

CHAPTER 1

# OVERVIEW OF MALE CIRCUMCISION AS AN HIV PREVENTION STRATEGY





## This chapter provides information on the following:

- need to prioritize safety when providing male circumcision
- various terms used for male circumcision, from clinical and programmatic perspectives, and how the procedure is performed
- biomedical basis for male circumcision for reducing the risk of HIV infection
- World Health Organization's minimum package of services to be provided in male circumcision for HIV prevention programmes and optional expanded service packages
- importance of informed consent (and assent for minors) to ensure that clients are opting to undergo the procedure voluntarily
- importance of ensuring confidentiality and privacy, and providing kind, respectful care to all clients seeking male circumcision
- benefits and risks of male circumcision, including benefits to female partners
- typical client flow through male circumcision services

## 1.1. INTRODUCTION

More than 14 million adolescent and adult males in east and southern Africa have undergone male circumcision (removal of the penis foreskin) for HIV prevention in the past decade. Since 2007, the World Health Organization has recommended male circumcision as part of a comprehensive public health prevention effort to end the region's HIV epidemic. Although much of the information and guidance provided in this (*Manual for male circumcision under local anaesthesia and HIV prevention services for adolescent boys and men (Manual)*) is based on experience in limited-resource settings in African countries, the *Manual* is intended to support safe male circumcision anywhere in the world, wherever providers are doing circumcisions on adolescent and adult males for health promotion and partial protection against HIV (see Box 1.1). The many young men who are electing to undergo the procedure are helping to protect their own health and well-being and the well-being of their partners. In this elective surgical procedure, every effort must be taken to mitigate the risk of adverse events. The provider who performs the procedure, along with his or her team, is responsible for providing the safest care possible.

### Box 1.1. Intent of *Manual for male circumcision under local anaesthesia and HIV prevention services for adolescent boys and men (Manual)*

This *Manual* is intended to support safe conventional or device-based surgical circumcision anywhere in the world where providers are doing circumcisions on adolescent and adult males for health promotion and partial protection against HIV.

### 1.1.1. What male circumcision is and how it is performed

Male circumcision is the permanent and complete removal of the foreskin (or prepuce), the fold of skin that covers the head (or glans) of the penis. Male circumcision can be performed by several conventional or device-based surgical methods (see Box 1.2). It can be performed for medical reasons or as part of traditional and religious practices (called traditional foreskin cutting in this *Manual*). Male circumcision can be performed for therapeutic reasons, such as to correct a pathological condition (for example, phimosis). It can also be performed for elective purposes, such as improved hygiene, prevention of HIV or other sexually transmitted infections, and aesthetic preferences. In this *Manual*, male circumcision refers to elective (versus therapeutic) circumcision of males performed by trained health care providers, unless otherwise noted.

This *Manual* is primarily concerned with male circumcision for adolescents—at least 10 years old—and adults performed under local anaesthesia. The 10-year age cut-off is based on evidence of safety and the client's capacity to assent and cooperate (1). Male circumcision may also be performed during early infancy, that is, under two months of age. For more information on medical circumcision of male infants, refer to the *Manual for early infant male circumcision under local anaesthesia* (2) and its accompanying learning package.

Although traditional foreskin cutting is not the subject of this *Manual*, some information on the practice is relevant here. Traditional foreskin cutting has been widely performed for religious and cultural reasons, often within two weeks of birth or at the beginning of adolescence, as a rite of passage into adulthood. Whether performed for religious or cultural reasons, traditional foreskin cutting is often associated with higher rates of complications than circumcision that is performed within the formal health care sector and has sometimes even led to death (3, 4). For additional information on this practice, as well as considerations for male circumcision programmes in countries where traditional foreskin cutting is practiced, refer to the World Health Organization's 2010 consultation with traditional circumcision providers (5).

### Box 1.2. Important note about device-based surgical methods

In 2013, the World Health Organization stated that the male circumcision devices it prequalifies are efficacious, safe and acceptable as additional methods of male circumcision for HIV prevention among healthy men. A list of devices that have been prequalified by the World Health Organization is available on its website. Although some information and guidance related to these devices are provided in this *Manual*, no information is given for applying or removing the devices. Providers who perform circumcisions using device-based surgical methods should be appropriately trained and competent in the use of the specific device (and consult manufacturer's instructions for use). See the Bibliography section for additional information.

## 1.1.2. Male circumcision and HIV infection

A randomized controlled trial is the gold standard for scientific studies, and three such trials conclusively determined that male circumcision reduces female-to-male HIV transmission by about 60% (6–8). Long-term follow-up demonstrates that the protective effect continues beyond five years (9–11). Responding to this evidence, in March 2007, the World Health Organization and UNAIDS issued recommendations on male circumcision and HIV prevention: male circumcision programmes would have the greatest population-level impact in countries with a primarily heterosexually driven epidemic, high prevalence of HIV, low prevalence of male circumcision and large populations at risk for HIV. There is insufficient evidence to suggest that circumcision reduces HIV infection among men who have sex with men (12, 13). More recently, reduced incidence of HIV has been shown in community-level studies of HIV prevalence in areas where rates of male circumcision have increased through male circumcision programmes (9, 14).

## 1.1.3. Biological explanations for the protective effect of male circumcision

The mechanisms through which male circumcision reduces the risk of HIV transmission have been widely studied (15), resulting in the following findings:

The primary target cells through which HIV enters the body are immune system target cells with CD4 receptors, including Langerhans cells. These cells are present in high density in the epithelium of the inner foreskin and are close to the surface (16–22).

In an in vitro study, HIV uptake by cells from the mucosal surface of the foreskin was seven times more efficient than uptake by cells from tissue of the female cervix (23).

The highly vascularized foreskin mucosa and the mucosa at the frenulum are prone to tearing and bleeding during intercourse. These microinjuries allow easy entry of HIV into the bloodstream (22).

A factor that further facilitates transmission of the virus is the presence of an ulcerative sexually transmitted infection—such as herpes simplex, chancroid or syphilis—which tends to be more common in uncircumcised men (22, 24, 25, 28–30).

Research on the microbial environment of the foreskin has demonstrated a high concentration of anaerobic bacteria causing inflammation, which may recruit immune system target cells to the surface of the foreskin (26, 27, 31).

## 1.2. WORLD HEALTH ORGANIZATION'S MINIMUM PACKAGE OF SERVICES AND RECOMMENDATIONS FOR MALE CIRCUMCISION PROGRAMMES

In 2007, the World Health Organization and Joint United Nations Programme on HIV/AIDS (32) recommended male circumcision as a strategy that provides partial protection against HIV infection and that it is an important part of a comprehensive HIV prevention package. Recently, viral suppression with early initiation of antiretroviral treatment has been identified as another key prevention strategy. Based on the evidence of partial protection provided by circumcision, the World Health Organization now recommends the following, along with services directly related to the circumcision procedure, as essential components in the minimum male circumcision package:

- HIV testing services
- active or supported referral of clients who test positive for HIV to HIV care and treatment programmes
- screening for sexually transmitted infections and provision of or referral for treatment
- promotion and provision of condoms
- promotion of safer sex practices (see Box 1.3)

### Box 1.3. Safer sex practices

Safer sex practices include delaying the age of first intercourse, abstinence from penetrative sex, reduction in the number of sexual partners, having only one sexual partner at a time, and correct and consistent use of male or female condoms.

### 1.2.1. HIV testing and referral of HIV-positive clients

Over the past 30 years, global availability and uptake of HIV testing services has increased sharply. Despite the growing number of people receiving HIV testing every year, half of all people with HIV remain unaware of their status (33). HIV testing coverage continues to be low in most endemic settings, and late diagnosis and linkage to prevention, care and treatment services persist (34).

Male circumcision services provide an excellent opportunity for adult males to learn their HIV status and to identify undiagnosed HIV. Because of the low rate of HIV infection in young clients, HIV testing does not need to be routinely offered to adolescents under 15 years of age unless requested or clinically indicated. Priorities are linking HIV-positive clients to HIV care and treatment, and providing male circumcision services to HIV-negative high-risk men, such as those treated for sexually transmitted infections. Effectively scaling up HIV testing services to diagnose 90% of all people with HIV by 2020 has been highlighted as the first of three global targets set by the United Nations, as part of the strategy of the Joint United Nations Programme on HIV/AIDS: Fast-Track: Ending the AIDS Epidemic by 2030 (35, 36).

The World Health Organization and UNAIDS promote the routine offering of HIV testing services at health facilities; this includes clinics offering male circumcision services, particularly in settings with high HIV prevalence and incidence (37). Furthermore, HIV testing with linkages to prevention, treatment and care should be offered to all adolescents living in areas with a generalized epidemic. However, this service should remain voluntary, and clients should have the option to refuse the offer of an HIV test without affecting their access to male circumcision or other care and services offered at the male circumcision site. Male circumcision clients who are not ready to test for HIV can be offered the test again during postprocedure visits and informed about self-testing (37).

The remaining elements of the minimum services package (screening for sexually transmitted infections, provision of condoms and promotion of safer sex practices) are all covered in detail in subsequent chapters of this *Manual*.

## 1.3. MAKING SAFETY A PRIORITY

The foundation of good health care is providers who have training and resources to perform services according to global safety standards. Use of the World Health Organization's *Surgical safety checklist and implementation manual* (see the Bibliography section and Chapter 7, Section 7.6.2), which has been adapted for the male circumcision procedure, supports many of the safe practices discussed below.

### 1.3.1. Standard precautions for infection prevention

Infection prevention and control are vital to protecting both clients and clinic staff. This includes hand hygiene; use of personal protective equipment; safe handling of needles, syringes and sharp instruments; and appropriate measures for cleaning and proper waste disposal. A major concern is the potential transmission of bloodborne pathogens, such as hepatitis B and C virus, and HIV, to clients or health care providers. This risk is greatly reduced by implementing standard precautions.

### 1.3.2. Client eligibility and deferral or referral as appropriate

Providers must perform appropriate screening to ensure eligibility for male circumcision. Some conditions, such as acute febrile illness or infection, must be treated before a client can safely undergo the procedure. Other contraindications to the procedure at the clinic level include known or suspected bleeding disorder, hypospadias and pathological phimosis; clients with such conditions should be referred as appropriate.

### 1.3.3. Tetanus mitigation (based on national policy)

Tetanus is a deadly disease that is preventable through proper vaccination and wound care. Clinics should ensure that clients are offered tetanus toxoid-containing vaccination according to the client's need and in line with national policy and male circumcision method.

### 1.3.4. Safe anaesthesia

Local anaesthesia is recommended for male circumcision services and is simpler, safer and less expensive than general anaesthesia (see Chapter 9, Section 9.4).

### 1.3.5. Haemostasis

Providers can help prevent life-threatening bleeding by carefully screening clients to identify bleeding disorders. All providers must be competent to use surgical techniques to stop bleeding (see Chapter 8, Section 8.4.1). If bleeding cannot be stopped using surgical techniques, then all providers must be competent to control blood loss by applying pressure.

### 1.3.6. Emergency plan

Although the risk of adverse events in male circumcision is low, the team should be able to identify conditions that require emergency care, and have a plan that outlines roles and responsibilities of all team members in an emergency, outlines each step in the emergency response, and identifies emergency referral facilities.

### 1.3.7. Postprocedure instructions and follow-up

Key postprocedure messages relate to the following:

- proper hygiene practices
- proper wound care and warnings against the use of home remedies on the wound
- the need for abstinence during the wound-healing period (or wearing a condom if abstinence is not possible)
- the importance of returning for follow-up care as recommended and

- description of symptoms that indicate a need to return to the clinic or a need to seek medical attention immediately

## 1.4. CONFIDENTIALITY AND PRIVACY

Confidentiality means that health care providers and other staff protect and do not share a client's personal information—it is an individual's right to decide when and with whom to share information about his health. All client information should be kept confidential, and client records should be safely secured. Privacy is about making sure that anyone who is not accompanying or directly interacting with the client neither hears (audio privacy) nor sees (visual privacy) the client during discussion of personal health matters, physical examination and surgical procedure.

### 1.4.1. Informed consent and assent

Informed consent and assent are critical components of male circumcision service delivery. The client—or in the case of a minor, the client and his parent(s)/guardian(s)—must be given understandable, complete, accurate information about the risks, benefits and limitations of the procedure. All clients—or parent(s)/guardian(s) in the case of a minor—need to sign a consent form to document the consent process before the procedure. Consent or assent is also needed for HIV testing.

## 1.5. EXPANDED OPTIONAL SERVICES

For many adolescent boys and men, accessing male circumcision services is their first encounter with health services since early childhood. Male circumcision programmes may supplement the minimum package, defined by the World Health Organization, with services that include tuberculosis screening, HIV treatment eligibility determination, antiretroviral therapy initiation, oral pre-exposure prophylaxis for HIV prevention, HIV testing services for couples or for sexual partners of clients, and screening for noncommunicable diseases or problems (for example, substance use or mental health problems). Hence, policy-makers and decision-makers are encouraged to consider these and other options as they apply to local needs and individual clients. Opportunities for providing additional services must be balanced with resources available. In addition, clear mechanisms of linkage and referral are essential to facilitate male circumcision clients' access to these additional services. When considering the offer of expanded services, great care has to be taken when other information is offered in the context of the circumcision procedure.

## 1.6. BENEFITS, RISKS AND LIMITATIONS OF MALE CIRCUMCISION

The decision of an adult or adolescent male to be circumcised, or of parent(s)/guardian(s) to have their son circumcised, can be based on various factors. These factors include cultural, religious and personal preference, and evidence-based information on the benefits, risks and limitations of the procedure, which are given to the client through education and counselling by a trained male circumcision service provider, as described in Chapter 6.

### 1.6.1. Benefits for males

Male circumcision offers a range of benefits related to general health and disease prevention, or for personal preferences (see Box 1.4). Potential health benefits of male circumcision are the following:

- reduced risk of female-to-male transmission of HIV
- reduced risk of some sexually transmitted infections, including, syphilis, herpes, chancroid and ulcers (29, 30, 38–40)
- reduced risk of human papillomavirus and resultant lower risk of penile cancer (41–43)
- possible increased ease of keeping the penis clean or having better hygiene
- reduced inflammation of the glans (balanitis) and the foreskin (posthitis)
- reduced risk for formation of foreskin scar tissue, which may lead to phimosis (inability to retract the foreskin) and paraphimosis (swelling of the retracted foreskin, resulting in the inability to return the foreskin to its normal position)

## 1.6.2. Benefits to female partners

As men accrue the benefits of reduced HIV and sexually transmitted infections, their female partners experience secondary health benefits, including reduced risk of contracting the following:

- HIV—as more men are circumcised, fewer men will become infected with HIV, thereby decreasing the chance that a woman will encounter an HIV-positive sexual partner; thus over time, female HIV incidence will decline (44)
- human papillomavirus and, therefore, of developing cervical cancer (42, 45)
- herpes simplex virus, syphilis, trichomonas vaginalis and bacterial vaginosis and, therefore, of developing related consequences to pregnancy outcomes, including preterm labour (25, 46, 47)

### Box 1.4. Limitations—what male circumcision can and cannot do

When discussing the benefits of male circumcision, it is important to help clients to also understand the limitations of the procedure.

- Although male circumcision *reduces* the client's risk of becoming infected with HIV, that risk is *not* eliminated. Male circumcision provides partial (not 100%) protection against female-to-male HIV transmission. After male circumcision, clients must practice additional risk-reduction strategies to further reduce the risk of acquiring HIV; such strategies include correct and consistent condom use, fewer sexual partners, and avoidance of concurrent sexual partnerships.
- There is insufficient evidence to determine whether circumcision reduces HIV infection among men who have sex with men (12, 13). Also, circumcision does not provide any direct protection against HIV transmission from HIV-positive men to their female partners.
- Male circumcision is **not a cure** for erectile dysfunction, sexual performance problems, infertility and other conditions that some clients may believe the procedure will address. It is important for the provider to assess the client's beliefs about the benefits of male circumcision.

## 1.6.3. Risks of male circumcision

As with all medical procedures, male circumcision poses a level of risk to clients, albeit that risk is low. The vast majority of clients of male circumcision programmes do not experience any adverse events; however, when such events occur, they are usually mild and quickly resolved. In cases where moderate or severe adverse events have occurred, accurate identification and treatment have limited the severity of outcomes. One study followed the outcome of male circumcision in more than 1 million men across six African countries; the study occurred from 2010 to 2012 and found the combined risk of moderate and severe adverse events to be less than 1% (48). In rare instances, complications progressed, resulting in permanent deformity or disability. Death following male circumcision is extremely rare; causes include tetanus, bleeding disorders and local anaesthetic toxicity.

When adverse events do happen, they typically occur within the first week after the procedure, although this is not always the case. More information on risks of male circumcision is in Chapter 6 and the management of adverse events is in Chapter 10.

## 1.6.4. Risk compensation

Risk compensation is the practice of increasing sexual risk behaviour because of a false sense of security. This is a concern with any partially protective intervention against HIV, including male circumcision. Three studies have compared men's sexual risk behaviours before and after circumcision; they found that behaviour did not significantly change after circumcision (49–52). Additional studies have indicated that there are higher-risk behaviours among circumcised men than among their uncircumcised counterparts (53–55). It may be, however, that men choosing circumcision engage in higher-risk behaviours before becoming circumcised and simply continue those behaviours after circumcision (this is not



risk compensation). A good way to help clients avoid engaging in risk compensation behaviour is to ensure that they understand that male circumcision provides only partial (versus full) protection against HIV (53–55).

### 1.6.5. Sexual function and satisfaction after male circumcision

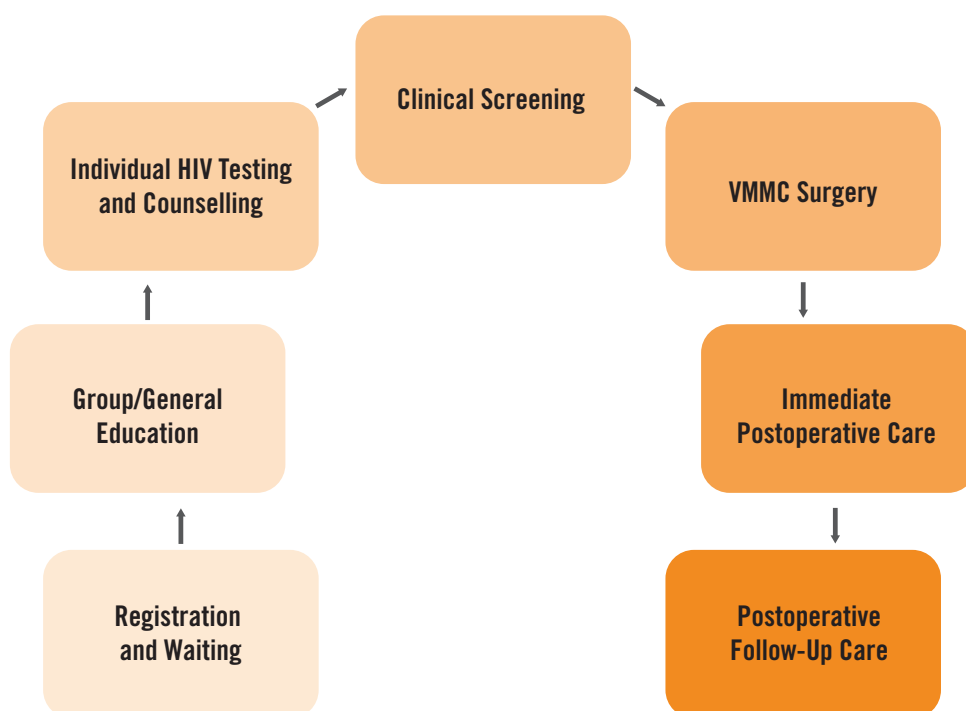
A systematic review (56) of studies on the effect of male circumcision on sexual sensation, function or satisfaction did not demonstrate any significant changes. The only consistent finding was a slight prolongation in the time to ejaculation (about 30 seconds longer). A study of female sexual partners of men who had been circumcised during the partnership found that most women either had no preference or preferred circumcision for their partners; only 3% preferred their partners to be uncircumcised. Women reported preferring circumcision because of improved hygiene and longer duration of coitus (57, 58).

## 1.7. TYPICAL CLIENT FLOW THROUGH MALE CIRCUMCISION SERVICES

Based on resources available, onsite capacity and other factors, male circumcision teams should decide how to provide critical services for safe circumcision at appropriate stages in the male circumcision process. Steps in client flow are shown in Fig. 1.1 and listed below:

- registration and waiting
- group education about male circumcision, HIV risk reduction and other aspects of reproductive and sexual health, including the circumcision procedure—by itself and as part of a comprehensive HIV prevention strategy
- individual counselling, including the offer of HIV testing services
- screening to determine client eligibility, followed by informed consent or assent, as appropriate
- the circumcision procedure
- immediate postprocedure care, including wound care instructions and follow-up at 48–72 hours, seven days and six weeks

**Fig. 1.1. Education and counselling integrated with other male circumcision services**



Source: Adapted from (59)

## 1.8. KEY MESSAGES

- Male circumcision is permanent removal of the foreskin, either through the use of conventional or device-based surgical methods.
- Male circumcision is a one-time procedure that reduces the risk of female-to-male HIV transmission by about 60%.
- Male circumcision provides partial protection and should be offered as part of a minimum package of services as defined by the World Health Organization. Such package should include the following:
  - HIV testing services
  - active or supported referral of clients who test positive for HIV to HIV care and treatment programmes
  - screening for sexually transmitted infections and provision of or referral for treatment
  - promotion and provision of condoms
  - promotion of safer sex practices
- Informed consent (and assent, for minors) is a critical component of male circumcision service delivery to ensure that the procedure is being accepted voluntarily.
- Assurance of confidentiality and privacy is an important aspect of quality health services and supports the effectiveness of education and counselling.
- In addition to partially preventing HIV, male circumcision provides other health benefits for men and women.
- The rate of reported adverse events following the 14 million male circumcisions that have been performed in Africa has been low.
- Client safety is a priority.

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