>	<i>Quantity</i>	<i>UNIPAC catalogue number</i>
Pouch with drawstring, 210 × 290 mm, 8-gauge PVC plastic	1	0759760
Scissors, suture, angled- on-flat new, 140 mm	1 pair	0774645
Syringe, anaesthetic (control), 5 ml Luer	1	0781900
Syringe, hypodermic, 5 ml, spare for anaesthetic syringe (control), 5 ml Luer	4	0781900

**Sterilization kit for surgical instruments
and dressings**

9960000

All of the items listed can be ordered as one single kit, and can be obtained from UNIPAC (UNICEF Procurement and Assembly Centre) Freeport – DK 2100 Copenhagen, Denmark.

Stove, kerosene, single burner pressure type	0170000
Sterilizer, instrument, 200 × 100 × 60 mm, alcohol burner	0162500
Forceps sterilizer (utility) 200 mm VAUGHN CRM	0736001
Forceps sterilizer cheatle 265 mm SS	0735200
Sterilizer dressing press CKR 350 × 380 mm/39 l Fuel	0156000

Annex 5. Model curriculum for a vasectomy training programme¹

Subject	Contents	Methods	Trainer
1. Rationale for family planning, including vasectomy: population, health, and human rights issues	Review of the country's population statistics (birth rate, death rate, rate of natural increase, fertility rate, etc.) and major health indicators (nutrition status, infant and maternal morbidity and mortality, life expectancy, etc.).	Lecture with supporting visual and written materials to illustrate statistics	Demographer Medical leader (physician and/or nurse-midwife)
	Implications of these statistics and indicators for socioeconomic development (including labour supply and future employment) and the health of the population. Effects of timing and spacing of births, number of children, and age of woman on the health of the mother and of the child. How family planning can help couples plan the timing, spacing, and number of their children.	Group discussion with questions and answers	
2. Current status of family planning and vasectomy in the trainee's country	Background and history of family planning programmes in the country. Knowledge, attitudes, and practices, particularly for vasectomy. Major cultural, social, or psychological barriers, particularly for vasectomy.	Lecture Group discussions with questions and answers	Social scientist or medical leader

Obstacles to availability of quality services:
lack of manpower, facilities, information and
education at all levels, political or legal
support, etc.:

- Need to overcome cultural, social, and
psychological barriers; legal and policy
constraints.
- Need for adequate facilities and trained
personnel to provide services.
- Need for support at all levels: government
officials, opinion leaders, community leaders,
medical community, health and social
services professionals, general public.
- Need for strong information and education
programme to encourage informed decision-
making.

Responsibility of the public and private
sectors for manpower development and
service delivery.

Goals and objectives of family planning and
vasectomy programmes.

Role of the health professional in the
national family planning effort.

The health professional as educator,
motivator, outreach worker, counsellor,
patient advocate, referrer and researcher.

Ministry of
Health official
and/or leader
from the private
family planning
sector

Physician or
counsellor

(continued)

¹ Reproduced by permission, from *Training for voluntary surgical contraception*, World Federation of Health Agencies for the Advancement of Voluntary Surgical Contraception. New York, 1986.

Subject	Contents	Methods	Trainer
3. Reproductive anatomy and physiology	<p>Applied anatomy and physiology of male reproductive system.</p> <p>Applied anatomy and physiology of female reproductive system.</p> <p>Conception and pregnancy.</p>	Lecture with illustrated flip chart	Physician
4. Temporary and permanent methods of family planning	<p>Currently available temporary methods—how they work, effectiveness, advantages and disadvantages, risks and benefits:</p> <p>—Systemic methods (pills, injectables, etc.)</p> <p>—Intrauterine methods (IUD)</p> <p>—Barrier methods (diaphragms, caps, condoms, spermicides, etc.)</p> <p>—Natural methods (rhythm, coitus interruptus, etc.)</p> <p>—Traditional methods</p> <p>Appropriate candidates for temporary methods: couples who want to plan their families, either to delay the first birth or to space subsequent births.</p> <p>Currently available permanent methods: how they work, effectiveness, advantages and disadvantages, risks and benefits.</p>	<p>Lecture supported by visual aids: flip charts, anatomical models, and films</p> <p>Group discussion with questions and answers</p>	Physician or nurse-midwife
5. Counselling and informed consent	<p>Acceptability of voluntary surgical contraception.</p> <p>Patient recruitment and psychological evaluation.</p>	<p>Formal presentation</p> <p>Group discussion</p>	Counsellor or health educator

Empathy with the patient.

Appropriate candidates for vasectomy:
couples who do not want any more children,
or women in one or more of the high-risk
groups (high parity, older than 35 years of
age, history of obstetrical complications or
multiple caesarean sections, other health
problems that are contraindications to
pregnancy or to the use of other family
planning methods).

Preoperative counselling and postoperative
instructions:

- Discomforts, risks, and benefits of
vasectomy.
- Discomforts, risks, and benefits of all other
available methods, including female
sterilization.
- Postoperative care, instructions, and follow-
up.

Informed consent procedures

Ensuring voluntarism.

Addressing myths and fears about vasectomy,
for example the effect of the vasectomy
procedure on sexual performance, in group
or individual sessions.

Assessing the individual's ability to understand
the intended permanency of the procedure.

Observation of
counselling
procedure at the
clinic

Interview with
vasectomy client

(continued)

Subject	Contents	Methods	Trainer
6. Preoperative patient evaluation	Psychological evaluation including status of marital relationship. Family and individual medical history: past illnesses, past surgery, allergies, etc. Physical examination. Indications and contraindications.	Lecture Practical training	Physician
7. Preoperative patient instructions	Shaving/clipping and cleaning/bathing Dressing the patient	Lecture	Operating theatre nurse
8. Asepsis and equipment maintenance	Basic hygiene. Various types of sterilization equipment: —Relative effectiveness. —Guidelines for each method: temperature, time. —Indications and contraindications for use. Preparing the operating theatre, instruments, materials, and equipment. Preparing the patient. Hand washing and scrubbing for the surgeon. The use of gloves. Maintaining a sterile field. Cleaning, care, and storage of instruments and equipment after surgery.	Lecture Practical training aseptic technique maintaining sterile field	Operating theatre nurse or physician

9. Anaesthesia, analgesia, and resuscitation	<p>Anaesthesia used with vasectomy.</p> <p>Anaesthetic drugs: pharmacology, risks and benefits, indications and contraindications.</p> <p>Administration of anaesthesia.</p> <p>Patient monitoring:</p> <ul style="list-style-type: none"> —Preoperative —Intraoperative —Postoperative <p>Potential complications resulting from anaesthetic and analgesic action and their management.</p> <p>Cardiorespiratory resuscitation manoeuvres.</p> <p>Drugs and equipment required for resuscitation.</p>	<p>Lecture</p> <p>Demonstration of resuscitation using models</p> <p>Practical training: administering local anaesthesia</p>	Physician
10. Vasectomy technique	<p>Teamwork and surgical assistance.</p> <p>Common difficulties encountered during surgery.</p> <p>Local anaesthesia practices:</p> <ul style="list-style-type: none"> —Effective local infiltration of skin and vasa deferentia to avoid pain. —Communication with patient during surgery. —Gentle technique. 	<p>Lecture and demonstration</p> <p>Films or slides</p> <p>Practical training: observing, assisting with, and performing surgery</p>	Physician or surgeon

(continued)

Subject	Contents	Methods	Trainer
10. Vasectomy technique (<i>continued</i>)	<p>—Appropriate analgesia and sedation levels to prevent discomfort and to keep the patient responsive and cooperative throughout the procedure.</p> <p>Procedure:</p> <p>—Identification of the vas deferens.</p> <p>—Scrotal incision.</p> <p>—Occlusion: vasal division and ligation; vasal division and ligation with or without fascial interposition; vasal division and electrocoagulation with or without fascial interposition; measures to prevent recanalization.</p> <p>Closing the incision.</p> <p>Morbidity and mortality.</p> <p>Methods of recording and reporting.</p>	Lecture	<p>Surgeon and health educator</p> <p>Family planning counsellor to teach part on psychological sequelae</p>
11. Complications and their prevention and management	<p>Early side-effects: swelling, tenderness.</p> <p>Early complications: infection, haemorrhage, haematoma.</p> <p>Secondary complications: granuloma.</p> <p>Sequelae: psychological sequelae including problems of sexual performance.</p> <p>Management of complications.</p> <p>Failures:</p> <p>—Failure to achieve azoospermia.</p>		

	—Spontaneous recanalization.		
	—Operating on the wrong structure.		
12. Postoperative care	Postoperative instructions to patient: care of the wound, rest, bathing, etc. Outcome of vasectomy procedure: progressive disappearance of spermatozoa, semen analysis, protected intercourse for 15 ejaculations.	Lecture Practical training: postoperative instructions and explanation for patient	Physician or surgeon
13. Reversal of vasectomy	Anastomosis procedure: —Operating microscope. —Magnifying lenses (loupes).	Lecture Audiovisual aids (Because no training in reversal techniques is provided, demonstration and practice are not needed.)	Physician with knowledge of reversal surgery
14. Organization, administration, and evaluation of the vasectomy clinic	Establishing and managing the vasectomy clinic: —Physician as leader of vasectomy service-delivery team. Encouraging other physicians in hospitals and the community to perform vasectomy. Information and education. Programme planning and project development. How to evaluate programme impact. How to evaluate quality of care.	Lecture Group discussion with questions and answers	Clinic administrator, physician or evaluator

Annex 6. Guidelines for developing and using client medical record forms for vasectomy programmes

The types of information that should be included on the standard client medical record form should be determined for every programme. The following items are recommended:

1. *Client identification information*, including name, marital status, address, age, number of living children, etc.
2. *Client assessment/counselling information*, including reasons for requesting vasectomy.
3. *Informed-consent form*, properly completed.
4. *Preoperative medical assessment*, including medical history, physical examination, vital signs, and laboratory test results (if any).
5. *Medicines administered*, including doses and times given.
6. *Surgical procedure notes*, including type of procedure, anaesthesia, etc.
7. *Postoperative and discharge notes*.
8. *Complications and outcomes of complications*.
9. *Follow-up data*, including results of semen analysis (if done).

Format and storage

If the form is brief and concise, clinic staff are more likely to complete it accurately and completely. Some programmes use a single sheet of paper, printed on both sides, for all information, including the client's informed consent. This eliminates the risk of misplacing important information, such as laboratory results and the consent form. Local regulations should be checked to determine how long records must be kept and maintained. Client medical records should be easily retrievable.

Annex 7. Additional sources of information

There are a number of publications the reader may consult to explore further the various aspects of vasectomy.

For a comprehensive yet concise overview, see LISKIN, L. ET AL., Vasectomy: safe and simple, *Population reports*, Series D, No. 4 (1983).

For a comprehensive compilation of data and information on vasectomy for various countries (including prevalence, incidence, laws and regulations, acceptor characteristics), see ROSS, J. A. ET AL., *Voluntary sterilization: an international factbook*, New York, Association for Voluntary Surgical Contraception, 1985.

One of the most detailed historical accounts of vasectomy is to be found in WOLFERS, D. & WOLFERS, H., *Vasectomy and vasectomania*, London, Mayflower Books, 1974.

Finally, many of the ideas about vasectomy programming presented in this publication derive from the presentations and discussions at the First International Conference on Vasectomy which was held in Colombo, Sri Lanka in October, 1982. For a report summarizing the deliberations at this conference together with a selection of papers presented at the meeting, see ATKINS, B. S. & JEZOWSKI, T. W. *Studies in family planning*, 14, 89-95 (1983).

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Well managed vasectomy services can play an important role in helping countries achieve their family planning goals. The guidelines in this book, which are based on experience gained in successful vasectomy programmes around the world, are intended for people responsible for initiating or expanding vasectomy services, within family planning and health programmes. They cover programme issues such as the advantages and disadvantages of vasectomy, service delivery, the importance of effective communication, and programme evaluation. The technical and medical details given provide necessary background information of value to all programme personnel.

The guidelines contain enough detail to be of practical value for those running a vasectomy programme for the first time, but are also flexible enough to allow for adaptation to different societies and cultures.