

TECHNICAL BRIEF

PREVENTING HIV THROUGH SAFE VOLUNTARY  
MEDICAL MALE CIRCUMCISION FOR ADOLESCENT  
BOYS AND MEN IN GENERALIZED HIV EPIDEMICS

# ENHANCING UPTAKE OF VMMC AMONG ADOLESCENT BOYS AND MEN AT HIGHER RISK FOR HIV - EVIDENCE AND CASE STUDIES. TECHNICAL BRIEF





**PREVENTING HIV THROUGH SAFE VOLUNTARY  
MEDICAL MALE CIRCUMCISION FOR ADOLESCENT  
BOYS AND MEN IN GENERALIZED HIV EPIDEMICS**

**ENHANCING UPTAKE OF  
VMMC AMONG ADOLESCENT  
BOYS AND MEN AT HIGHER  
RISK FOR HIV - EVIDENCE  
AND CASE STUDIES.  
TECHNICAL BRIEF**

Preventing HIV through safe voluntary medical male circumcision for adolescent boys and men in generalized HIV epidemics: enhancing uptake of VMMC among adolescent boys and men at higher risk for HIV - Evidence and case studies. Technical brief

ISBN 978-92-4-003979-7 (electronic version)

ISBN 978-92-4-004022-9 (print version)

© World Health Organization 2021

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization (<http://www.wipo.int/amc/en/mediation/rules/>).

**Suggested citation.** Preventing HIV through safe voluntary medical male circumcision for adolescent boys and men in generalized HIV epidemics: enhancing uptake of VMMC among adolescent boys and men at higher risk for HIV - Evidence and case studies. Technical brief. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.

**Cataloguing-in-Publication (CIP) data.** CIP data are available at <http://apps.who.int/iris>.

**Sales, rights and licensing.** To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <https://www.who.int/copyright>.

**Third-party materials.** If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

**General disclaimers.** The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Cover image: © WHO / Stephenie Hollyman

# CONTENTS

<b>Acknowledgements</b> .....	<b>iv</b>
<b>Box 1. Key points from evidence and case studies on interventions to enhance VMMC uptake by men at higher risk for HIV infection</b> .....	<b>v</b>
<b>Introduction, definition and rationale</b> .....	<b>1</b>
<b>Identifying adolescent boys and men at higher risk for HIV infection</b> .....	<b>2</b>
<b>Navigating stigma</b> .....	<b>3</b>
<b>Review of literature on initiatives to enhance VMMC uptake among men at higher risk</b> .....	<b>4</b>
Methods .....	4
Evidence from reviews for Chapter 5 of 2020 Guideline on enhancing VMMC uptake among men.....	4
Evidence from updated review of published literature on increasing uptake by men at higher risk.....	4
Approaches from case studies, practices in use, or existing guidance recommendations.....	6
<b>Barriers to VMMC uptake among men at higher risk</b> .....	<b>9</b>
<b>Service delivery in the context of COVID-19</b> .....	<b>10</b>
<b>Conclusions</b> .....	<b>11</b>
<b>Box 2. Research, monitoring and evaluation needs for enhancing uptake of VMMC and other services by men at higher risk</b> .....	<b>12</b>
<b>Annex 1: Additional search strategy details for review of uptake interventions for men at higher risk for HIV</b> .....	<b>13</b>
<b>Annex 2: Case studies on enhancing uptake of voluntary medical male circumcision services by men at higher risk</b> .....	<b>14</b>
Case study 1: Linking male clients from other services to VMMC, Botswana – Jhpiego .....	14
Case study 2: Mobilization by informal market association leadership in Zambia – DISCOVER-Health .....	16
Case study 3: Lost wage compensation, Malawi – Population Services International (PSI).....	17

## ACKNOWLEDGEMENTS

This technical brief is intended to provide a more focused evidence review in 2021 to support programmes in their efforts to reach more men at higher risk, and to document some of the approaches which may be valuable for programmes restarting or rescaling their operations. Stephanie Davis, Consultant, WHO wrote the manuscript. The development of this brief was coordinated by Julia Samuelson and Wole Ameyan, Global HIV, Hepatitis and Sexually Transmitted Infections Programmes WHO under the guidance of Rachel Baggaley and overall leadership of Meg Doherty, Global HIV, Hepatitis and Sexually Transmitted Infections Programmes, WHO. WHO would like thank Todd Lucas, Daimon Simbeye, Emily Dorward, Valerian Kiggundu, Anne Thomas, Sarah Day, Derek Mangoya, Thandeka Raboshakga, Maria Sibanyone, Catey Laube, Adrian Musiige, Omega Chituwo, Eugene Rugwizangoga, Ribakare Muhayimpundu, Karin Hatzold, Frackson Shaba, Kudakwashe Murombedzi, Nandi Owuor, Chiwawa Nkhoma, Richard Chilogosi, Maaya Sundaram, Leonel Nhambi, Lisete Macaringue, Antonio Langa, Skye Grove, Kija Nyalali, Marcos Canda, Inacio Malimane, David Kelapile, Amon Marwiro, Bernard Komba, Onalenna Sokwe, Koziba Mookodi, Clever Manyenyengwa, Godfrey Ligenda, and Shira Chandler who contributed practices or case studies for the development of this technical document. WHO also thanks the WHO and UNAIDS Global Men and HIV technical working group who provided technical review and support.





## Key messages

- 1) Voluntary medical male circumcision (VMMC) remains a general-population intervention for countries with generalized HIV epidemics. Within this effort, though, ensuring that men at higher risk for HIV infection are reached within this effort is crucial for increasing the rapid impact of VMMC to meet Fast-Track goals. It is also increasingly timely in such contexts as limited donor funding and programme-volume limitations imposed by the COVID-19 pandemic.
- 2) A variety of targeted approaches to reach men at higher risk have some evidence for effectiveness, and other promising practices could generate such evidence. Some approaches work by helping programmes efficiently identify men at higher risk in order to focus their mobilization work. Others work by addressing specific uptake barriers that these men may face.
- 3) Some efforts may yield comparatively low volumes yet successfully reach men at higher risk. Costing information may help programmes determine which of these efforts to continue.
- 4) A key underexplored approach is linkage from other services, such as HIV testing, that are already reaching men at higher risk. In these settings, active personalized linkage may be more effective than passive referral.
- 5) During the COVID-19 pandemic, multiple mobilization and service delivery changes have emerged to support safe VMMC service delivery. Effectively focusing on men at higher risk may also help VMMC services maximize their impact while still operating under restrictions on mobilization activities and service volume.
- 6) Current gaps include the need for more evidence on successful methods to reach men at higher risk with VMMC, and for monitoring tools for these endeavours.

### Box 1. Key points from evidence and case studies on interventions to enhance VMMC uptake by men at higher risk for HIV infection

- This technical brief was based on recent evidence in the literature, case examples submitted by implementers and global partners, and other relevant WHO guidance, rather than a systematic review. Thus, no recommendations were made. However, lessons and examples will be of value to developing more targeted prevention programming.
- The brief structure aligns with the 2020 guidance, covering interventions and barriers for men at higher risk. Interventions are classified by the key types of places where they were used, to help implementers easily consider which might apply to their programmes.
- The brief found a broad range of possible characteristics and factors to identify men at higher risk. National programmes and implementers can consider which men at higher risk to prioritize, considering:
  - o local and national data on characteristics predicting risk;
  - o characteristics that are most feasible to target; and
  - o the places men with those characteristics can be reached.
- The brief also found a broad range of interventions, including those that work to efficiently identify men at higher risk, those that address setting-specific uptake barriers men at higher risk may face (particularly accessibility and acceptability barriers), and those with elements of both.
- The review also shares new examples of programme adaptations developed in the early months of the COVID-19 context or as VMMC services were restored. These changes align with the person-centred integrated approaches advised in the 2020 Guidelines, and with a more precise prevention focus.

**Interventions to enhance uptake of VMMC among men at higher risk:** Interventions included fall along a spectrum of evidence levels, including peer-reviewed publications with outcome data, case studies from programmatic work, and promising practices for which more experience is needed.

- 1) *Approaches from published literature:* Diverse subgroups of men were engaged. Overall, the interventions reviewed enhanced uptake. They included:
  - Health facility-based approaches
    - o scaling up services at existing VMMC site types preferred by men at higher risk (over 15 or over 20 years of age): routine fixed or mobile site services, rather than campaign services;
    - o recruiting actively from, and/or enhancing linkage from, other services already reaching men at higher risk, such as sexually transmitted infection (STI) clinics, antenatal care (ANC) services engaging serodiscordant male partners, safer conception services for serodiscordant couples, and HIV testing services (HTS), using various approaches, such as:

## Box 1. (continued)

- compensation for clients recruited through ANC (consistent with the discussion of compensation as effective in the 2020 Guidelines);
  - video education and messaging in STI clinics; however
  - approaches that relied on passive referral without linkage did not increase uptake; currently HTS services often include VMMC referral but not linkage or linkage indicators;
  - o enhancing privacy and separating clients by age (over 25 years).
  - Community-based approaches
    - o Addressing accessibility barriers by:
      - engaging street youth by providing recovery housing after the procedure;
      - placing mobile sites in remote high-risk areas (migrant work and fishing communities); and
      - economic compensation: recruiting clients at venues including workplaces, entertainment venues and community service points, and offering those who self-reported HIV risk factors compensation for obtaining VMMC.
    - o Addressing acceptability barriers by:
      - targeting community mobilization using segmentation approaches requiring prior market research (men 15–29 years of age).
  - Occupational setting-based approaches
    - o Distribution of written material and group education at large worksites employing migrant workers.
  - Virtual approaches
    - o Enhanced mobilization followup using SMS messages (men aged over 25 years).
- 2) *Additional approaches from case studies or reported practices, or recommended by existing guidance:*
- Health facility-based approaches
    - o Active linkage from additional services already reaching populations at higher risk (male partners of DREAMS beneficiaries who qualify for PrEP; men completing drug and alcohol rehabilitation; STI care clients; and partners of women obtaining cervical cancer screening).
    - o Offering 'one-stop shopping' (other services appealing to men at higher risk, like PrEP).
  - Community-based approaches
    - o Referral partnerships outside the health sector:
      - with market associations reaching older informal workers and patrons;
      - with female sex workers; and
      - with vendors near military and rural occupational settings.
    - o Embedding VMMC services in a community-based HTS campaign reaching key populations.
    - o Adapting mobilizer selection and training by:
      - engaging satisfied clients from groups at higher risk; and
      - engaging educated mobilizers trained to high professionalism standards.
  - Occupational or institutional setting-based approaches
    - o 'Afternoon drives', offering end-of-day transport to VMMC from large worksites.
    - o Coordinating with large employers in high-risk industries and authorities in prisons.
    - o Offering circumcision to military recruits during training.
  - Virtual approaches
    - o Using a shared messaging group to coordinate with workplace managers and community health workers.

**Interventions to adapt VMMC service delivery to the COVID-19 context:** Programmes have adopted multiple strategies to weather the COVID-19 pandemic, including:

- *Focusing on planning:* during shutdown periods, some programmes scouted venues, mapped service areas, redesigned printed materials, and even engaged their staff, who had been repurposed to community-based interpersonal COVID-19 work, to continue generating leads to follow up for future services.
- *Safe mobilization:* outdoor-only, masked mobilization; incorporating COVID screening in mobilization; unmanned branded handwash stations; and incorporation of VMMC messaging in public COVID-19 education.
- *Safer service delivery:* replacing mass campaigns with satellite and static services; eliminating group education; appointment-only services; making appropriate stations openair; and offering single-stop multiservice sites to minimize men's total instances of health system contact.



# INTRODUCTION, DEFINITION AND RATIONALE

As described in Chapter 2 of the 2020 Guideline on preventing HIV through safe voluntary medical male circumcision for adolescent boys and men in generalized HIV epidemics (1), male circumcision decreases men's risk for acquiring HIV through vaginal sex with women (2, 3, 4, 5). Voluntary medical male circumcision (VMMC) has been recommended by WHO and UNAIDS since 2007, and was re-evaluated in 2020 as a public health HIV prevention intervention, with a focus on 15 countries in sub-Saharan Africa (SSA) with high HIV prevalence in the general population. These countries established and rapidly scaled up VMMC within HIV programmes, and through 2019 over 27 million VMMCs were performed. In addition to providing lifelong partial protection from HIV and other STIs, VMMC serves as a unique entry point into HIV prevention and care services for men, whose coverage gap in these services poses a global challenge for achieving UNAIDS Fast-Track goals for HIV diagnosis and treatment coverage (6). However, to maximize the impact of VMMC in preventing new HIV infections – directly, and through linkage to combination prevention – it is particularly urgent to circumcise the men who are most at risk for acquiring HIV and can be protected by VMMC.

In this document, this group is referred to using the term 'men at higher risk', encompassing *those who may, based on one or more characteristics, face a higher risk of acquiring HIV through sex with women, than the general male population in their countries*. Though adolescents may face lower short-term risk than adults, any adolescent subgroups facing higher risk are included. Because risk can be based on behavioural or nonbehavioural characteristics, the term does not refer only to men having risky sex, but to men with any characteristic that enhances risk. These can include location; age; behaviours; occupation; and other individual, social or structural drivers.

Reaching men at higher risk has high potential impact because the difference in risk that these characteristics drive can be large. For example, population-based infection recency testing in VMMC implementing countries since 2015 has shown HIV incidence differences of five-fold or more across countries, and also suggested similar differences between age groups in some countries (7). The impact of each VMMC on HIV transmission would be expected to vary similarly.

Reaching men at higher risk is also timely, for several reasons. While countries are intended to ultimately reach VMMC coverage above 90% among eligible males and shift to a 'maintenance phase', which may instead prioritize broad service coverage for rising adolescents, many countries and subnational regions are still in the 'scaleup phase', in which prioritizing these men at higher risk will yield immediate and lasting benefits in HIV prevention and lives saved. In addition, growing resource limitations may require scaleup-phase programmes to be increasingly intentional in whom they reach, and it will be critical to prioritize the men who need VMMC the most. Finally, as long as the COVID-19 pandemic continues to severely impact HIV prevention

services, prioritizing men at higher risk is a potential timely strategy to deliver greater impact in the context of pandemic-related service volume limitations. For individual clients, it may also provide the best short-term balance between risk of COVID-19 exposure during the VMMC process, which programmes may not be able to eliminate entirely, and HIV prevention benefit.

Despite this, current efforts to maximize coverage may not be reaching many of the men who are at highest risk. Though it is not known how overall male circumcision coverage among men at higher risk compares to that among the general population, VMMC clientele is younger than the general population (8), and lower circumcision coverage is often found in older age groups, where incidence is higher (7).

Conversely, some efforts may successfully reach men at higher risk but generate lower or limited procedure volumes. (For example, recruitment from sexually transmitted infection (STI) clinics is capped by their patient flow.) Costing information on these efforts and risk or incidence data on beneficiaries may help programmes determine with which ones to continue.

The process of reaching men at higher risk with VMMC can be conceptualized using the Framework for Effective Service Coverage referenced in the 2020 Guidelines (Chapter 5, Box 5.1), adapted by WHO InoV8 (9) from the Tanahashi Framework (10). The Framework is a service cascade, in which the target population must first be identified; then have the awareness, knowledge, intent and self-efficacy to access services; have available and acceptable services; and then progress through initial contact to effective service delivery. Improving VMMC coverage ('effective final' coverage in the Framework) for men at higher risk could require different activities, in any or all of these steps, from those used for the general population.

In practice, generating this awareness, knowledge, intent and self-efficacy towards VMMC often depends on active demand creation activities, but these cannot be delivered with equal intensity everywhere. Therefore, many of the practices reviewed here could fit within the Framework as the tools to first locate the target population in order to focus demand creation work there. This involves identifying characteristics associated with higher risk locally in order to determine the settings within the programme catchment area where men at higher risk can be reached, and deciding how to maximize contact at those places.

Other practices reviewed here can be seen as addressing barriers to service accessibility and availability facing men at higher risk once identified. Both approaches may be needed.

Finally, the urgency of reaching men at higher risk for acquiring HIV does not diminish the importance of maintaining widespread VMMC availability and increasing VMMC coverage among general populations in priority countries, where HIV remains a generalized epidemic. Also, individual risk levels are expected to vary across the life course, through developments including geographic mobility and occupational and behavioural changes, so that it remains

important to provide VMMC to each man whenever the opportunity to reach him arises. However, over the next several years, intentionally including the men who are currently at higher risk would maximize the rapid impact needed to reach the Fast-Track goal of achieving epidemic control by 2030. Meanwhile, because the unique contribution of VMMC lies in its lifelong effect, which is unimpaired by any disruptions in access to other interventions, VMMC in the general population provides the stable transmission reduction to both achieve epidemic control and maintain it.

The WHO 2020 VMMC Guidelines, and previous guidance documents, have already identified reaching men at higher risk as a future priority for VMMC programme and research efforts. The 2020 guidance focused first on providing an up-to-date evidence summary on methods for enhancing uptake among adult men generally (Chapter 5, Enhancing uptake of VMMC among adult men and male adolescents in

high HIV prevalence settings). This was informed by systematic reviews of published evidence, and by case studies using programmatic evidence on interventions for increasing VMMC uptake in general, which were shared in Annex 5.2. At that time, a scoping review informed the selection of those systematic reviews; it did not identify published studies that focused specifically on men at higher risk, although some studies did disaggregate by characteristics that suggest vulnerability.

This document is an update of chapter 5, rather than functioning as a stand-alone document. It is intended to provide a more focused evidence review in 2021 to support programmes in their efforts to reach more men at higher risk, particularly in the context of the COVID-19 pandemic; it is also to document some of the approaches taken to operating in pandemic circumstances, which may be valuable for programmes restarting or rescaling their operations.

## IDENTIFYING ADOLESCENT BOYS AND MEN AT HIGHER RISK FOR HIV INFECTION

From a technical perspective, most experience with determining predictors of HIV risk in sub-Saharan Africa has been based on correlation with current HIV infection (prevalence). Many of these are well established and familiar. More recently the use of serial testing to identify new seroconverters, and the emergence of recency testing, has begun to offer the chance to determine more precisely the predictors of new (incident) infections. However, these new approaches are often limited by small numbers.

Table 1 on the right lists some currently available markers that could identify priority VMMC clients: 1) predictors of current HIV infection in recent data in specific sub-Saharan African settings (11, 12, 13, 14) or 2) characteristics already used in some such settings to prioritize clients (15). Some would be expected to impact risk directly; others may be markers for other conditions that are truly driving risk, such as residence in some remote locations signifying impaired access to condoms. However, the primary risk proxy used by VMMC programmes to date has been adult (as compared to adolescent) age.

The use of all these characteristics may be setting-specific. Incidence may peak in somewhat different ages in different settings, and the importance of each other characteristic as a risk predictor may also vary. In practice, and in this document, men older than the standard VMMC clientele are considered to be at higher risk on average.

**Table 1: Potential groups of men at higher risk for HIV infection**

Groups based on predictors of current HIV infection in various sub-Saharan African settings	Groups prioritized in some countries as VMMC clients
<ul style="list-style-type: none"> <li>• urban residents</li> <li>• men affiliated with religious groups at higher risk locally (e.g., those not promoting circumcision)</li> <li>• men with personal higher-risk sexual behaviour</li> <li>• men living in higher-risk geographic locations</li> <li>• men in specific sexual partnership types, including those with age disparities</li> <li>• older men</li> <li>• highly mobile men</li> <li>• men working in specific occupations or sectors (e.g., transport, tourism, bar work, military, mining, construction, security, petroleum, agriculture, fishing)</li> <li>• men with lower education</li> <li>• prisoners</li> <li>• men with higher or lower socioeconomic status, depending on setting</li> <li>• men with inequitable view of gender roles</li> <li>• men with heavy alcohol consumption</li> </ul>	<ul style="list-style-type: none"> <li>• men in serodiscordant relationships</li> <li>• men with STIs or seeking STI services</li> <li>• clients of sex workers</li> <li>• men living in higher-risk geographic locations</li> </ul>

From a social perspective, HIV risk is also related to the concept of population vulnerability. As described by WHO, vulnerable populations are:

Groups of people that are at higher risk for HIV infection in certain situations or contexts, such as infants, children and adolescents (including adolescent girls in sub-Saharan Africa), orphans, people with disabilities and migrant and mobile workers. They may also face social and legal barriers to accessing HIV prevention and treatment. These populations are not affected by HIV uniformly in all countries and epidemics and may include key populations. Each country should define the specific populations that are vulnerable and key to its epidemic and response, based on their epidemiological and social context (16).

Though the term 'vulnerable' also carries social and economic connotations that are less often applied to adult men, this definition is still relevant to VMMC in two key ways, beyond including migrant and mobile workers. First, it acknowledges the external circumstances, independent of behavioural risk, that may confer higher risk for HIV. (The example of limited condom access in some locations would apply here again.) Second, it recognizes again that characteristics predicting risk may vary between countries and programmes. However, it is also true that men at higher risk for HIV include some who would not typically be considered vulnerable in other ways, including men who are relatively privileged and face few barriers to care

(for example, some military members and men with higher incomes in some settings).

Finally, the men at higher risk for HIV infection who are priority VMMC clients also overlap with, but are distinct from, male members of key populations. Some key population groups – particularly prisoners – are also men at higher risk who would benefit from prioritization for VMMC. However, not all male members of key populations are at risk for HIV primarily through sex with women<sup>1</sup>. Conversely, many men at higher risk are not members of any defined key population.

From a programmatic perspective, VMMC decision-makers defining men at higher risk to reach will need to consider, as well as local or national data on characteristics predicting risk, the feasibility of action aimed at each characteristic. (For example, it could be more feasible to reach clients of female sex workers than men of a specific partnership status.) In some cases, countries or regions may determine that certain groups should be prioritized, and additionally require data on where they are and their barriers or gaps for accessing VMMC. Local surveys may therefore be needed first (for example, the Priorities for Local AIDS Control Efforts (PLACE) protocol, designed to provide rapid actionable information on local HIV transmission networks and service gaps) (17). Data from these surveys are also useful for broader local HIV prevention and control.

## NAVIGATING STIGMA

In some cases, efforts to define and reach men at higher risk will also face the challenge of avoiding recontributing to stigma towards some of their target groups. This is true even though structural and geographic factors can be more important drivers of HIV risk than individual-level factors. Messaging and service delivery should be designed with this consideration, and ideally with participation by members of the target groups. Continuing simultaneous VMMC services for general populations; integrating multiple service types in one location (so that specific needs are not singled out); and applying lessons learned in non-stigmatizing service delivery from programmes serving key populations may also contribute to this goal. Interventions recommended in guidance on serving key populations include anti-stigma training for healthcare workers, mechanisms for anonymous reporting of observed stigmatizing behaviour, and formal anti-stigma policies. Service delivery can also follow differentiated service delivery principles in selecting providers who are competent to deliver non-stigmatizing care (18).

<sup>1</sup> As described in the 2020 Guidelines, Chapter 1, page 4, additional data would be needed to support a recommendation on use of VMMC to prevent HIV transmission via sex between men. However, in settings where many men who have sex with men (MSM) also have sex with women, VMMC would still provide protection against that component of their overall risk. They would potentially be prioritized clients if their sex with women is regarded as higher-risk sex.

# REVIEW OF LITERATURE ON INITIATIVES TO ENHANCE VMMC UPTAKE AMONG MEN AT HIGHER RISK

## Methods

Peer-reviewed papers already identified by the prior search for VMMC uptake interventions in general populations done for the 2020 Guidelines are described elsewhere (19). For this update, those offering stratified results, including for men who are potentially at higher risk, were reviewed first to extract relevant findings. An update to the prior search was then performed, with small modifications, to identify new literature on uptake interventions for men at higher risk. Multiple terms for HIV and circumcision were combined where possible, while terms for circumcision alone were used for simpler search engines. A range of peer-reviewed databases, abstracts from key conferences, grey literature including implementer websites, programme reports and clinical trial databases were searched. Any group definition that could plausibly predict vulnerability was includable; some, however, may not apply in all settings. Details are in Annex 1.

## Evidence from reviews for Chapter 5 of 2020 Guideline on enhancing VMMC uptake among men

**Service delivery – routine and mobile services:** The 2020 systematic review on service delivery interventions to increase overall VMMC uptake identified peer-reviewed and grey literature published through May 2018, and included age stratification of findings when available. Of the nine studies included, five sought to increase uptake by men who were 'older' based on the age eligibility cutoffs at the time (15–49, 20–24 or 18 and above years), and four reported age-stratified results. One reported that **routine service delivery clients** were more likely to be aged over 15 years than campaign clients in one of its two settings, with little difference in the other (20); a second reported nearly double the proportion aged >20 in **mobile as compared to campaign services**, with routine services falling in the middle (21); and a third found higher proportions aged over 20 years in the intervention than the control group when using a multifaceted, intensive demand creation package that included **peer promotion by recently circumcised men, service facility changes to increase privacy, and engagement with female partners** (22). The fourth, using a sport-based intervention, found a shift toward younger clientele (23).

**Economic compensation:** A 2020 systematic review on use of economic compensation to increase overall VMMC uptake (24) found evidence supporting its effectiveness. Enrolled populations were mostly adult men, but the design did not allow conclusions about reaching older men preferentially.

## Evidence from updated review of published literature on increasing uptake by men at higher risk

The updates described below are organized according to place of intervention and specific population.

### Health facility-based approaches

The largest group of studies was facility-based approaches. Many of these sought to connect men at higher risk, who came seeking other health services, onward to VMMC. Total numbers and/or conversion rates were modest in the successful reports, but some of the groups reached are at particularly high expected risk for HIV infection. These achievements could therefore represent a substantial impact.

They also include examples of potential opportunities for VMMC programmes to benefit from initiatives by other facility-based services to engage more men. Antenatal care (ANC) clinics, for example, are a novel setting for reaching men. However, increasing male partner engagement in ANC is a WHO-promoted effort (25) based on its association with multiple improved outcomes (26, 26, 27); some VMMC implementing countries have instituted policies and activities to promote this engagement (28, 29); and the percent of women accompanied to at least one ANC visit by a male partner in some settings in some countries can be substantial, as was the case for 35% of married women in Kenya in 2013 (30) and 54% in United Republic of Tanzania in 2019 (31).

- A quality improvement project performed by a Malawi VMMC programme embedded MC mobilizers in an existing **STI clinic and partner-friendly ANC care clinic** on the same campus, reaching potential clients through group education and individual counseling services while they awaited clinical care, and following up telephonically. Contributions to total site VMMC volume were modest at 6% (STI) and 2% (ANC), but referred clients were substantially older than those from other sources, in addition to the markedly higher HIV risk expected in the STI population (32). Without a pre-intervention sample, significance of impact was not assessed.
- Also in Malawi, a separate multi-arm randomized trial of using compensation to improve linkage to prevention and care among **male partners of ANC clients** achieved 3% VMMC uptake in the standard-of-care arm, 8% with distribution of HIV Self Tests for partners, and a statistically significantly higher 12% and 16% uptake with financial compensation of US\$ 3 and US\$ 10 respectively (33).
- In contrast, another Malawi study, which followed up **male partners identified by ANC clients** but not



present in clinic, relying on standard referral approaches, achieved minimal uptake (34).

- In Kenya, the Safer Conception Intervention for Partners study of safer conception interventions for this population did recruiting via outreach to serodiscordant couples' support groups and via partnerships with HIV testing services (HTS) and antiretroviral treatment (ART) venues referring **HIV-negative, uncircumcised male partners in serodiscordant couples** to VMMC. These constituted a small minority (approximately 5%) of the study population at enrollment, but all had become circumcised by the time of conception (significance not reported) (35).
- Finally, outside the priority setting of sub-Saharan Africa, in China, a randomized trial of **STI clinic patients** found that those watching a 10-minute video on VMMC benefits, followed by brief clinician counseling, had approximately 15% VMMC uptake at six months, a statistically significant increase from the 3% among controls (36).
- One feature of the study that found minimal uptake (36) was reliance on passive referral. More active and focused linkage approaches may be needed. It also remains to be clarified whether male partners of ANC clients are, in fact, at higher HIV risk than the general population.

Other facility-based approaches used interventions at the VMMC service site.

- A prepost study in South Africa, primarily designed to increase VMMC uptake among men aged 25–49 years, used “adult-specific demand generation materials, and discussions with community members” as well as “infrastructure changes that separated adults from adolescents at the MMC site, [and] an exclusive men’s health club”. In the post period, the proportion of target-aged participants accessing VMMC increased by 5% and, importantly, **patients with multiple partners** were significantly more likely to obtain VMMC (37).

## Community-based approaches

Some community-based interventions appeared to address accessibility or acceptability barriers unique to the targeted population, namely:

- The Engaging **Street Youth in HIV Interventions** study in Kenya invited a subgroup of youth at high risk for HIV – street-connected males aged 12–24 years in Eldoret – to a ten-day initiation and healing retreat including VMMC provision, achieving 100% uptake among 116 retreat participants, which was attributed to addressing the need for a safe place for postoperative recovery (significance not reported) (38).
- A combination prevention study in Ugandan **mobile fishing communities** with high HIV prevalence achieved VMMC coverage increases of three times more in intervention communities than the control communities (21% vs 7%), primarily simply through offering convenient camp-based VMMC services not otherwise available in the area (significance not reported) (39).
- In contrast, the mHealth Lakefolk Keeping Actively Engaged (mLAKE) randomized study conducted in a **high-risk fishing community** in Uganda found no

significant impact on VMMC uptake from regular education and referral visits by community healthworkers. Notably, in that intervention, the same healthworkers were responsible for referral to multiple prevention and care interventions, some of which did achieve significant impact; they were not only focused on VMMC (40).

- In United Republic of Tanzania, the male-friendly Very Important Person (VIP) initiative provided volunteer community advocates with VIP cards for **men over 25 years**, which both informed them of their VIP status and its basis in age-specific HIV risk, and offered a menu of services to choose from via checkbox. These included fast-tracking (queue skipping), free choice of appointment dates and times, privacy, and choice of provider sex, among others. Not only did this approach double achievement against age-specific targets from 26% to 55%, but the initiative design made it possible to determine which services these men chose most often: fast-tracking and privacy (41).
- Another community-based intervention offered economic compensation, which can be considered to address the accessibility barrier of lost wages during recovery. A multiphase 2018–2019 prepost study of monetary compensation (approximately US\$ 11) in Zambia enrolled participants by **recruiting men at workplaces, entertainment venues and community service points (including bars, brothels, markets, music and barber shops, sportsgrounds and bus stops)** and then enrolling those **with self-reported risk factors**. Remarkably, VMMC uptake rose significantly from 3%, among 6820 men in the six months before compensation introduction, to 37% over seven weeks among 3731 men enrolled after compensation (42).
  - o Once compensation is widely publicized, measures to ensure funds are used as intended may be needed. These could include recruiting from semi-closed settings where risk is known to be elevated (such as STI services) rather than relying on self-reporting, and by using systems to secure and track funds.
- **Person-centred segmentation** approaches to VMMC promotion have been used in multiple initiatives to address acceptability barriers for older men, with mixed results.
  - o Early use targeted men aged 15–29 years; first rapidly classifying each man in a mobilization encounter into one of several clusters with its associated barriers, then using materials and messaging directed at those barriers (43). In Zambia, this approach increased uptake by over 42% per mobilizer, with over 90% of the 6923 clients aged 15–29 years.
  - o In Zimbabwe, although a multi-arm randomized trial that also studied impact from an offer of HIV self-testing did not show increased VMMC uptake with segmentation, segmentation was associated with a nonsignificant doubling among men aged 30+ years in one HIV self-testing arm. The investigators suggested that the minimal effect might result from limited implementation of the interventions as designed (36). Furthermore, although fear of HIV testing is sometimes cited as a barrier to VMMC, addressing it may not have been sufficient, or testing in privacy may not have addressed it fully.

There is potential for segmented messaging to succeed. Prior investment in segmentation data, and streamlined implementation processes with oversight to ensure fidelity, may be needed.

### Occupational setting-based approaches

- Outside the priority setting of sub-Saharan Africa, in China, a trial of VMMC promotion in adult **internal migrant workers** – seen as a ‘bridge’ population at risk for bringing HIV from their work regions to their families – randomized participants into arms receiving either a single discussion and education session, or the same session preceded by one or two distributions of educational materials over several months. It achieved 20–46% uptake of VMMC across arms, with uptake rising with the number of contacts (44). In sub-Saharan African settings, comparable populations might include men who migrate internally to work in fixed-location industries such as mining.

### Approaches in virtual places

- Another application of person-centred segmentation in Zambia first identified barriers specific to men aged over 25 years and then offered a **series of SMS followup messages designed to address identified barriers**, noting an increase in proportion of clients aged over 25 years from 13% before to 24% during the intervention (45).

## Approaches from case studies, practices in use, or existing guidance recommendations

### Health facility-based approaches

#### Linkage from HIV testing services

Existing WHO guidance consistently recommends enhancing and monitoring **linkage of men testing HIV-negative from HTS programmes to VMMC**. Additionally, global shifts toward maximizing case identification through targeted high-yield (rather than universal) HIV testing, and the increasing emphases on closing the testing gap for men (46), offer VMMC programmes an opportunity to reach men at higher risk through routine linkages from high-yield HTS programmes. However, despite the recommendation to monitor referral statistics, and unlike linkage to care, linkage to VMMC from HTS does not have recommended standards, best practices, or comprehensive indicators (47, 48)<sup>2</sup>. In practice, while testing programme protocols commonly include VMMC counseling and referral, they are less likely to include active linkage, and flows through or quality improvement for that ‘cascade’ has not been widely documented.

Another promising frontier in testing is emerging approaches, such as partner testing, also known as index testing (55), and HIV self-testing. These are expanding

rapidly, have higher positivity yields than general HTS in some settings (49) and, **in the case of HIV self-testing, have also begun defining a more specific path for connection to VMMC**. WHO guidance on workplace self-testing suggests two potential approaches for linkage to both care and prevention: referral cards (either packaged with tests by manufacturers or distributed alongside them by programmes) and traditional person-to-person, phone-based or SMS followup messaging (11). Finally, self-testing programmes, which are following current guidance to close demographic ‘gaps’ in national testing coverage (for example, men aged 15–24 years in Zimbabwe), can compare their gap subpopulations to the populations at higher risk prioritized in their settings for VMMC, and can prioritize linkage to VMMC, particularly when these groups overlap substantially.

The limited published data on HTS-to-VMMC linkage interventions relates to general male populations, but a few approaches have shown success and could potentially be applied selectively to men at higher risk. These interventions involved providing contact information of uncircumcised men testing negative at HTS programmes to MC mobilizers for phone and in-person followup (50), with or without the addition of SMS reminders (51), and are included in the 2020 Guidelines Table 5.1 as a general uptake intervention.

- In one instance of this approach (Annex, case study 1), a VMMC programme in Botswana held a **training and sensitization workshop for providers in multiple services, including community testing, that share the same physical campus, in order to reach men at higher risk. Community HIV testing was also offered**. The region is a popular tourist area with one of the country’s highest HIV positivity yields among VMMC clients, placing residents at high geographic risk for HIV. Service providers were asked to physically escort interested clients to the VMMC area. Conversion rates from testing services to obtaining VMMC increased, remarkably, from 6% to 91%.

More evidence on effective linkage approaches and experience ‘translating’ successful linkage approaches from the general population to men at higher risk are needed. At the same time, HTS programmes or sites that are identifying few positives (serving low-risk populations), or reaching few men or mostly circumcised men, are unlikely to be priority settings for linkage improvement.

#### Linkage from other services already reaching men at higher risk

Specific health services already reaching large numbers of men at higher risk will vary by region and health system. In addition to the published examples already discussed, the following linkage approaches have been used.

- In Rwanda, a VMMC programme reaches **partners of adolescent girls and young women who are enrolled beneficiaries of the PEPFAR DREAMS initiative and qualify for PrEP** (therefore are themselves at higher risk for HIV). This is done by embedding VMMC education in regular

2 The linkage-to-prevention indicator, KP.1, applies only to key populations, and its service package does not include VMMC. The WHO HIV self-testing strategic framework: guide for planning, introducing and scaling up does define a relevant optional indicator: percentage of medical male circumcisions within the past 12 months among people who report prior self-testing in that period. While this is not a measure of unidirectional linkage, it does capture service overlap, and could be measured before and after introducing a linkage initiative to help evaluate the impact.



beneficiary meetings. Beneficiaries then discuss VMMC with their partners, and later provide the interested partner contact details at a subsequent meeting. VMMC mobilizers then follow up to escort partners in person to be screened for and access these services, including VMMC (52).

- Also in Rwanda, a VMMC programme reaches **men recovering from drug and alcohol abuse in voluntary government-provided rehabilitation centres**. Potential clients finishing their stays can select vocational training and other support in preparing for discharge, including health education and linkage to VMMC, allowing them to finish healing before returning to external obligations.
- In Botswana, **the training and sensitization described in the prior section (Annex, case study 1) (60) included providers of STI and cervical cancer screening services in this high-risk geographic area**. The number of men obtaining VMMC through referral from these services more than doubled after the training. In the case of cervical cancer screening, the referral process relies on educating the women on the benefits of VMMC, including reduced cervical cancer risk for themselves, and asking them to link their partners. Women with additional risk factors such as multiple partners are prioritized.
  - o This intervention differs from the published Malawi ANC and STI linkage system, not only in the service types included as recruitment sources, but in making the staff of these services, rather than VMMC staff, responsible for linkage. This linkage structure is facilitated by active support and accountability from district health leadership, and by regular joint meetings between VMMC staff and referring service staff to review current data on the linkage cascade and to troubleshoot 'leaks'.
  - o However, in all these successful cases, all services were co-located with VMMC.
  - o Depending on local criteria for cervical cancer screening, HIV-negative male partners of eligible women may be considered to be at higher risk based on age and serodiscordant HIV partnership. However, in settings where cervical cancer screening patients have high rates of knowing HIV status and of viral suppression if positive, their male partners may not be a group at higher risk. As with the Botswana programme, it may be useful to prioritize a subset of women with additional self-reported characteristics that are risk markers for their partners.

### VMMC facility-based approaches

- In Mozambique, a service package tailored to older men included 'one-stop shopping' – including PrEP initiation for eligible men – and evening and weekend hours, among other components, and reported an increase in its client proportion aged over 15 years from 55% in 2013–2014 to 62% in 2018–2019. (Originally documented in 2020 Guidelines Web Annex 5.2, Case Study 3.)

### Community-based approaches

Some programmes developed referral relationships with partners outside the health sector with access to men at higher risk.

- In Zambia, partnerships with other community-based organizations (CBOs) were useful in reaching older men, including a campaign-style joint initiative with **market association leadership** to connect with men employed in the informal sector, as well as other CBOs and local police. The elected market association leaders were sensitized about VMMC and then they both referred members and identified particularly male-dominated subsectors (for example, used vehicle parts, welding and carpentry) for mobilizers to reach with one-on-one counseling and small group VMMC education sessions. The campaign month achieved a greater than 10-fold increase in VMMCs among men aged from 19 to 34 years as compared to the same month the previous year. (This could also be considered an occupational setting-based approach (53).)
- Similarly, in Mozambique, counsellors work specifically with market supervisors and kiosk owners near military bases, sensitizing them about VMMC and HIV prevention, and providing flyers and condoms for them to distribute to patrons who are also potential clients. Groups reached can include **young men selling or working near military premises and patrons of venues that serve or sell alcohol**.
- Also in Mozambique, VMMC counsellors have developed **relationships with the informal leaders among female sex workers**, who can then provide access to their broader networks. Counsellors then regularly provide these sex workers with free condoms, educate them about benefits of VMMC, and provide them with flyers and contact information to give to clients (54).

Another programme used linkage from another HIV prevention intervention reaching men at higher risk, this time in a community-based outreach setting.

- In United Republic of Tanzania (originally reported in the 2020 Guidelines, Web Annex 5.2, Case Study 7), VMMC services were embedded within a **mobile HTS initiative** that mobilized testing clients from key and vulnerable populations. While success was initially measured as increased uptake by men aged over 20 years (38% of all clients served in this initiative, as compared to 11% among those served by routine services), clients recruited in this way may also be at higher risk than suggested by age alone.

One compensation initiative also used an intake process based on community mobilization.

- Also in Malawi, a lost wage compensation programme was developed based on an analysis of barriers to VMMC among men over 20 years old in Blantyre. A fixed payment of US\$ 6, valued to replace two days of typical wages, is available at the intervention site for clients aged 20 years and over. During interpersonal mobilization at **churches, markets and informal settlements**, mobilizers assist potential clients who identify lost wages as a barrier by first correcting any overestimates of healing time and then informing them of the

compensation. Men over 20 years of age constituted 69% of clients at the site after the intervention, as compared to 36% prior to it (55).

Other approaches have adapted community mobilizer selection and training to better target men at higher risk, particularly older men.

- Similarly, in Malawi, a mobilization initiative recruiting satisfied adult clients as mobilizers, and supporting them with an extensive professional oversight network and performance incentives, nearly doubled their client proportion aged 15–29 years from 37 to 61% (originally documented in the 2020 Guidelines, Web Annex 5.2, Case Study 2) (56).
- Also in Malawi, a VMMC programme that was able to double its clientele proportion aged 15–29 years intentionally recruited older mobilizers with higher minimum education criteria and equipped them with visible professional branding, in order to meet older men's higher expectations for VMMC knowledge and professionalism. To address the greater difficulty of recruiting in communities as compared to schools, they grouped mobilizers into teams that were compensated for team-level performance above a guaranteed minimum pay, thereby creating continuous mutual accountability; shifted funding from mass events to interpersonal communication; and provided regular supportive supervision (57).

### Occupational and institutional-based approaches

- A Botswana VMMC programme schedules VMMC services for prisoners well in advance, in cooperation with prison authorities (58).

- Tanzanian programmes also target **workers at sugarcane factories and cotton ginneries**, two migratory groups with high HIV prevalence. In these large work settings, they begin by reaching out to management for sanctioned time to educate employees and offer services, and they also negotiate up to two weeks of post-procedure leave for healing.
- In South Africa, another technique in use is 'afternoon drive' mobilization and service delivery for farm workers and other workers who cannot get time off during the day. VMMC is provided to these men after working hours (59).
- For a programmatic initiative in Zambia, clubs and farm blocks were also effective recruiting sites (60).
- Men employed in formal work sectors associated with vulnerability might also be accessible through events held by trade unions, labour advisory councils and NGOs serving workers (61).
- Some military VMMC programmes, including in Ethiopia, focus mobilization and service delivery on incoming recruits, prior to their being stationed to areas that may be high-risk (62).

### Approaches in virtual places

- Programmes in United Republic of Tanzania reach **fishermen** on remote islands using SMS messaging for appointment, followup and wound care reminders, and mobilizers have an ongoing shared messaging group with fisherfolk group managers and community healthworkers. (This is also a community-based intervention, as VMMC is delivered through periodic mobile campaigns that also include treatment, thus addressing accessibility barriers for more than one service).

# BARRIERS TO VMMC UPTAKE AMONG MEN AT HIGHER RISK

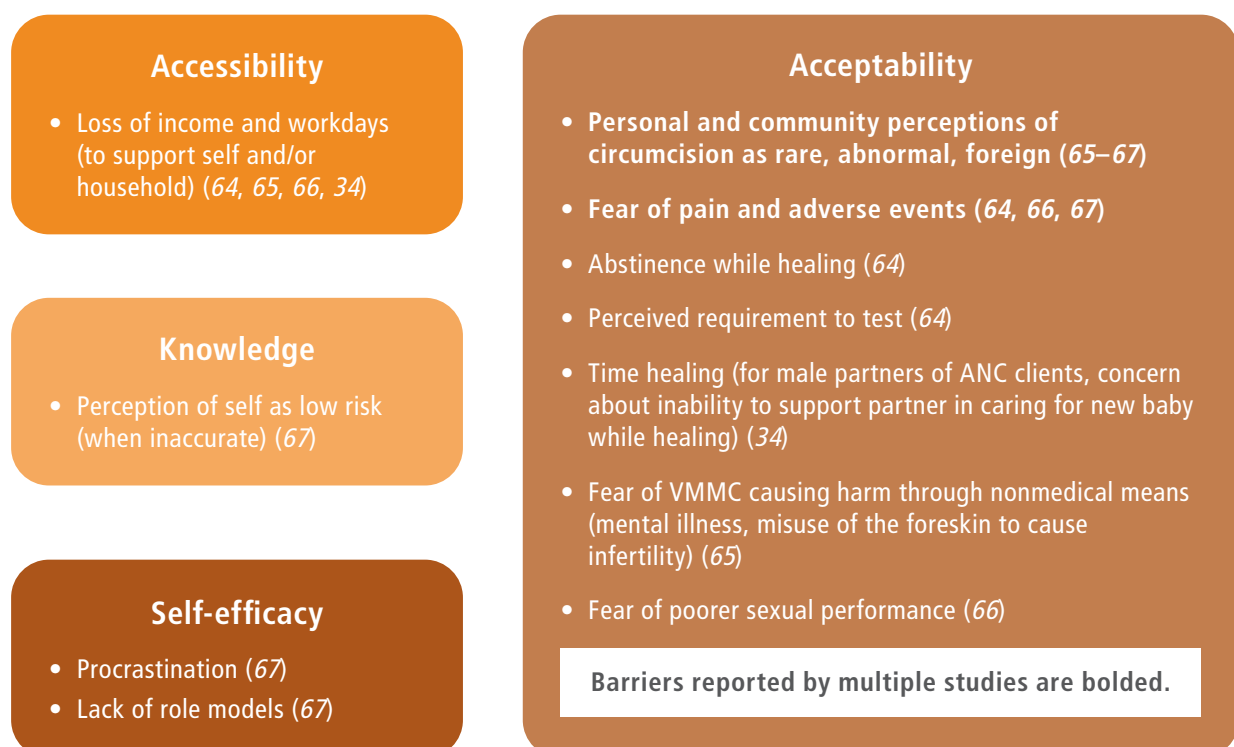
An important component of successfully reaching men at higher risk is understanding whether and how they experience unique barriers to VMMC availability, acceptability and accessibility. In the general population, qualitative research in the past decade has identified numerous barriers in multiple settings. In some cases, programme interventions have been intended to address these. A 2019 multicountry systematic review identified several acceptability concerns as the top three barriers among many: a negative perception of MC as culturally or religiously foreign, a fear of pain and perceptions of VMMC as not helpful or needed (63). The literature review informing the WHO 2020 Guidelines captured additional barriers, discussed in detail in Chapter 5. There are less data specifically on men at higher risk, but it suggests similar barriers. Diagram 1 shows, not exhaustively, barriers identified in some groups at higher risk (64, 65, 66, 67, 34).

While these barriers are not unique to men at higher risk, different groups may prioritize barriers differently. More direct comparisons between various groups at lower and higher risk would be helpful. One study in United Republic of Tanzania did compare men between risk groups based on self-reported sexual behaviour (condomless sex with multiple partners), using a discrete-choice experiment to determine which service changes would most likely induce participants

to obtain VMMC. Men at higher risk were less likely to choose circumcision under all scenarios, but preferred service attributes that improved privacy (all-male staff, age-separated waiting areas) over either conditional or guaranteed financial compensation, suggesting their most substantial barrier was one of service acceptability (68). Some groups at higher risk may also face unique barriers related to availability (for example, remote fishing communities) and accessibility (for example, inability to leave work during standard clinic hours), though these may be apparent without formal research.

Finally, while adolescents are less often considered a group at higher risk for VMMC, some adolescent subgroups may be at high HIV risk (for example, street youth, as described above). A 2019 WHO Adolescent Health Services Barriers Assessment conducted in United Republic of Tanzania identified barriers to accessing VMMC encountered by adolescents. Some may be important in settings where they apply to youth at higher risk for HIV, such as access barriers in rural areas with few health facilities, and knowledge barriers among out-of-school youth. However, adolescent subgroups at higher risk may also face different barriers from other adolescents, making generalizing about adolescents as a whole difficult. (For example, parental consent is a different challenge for adolescents without guardians) (69).

**Diagram 1. Self-reported barriers to obtaining VMMC identified by men potentially at higher risk for HIV due to age, occupation or geographic region (not exhaustive/systematic)**



## SERVICE DELIVERY IN THE CONTEXT OF COVID-19

Many programmes have innovated rapidly to adapt to the COVID-19 pandemic. This section is intended to add a more publicly available platform for experience-sharing on this topic to other sharing processes already underway between countries, and to be a resource for future experience-sharing activities. It is not intended to provide normative guidance or evidence on effectiveness.

During service suspension, some programmes have focused on *planning and preparing for rapid resumption*.

- One programme in United Republic of Tanzania, which remained on track to meet its VMMC targets, while unable to conduct campaigns in some high-risk areas, redesigned its visual materials for display in high-traffic areas like markets and bus stands, while also continuing to scout worksites in which to offer future services.
- Another programme, in Mozambique, used the time to prepare and disseminate community information through multiple media channels on its simultaneous minimum-age shift from 10 to 15 years. When it resumed services, it did not offer mass client transportation as a COVID risk-control measure. However, it did restart mobile services, shifting to counties without community COVID transmission, along with food and phone vouchers for clients 18 years and older (70).
- In South Africa, during a 5-month VMMC service hiatus, staff who were shifted to support COVID programmes used their public screening and education interactions to also generate new VMMC client leads, who were messaged by SMS and then followed up in person once services resumed (71).

Since being able to restore services, programmes have developed COVID-safer and more targeted mobilization strategies. After a substantial volume drop during lockdown, a Ugandan programme reoriented to reach its annual performance goals in males over 15 years of age with strategies that included the following:

- placing branded handwash stations in dense urban areas to both support COVID control and emphasize that services remained available;

- incorporating COVID symptom screening into mobilization and entry to care;
- restarting outdoor-only, masked mobilization, including door-to-door visits and outdoor workplaces (for example, boda boda stations); and
- employing community educators to deliver both COVID awareness and VMMC promotion messages (72).

Another programme in United Republic of Tanzania similarly relied increasingly on virtual places – mobile SMS platforms – and written materials (73).

Programmes have also developed **programme-level strategies** for VMMC **service delivery** adapted for COVID-19 safety, including the following:

- replacing high-volume VMMC camps or mobile campaigns with disseminated satellite services (83);
- increasing static site performance (extending hours and workdays); and
- moving mentorship and continuous quality improvement to virtual platforms (83).

Site-level **service changes** have included the following:

- replacing group education sessions with individual counseling;
- fixed procedure time slots to prevent crowding (84);
- use of outdoor gazebos for some stations for safe client flow;
- integration of onsite-related services like STI treatment and ART initiation, which would previously have been managed as referrals, to minimize clients' total healthcare visits (74); and
- substitution of telephonic for inperson followup of uncomplicated recoveries.

Notably, scaleup of some mobile campaign types and expansion of services offered are examples of pandemic adaptations that may also make VMMC more appealing to some groups of men at higher risk.

## CONCLUSIONS

Having achieved remarkable progress in maximizing overall VMMC uptake over the past decade, programmes now need to ensure their strategies also reach the men most at higher risk for HIV. While this has been previously recommended to maximize impact on the HIV epidemic, the need is increasingly urgent now in the context of limited-service volumes imposed by pandemic conditions and funding limitations. Reaching men at higher risk will also align VMMC with broader initiatives to improve the targeting precision of multiple pillars of HIV prevention.

This is likely to require additional, intentional interventions, designed using local data and knowledge. A wide variety have been described here for consideration. They may be located in facilities, communities, occupational settings, virtual (digital) places or other places. Some have already shown effectiveness in specific settings, and could be adapted for new settings. One promising theme, connecting men from other health services to VMMC, is an existing recommendation with underdocumented practice, and the limited evidence here suggests that active linkage can be effective where passive referral mechanisms may not.

Another promising approach is compensation in amounts sufficient for lost income replacement, though attempts to pilot its wider use may also need to reckon with potential issues with sustainability; for example, by testing local effects of phasing out compensation once coverage is high.

In addition, some of the innovations developed in response to the COVID-19 pandemic, which have reoriented programmes to be more person-centred and provide a more integrated set of services, may also be effective for reaching men at higher risk of HIV infection.

More documentation of programmes' experiences with using targeted approaches and assessing their effectiveness and costs would be of great value. (See Box 2: Research, monitoring and evaluation needs for enhancing uptake of VMMC and other services by men at higher risk.) Finally, clear targets and monitoring indicators, whether universal or local, may also be needed to sustain focus on men at higher risk until that segment has been widely reached with the life-saving benefits of VMMC.



## Box 2. Research, monitoring and evaluation needs for enhancing uptake of VMMC and other services by men at higher risk

More experience and data on increasing VMMC uptake among men at higher risk are needed to take full advantage of the potential of VMMC services to prevent HIV infections. The 2020 Guidelines on HIV prevention for men and adolescents previously highlighted the need for research on:

- barriers to VMMC uptake among men at higher risk of HIV infection; and
- the effect of interventions to increase their VMMC uptake.

Other areas of need for research, monitoring and evaluation specific to men at higher risk include:

- determining the most important and actionable predictors of risk for new HIV infection in adolescent boys and men in local settings of East and Southern Africa
  - o and how much these vary across VMMC countries and regions;
- determining which service delivery approaches for reaching adolescent boys and men with important risk predictors are successful; and
- developing effective linkage monitoring: methods to track and increase linkage from other services reaching boys and men using appropriate linkage indicators, which would apply most urgently to services reaching men at higher risk; such as
  - o documentation of the experience of programmes currently piloting such indicators;
- identifying 'untapped' services and contact persons for reaching men at higher risk; for example:
  - o other sources of STI care, including pharmacies;
  - o outpatient specialty care services reaching older men (for example, chronic viral hepatitis, tuberculosis, diabetes, cardiovascular disease, emergency or minor trauma); and
  - o other subspecialty services reaching other groups at higher risk (if not among the general population, then potentially among military members), such as alcohol treatment and gender-based violence programmes. Not only clinicians but other authority figures involved in remediating these issues with personnel, such as commanders and chaplains, could be explored as referral sources;
- HIV prevention or other health programmes already serving relevant key populations, such as prisoners and men who have sex with men;
- developing effective monitoring of efforts to reach men at higher risk with VMMC by:
  - o accurately identifying which clients are members of groups at higher risk, which may pose unique challenges, such as:
    - men in some groups at higher risk (for example, clients of sex workers, or others whose risk behaviours are stigmatized or punishable by law) may not be willing to disclose or confirm their group identities when seeking VMMC; and
    - coverage surveys, even when feasible, may not be applicable to some populations at higher risk due to their high turnover. For example, circumcision campaigns for fishermen in remote Tanzanian islands reach a highly mobile, largely immigrant population, which many individuals may leave while others enter between campaigns;
  - o measuring programme-level success, perhaps using appropriate definitions and targets for numbers of men at higher risk by national or subnational criteria obtaining VMMC, as is currently done with age bands; perhaps also through tracking clientele HIV positivity;
- determining the relative costs and impact of selectively reaching men at higher risk; and
- determining whether some adaptations made to function in the COVID-19 context have also shifted client profiles toward more men at higher risk.



# ANNEX 1: ADDITIONAL SEARCH STRATEGY DETAILS FOR REVIEW OF UPTAKE INTERVENTIONS FOR MEN AT HIGHER RISK FOR HIV

Peer-reviewed databases included: PubMed (after May 2018), Cochrane reviews, NIHR Centre for Reviews and Dissemination, EMBASE, Campbell Systematic Reviews, and CINAHL. Conferences searched for abstracts were Conference on Retroviruses and Opportunistic Infections (CROI), International AIDS Society (IAS) and International Conference on AIDS in Africa (ICASA). The grey literature search included OpenGrey, the malecircumcision.org website (using the search term 'risk'), and the story or solutions websites for the implementers Jhpiego (<https://www.jhpiego.org/stories/>) and Population Services International (PSI; <https://www.psi.org/related-solutions/voluntary-medical-male-circumcision-vmmc/>) and the donor (PEPFAR <https://www.pepfarsolutions.org/>). Clinical trials were

sought through [clinicaltrials.gov](http://clinicaltrials.gov), the Pan African Clinical Trial Registry, and the Australian New Zealand Clinical Trials Registry.

Searches were not limited by date except on PubMed, CINAHL, and conference abstract books, which were only included after May 2018, the end capture date for the prior review. Calls for case studies were made to VMMC representatives within bilateral donor agencies including US PEPFAR (CDC, USAID and the US Department of Defense), the Bill & Melinda Gates Foundation, stakeholder representatives participating in the UNAIDS Global Men and HIV Technical Working Group (MENHT), and implementing organizations Jhpiego, Aurum, IntraHealth and AVAC.



## ANNEX 2: CASE STUDIES ON ENHANCING UPTAKE OF VOLUNTARY MEDICAL MALE CIRCUMCISION SERVICES BY MEN AT HIGHER RISK

In March 2021 WHO opened a call to programmes and implementing partners for the submission of case studies describing the implementation of interventions that had been successful in increasing uptake of voluntary medical male circumcision (VMMC) by men at higher risk. WHO received five case studies. A reviewer evaluated each case

study for quantitative results data and selected three cases for inclusion in this technical brief. Notably, these examples involve simultaneous implementation of multiple interventions or strategies that seek to address multiple barriers.

### Case study 1: Linking male clients from other services to VMMC, Botswana – Jhpiego

#### Setting and higher-risk characteristics of target group

Maun, Botswana, is a high-risk geographic area. It is a mixed rural and urban area which is a hub of domestic and international tourism, with a highly transient population. Cervical cancer screening services in the area serve primarily HIV-positive women aged 25 years and older (or 30–49 years if HIV-negative). Their male partners are potentially at risk based on age, and on serodiscordant partnership if the women are not virally suppressed.

#### Challenges

Despite recent successes, Botswana has consistently had one of the lowest VMMC uptake rates in the sub-Saharan African region, with one model estimating 32% circumcision coverage among men aged 15–49 years in 2020 (75). The Maun General Clinic VMMC site had seen a drop in annual achievement against targets from 78% in 2019 to 46% in 2020 during the COVID-19 pandemic, and was seeking new mobilization approaches that would be less affected by travel and mass gathering restrictions.

#### Barriers

Implementers have perceived reaching older men to be particularly difficult because of their hesitance to seek out health services in general. Abstinence during healing is another obstacle.

#### Initiatives taken

The VMMC programme conducted a workshop to train and sensitize HIV testing counselors from Maun General Clinic and a community testing partner organization, STI screening and treatment service providers, and cervical cancer screening providers about referral to VMMC. All services were co-located at the district hospital with the VMMC site. Based on their training, providers began referring and directly escorting consenting eligible patients to the VMMC site. In the case of cervical cancer screening patients, providers included education on the benefits of VMMC for themselves during their visits, and provided referral information for them to give to their partners. VMMC staff continued to meet monthly with providers from each service to update them on the latest referral cascade data and troubleshoot points of 'leakage'. The district-level MoH leadership was closely engaged, and incorporated VMMC referral into supportive supervision and performance expectations for the referring services.

#### Results

During the initial implementation period from 1 October to 31 December 2020, compared to the three months prior, the following observations were made.

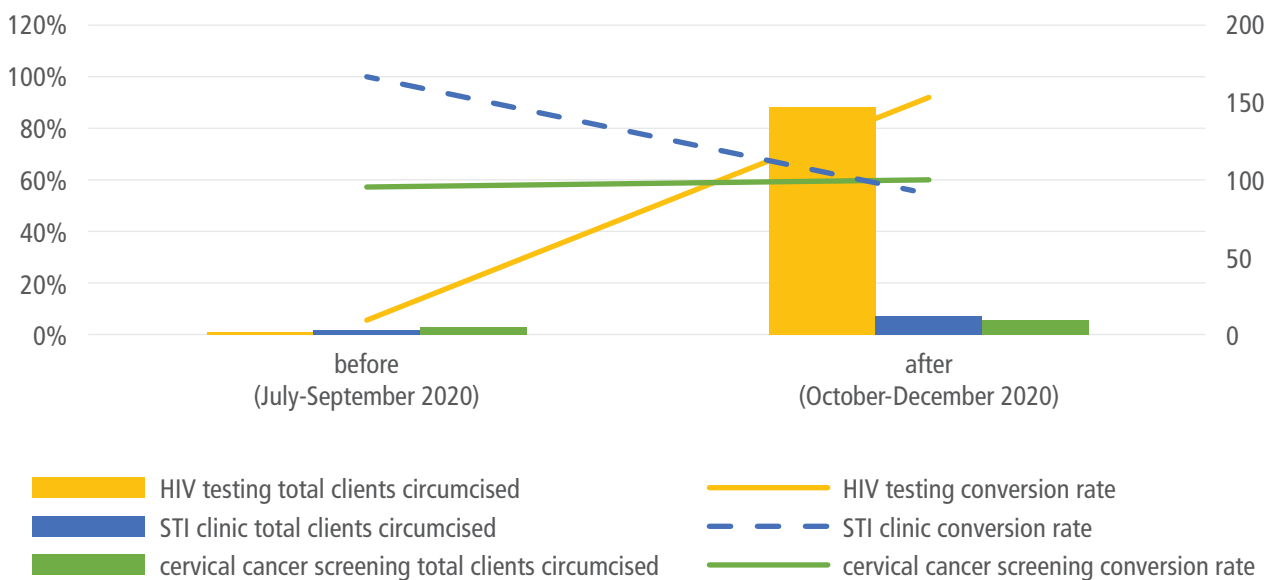
- Numbers of clients obtaining VMMC via referral from the intakes services increased to 147 (HTS), 12 (STI) and 9 (cervical cancer screening), from virtually no referral prior.
- Conversion rates of HIV-negative uncircumcised men from accessing the referring services to obtaining VMMC increased from 6% to 91% for HTS.

- Some of the community-based testing organizations involved have begun to use a linkage-to-VMMC indicator as one of their own internal performance metrics.
- The implementation period took place during the COVID-19 pandemic, when the volume of care-seeking at the referral services was lower than usual. The high conversion rate may result in part from self-selection for highly motivated men to access services during this period.

### Lessons learnt

- Ministry leadership and engagement, including capturing VMMC referral in performance expectations, was a crucial enabler of success.
- Ongoing collaboration and regular quantitative feedback with joint troubleshooting has maintained referral relationships. Practising reciprocal referrals (e.g., sending VMMC clients with genital warts to STI treatment) has also strengthened these relationships.
- Implementers expect the approach to be replicable in settings where healthcare leadership is supportive and is in the process of scaling it up to a second district.

**Fig. 1. Conversion rates and total clients circumcised by referring service, before and after training**



\*For STI clinic, conversion rate before intervention is unstable as only 3 eligible patients identified.

\*\* Training may have led to increased numbers of clients identified as eligible by referring services, as well as increased conversion rates (e.g., 3 eligible from STI clinic before vs 22 eligible after, of which 12 then obtained VMMC.)

*Inquiries on this case study can be directed to [Amon.Marwiro@jhpiego.org](mailto:Amon.Marwiro@jhpiego.org)*

## Case study 2: Mobilization by informal market association leadership in Zambia – DISCOVER-Health

### Setting and higher-risk characteristics of target group

Chisokone is an informal market in urban Kitwe, Zambia's second-largest city by population. Leadership of the local Association for Vendors and Marketers (AVEMA) is elected by the general membership. Each established market in Zambia has such a structure in place and their responsibilities include addressing issues that affect the welfare of the members. The initiative targeted men aged from 19 to 34 years at increased risk for HIV due to age.

### Challenges

Low uptake of MC service during non-school holiday campaign months (excessive seasonality).

### Barriers

Loss of income for older men in informal sector during the post-VMMC healing period, and embarrassment in seeking MC due to its perception as being for adolescent boys and young men, and taboos against discussing sexual topics with women.

### Initiatives taken

The USAID DISCOVER-Health team had previously developed a partnership with AVEMA leadership through cooperative work on HIV prevention outreach to key populations. From this, an initiative was developed to train AVEMA leaders, typically older men themselves, as VMMC peer mobilizers. A half-day training workshop was conducted within the marketplace, particularly capacitating market leaders to dispel myths and misconceptions. These leaders then conducted interpersonal mobilization among association members, including one-on-one and small group discussions, particularly among male-dominated market sectors, such as

used vehicle parts, carpentry and welding. The VMMC programme provided continued support for the new mobilization activities via regular feedback meetings to debrief and troubleshoot issues encountered in the field. The VMMC services were offered at a nearby health facility and older males were served separately from adolescents. VMMC clients were also referred to STI treatment as needed.

Baseline VMMC service statistics for that facility during the four-month period immediately before the intervention were used as comparison data to assess intervention effect.

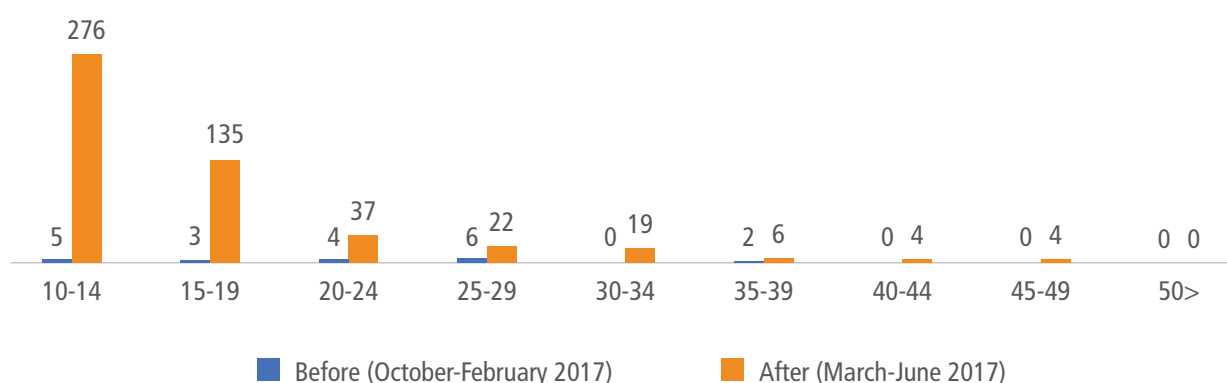
### Results

During the four-month pre-implementation period, only 15 VMMCs were conducted; during the first month of implementation, 224 VMMCs were conducted. Of those, 48% were among men aged 15–34 years, and under 35% were among boys aged less than 15 years. While only 18% of clients were aged over 19 years after the intervention, it successfully increased uptake in clients over 19 years by over ten-fold, and had the programme not been serving 10–14-year-olds, clients over 19 years of age would have represented 41% of circumcisions.

### Lessons learnt

- Older men in existing leadership positions were effective mobilizers for older clients employed in informal markets who cannot be reached through standard workplace campaigns.
- Market initiatives could be successfully employed during the 'low' periods in existing VMMC campaign schedules.
- Individual performance-based reimbursement for mobilizers did not promote group cooperation.
- The team expected the initiative to be replicable in other urban informal markets.

Fig. 2. VMMCs performed by age, 4-month periods before and during/after Chisokone market intervention



## Case study 3: Lost wage compensation, Malawi – Population Services International (PSI)

### Setting and higher-risk characteristic of target group

Metropolitan Blantyre, Malawi, has an HIV prevalence of twice the national average, high rates of poverty and frequent economic migration, and has a major access corridor for road traffic from neighboring Mozambique and Zimbabwe. There is low formal employment (21%), and the population relies heavily on day-by-day piece jobs.

### Challenges

VMMC uptake in Blantyre has remained low despite multiple prior strategies, and most clients reached by PSI were aged 15–19 years, with only 32% of clients since 2013 being 20 years of age and older.

### Barriers

PSI conducted an Empathy, Insight and Prototyping exercise in June 2020 on males aged 15 and above. Men from different Blantyre clusters across different employment categories were included. A key finding was that men's daily income sustained their families on that same day. Missing a day of work would pose an immediate threat to food or other supplies. Both the men and their wives also overestimated the time required to go for the VMMC service and time needed to return to normal work.

### Initiatives taken

Clients were asked to provide information on their daily earnings, and most fell within the range from US\$ 2 to US\$ 4. These figures were also checked against the Malawi minimum wage. The compensation was therefore set at US\$ 3 daily for two days (procedure and post-procedure day 1) for men over 20-years-old at a single intervention site. A pre-implementation performance survey and programme data were collected as comparisons to determine the intervention impact. The Malawi MoH noted the particular

current relevance of lost wage compensation, given the economic hardships caused by the COVID-19 pandemic.

Community mobilizers were trained on messages covering key barrier themes. They began to target areas where adult men congregated, including churches, markets and informal settlements. During interpersonal communications, mobilizers probed client barriers in order to tailor messages. If a client mentioned a fear of lost wages, the mobilizer first assessed the client's estimation of time required from work and provided any needed correction. The client was then informed of the availability of lost wage compensation.

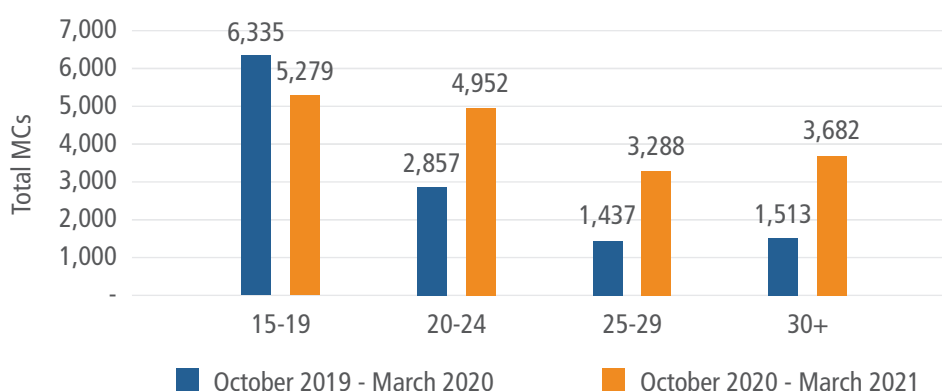
### Results

- The pilot results showed a 28% spike in total VMMC outputs in October 2020 (compared to September 2020) following introduction of lost wage compensation. This increase was sustained (21%) over the full first quarter.
- At the intervention site, during the pilot phase 63% (n=666) of men accessing VMMC were 20 years of age and older, as compared to 53% at the comparison site. Over the full first quarter, the proportion increased to 69%, as compared to 36% the year prior. At the intervention site, the client proportion aged 20 years and above increased by 128% during the month of implementation compared to the month prior.
- Of those circumcised, 57% benefited from the lost wage compensation initiative.

### Lessons learnt

- Lost wage compensation was effective in increasing VMMC uptake, overall and by older men.
- Small amounts tied directly to the typical amount and duration of income loss were effective and unlikely to be coercive.
- The intervention has shown replicability through later scaleup throughout Blantyre.

Fig. 3. VMMCs by age before and during compensation intervention



## REFERENCES

- 1 Preventing HIV through safe voluntary medical male circumcision for adolescent boys and men in generalized HIV epidemics: recommendations and key considerations. Geneva: World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO.
- 2 Auvert B, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. *PLoS Med.* 2005;2:e298. doi:10.1371/journal.pmed.0020298.
- 3 Gray RH, Kigozi G, Serwadda D, Makumbi F, Watya S, Nalugoda F, et al. Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial. *Lancet.* 2007;369:657–66. doi:10.1016/S0140-6736(07)60313-4.
- 4 Bailey RC, Moses S, Parker CB, Agot K, Maclean I, Krieger JN, et al. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet.* 2007;369:643–56. doi:10.1016/S0140-6736(07)60312-2.
- 5 Farley TM, Samuelson J, Grabowski MK, Ameyan W, Gray RH, Baggaley R. Impact of male circumcision on risk of HIV infection in men in a changing epidemic context – systematic review and meta-analysis. *J Int AIDS Soc.* June 2020;23(6):e25490. doi:10.1002/jia2.25490. PMID: 32558344; PMCID: PMC7303540.
- 6 Journal of the International AIDS Society. Special Issue: Men & HIV: insights from sub-Saharan Africa. *J Int AIDS Soc.* June 2020;23;(S2).
- 7 Population-based HIV Impact Assessment: Guiding the Global HIV response. Countries compared with available incidence data include eSwatini, Lesotho, Malawi, Namibia, Tanzania, Uganda and Zimbabwe (<https://phia-data.icap.columbia.edu/visualization>, accessed 6 June 2021).
- 8 Davis SM, Hines JZ, Habel M, Grund JM, Ridzon R, Baack B, et al. Progress in voluntary medical male circumcision for HIV prevention supported by the US President’s emergency plan for AIDS relief through 2017: longitudinal and recent cross-sectional programme data. *BMJ Open.* 2018;8(8):e021835. doi:10.1136/bmjopen-2018-021835. PMID: 30173159; PMCID: PMC6120649.
- 9 Innov8 approach for reviewing national health programmes to leave no one behind: technical handbook. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/bitstream/handle/10665/250442/9789241511391-eng.pdf?ua=1>, accessed 5 June 2019).
- 10 Tanahashi T. Health service coverage and its evaluation. *Bull World Health Organ.* 1978;56:295–303.
- 11 Policy Brief: HIV testing services. HIV self-testing at the workplace. World Health Organization; November 2018 (<https://www.who.int/hiv/pub/vct/hiv-self-testing-workplace/en/>, accessed 26 March 2021).
- 12 Golrokhi R, Farhoudi B, Taj L, Golsoorat F, Pahlaviani, Mazaheri-Tehrani E, et al. HIV prevalence and correlations in prisons in different regions of the world: a review article. *The Open AIDS Journal.*
- 13 Nyabuti MN, Petersen ML, Bukusi EA, Kanya MR, Mwangwa F, Kabami J, et al. Characteristics of HIV seroconverters in the setting of universal test and treat: results from the SEARCH trial in rural Uganda and Kenya. *PLoS ONE.* 2021;16(2):e0243167 (<https://doi.org/10.1371/journal.pone.0243167>).
- 14 Gottert A, Pulerwitz J, Heck CJ, Cawood C, Mathur S. Creating HIV risk profiles for men in South Africa: a latent class approach using cross-sectional survey data. *J Int AIDS Soc.* 2020;23(2):e25518. doi:10.1002/jia2.25518. PMID: 32589340; PMCID: PMC7319107.
- 15 Implementing the 2017–2021 framework for voluntary medical male circumcision. World Health Organization ([https://www.malecircumcision.org/sites/default/files/document\\_library/WHO\\_VMMC\\_framework\\_meeting\\_report\\_2017.pdf](https://www.malecircumcision.org/sites/default/files/document_library/WHO_VMMC_framework_meeting_report_2017.pdf), accessed 30 April 2021).
- 16 Updated recommendations on HIV prevention, infant diagnosis, antiretroviral initiation and monitoring: March 2021. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240022232>, accessed 12 May 2021).
- 17 Priorities for Local AIDS Control Efforts (PLACE) Tool Kit. MEASURE DHS (<https://www.measureevaluation.org/resources/tools/hiv-aids/place#:~:text=The%20Priorities%20for%20Local%20AIDS,tailored%20interventions%20to%20reduce%20transmission>, accessed 13 May 2021).
- 18 Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. Section 5.2. World Health Organization (<http://apps.who.int/iris/bitstream/handle/10665/246200/9789241511124-eng.pdf?sequence=8>, accessed 5 August 2021).
- 19 Atkins K, Yeh PT, Kennedy CE, Fonner VA, Sweat MD, O’Reilly KR, et al. (2020) Service delivery interventions to increase uptake of voluntary medical male circumcision for HIV prevention: a systematic review. *PLoS ONE.* 2020;15(1): e0227755.
- 20 Ashengo TA, Hatzold K, Mahler H, Rock A, Kanagat N, Magalona S, et al. Voluntary medical male circumcision (VMMC) in Tanzania and Zimbabwe: service delivery intensity and modality and their influence on the age of clients. *PLoS One.* 2014;9(5):e83642.
- 21 Hellar AM, Boyee D, Mahler H, Plotkin M, Ng’wanakilala T, Curran K, et al. Mobile VMMC teams in Tanzania see older clients and have higher followup rates. *Top Antivir Med.* 2015;23(e-1):502.
- 22 Wambura M, Mahler H, Grund J, Larke N, Mshana G, Kuringe E, et al. Increasing voluntary medical male circumcision uptake among adult men in Tanzania. *Aids.* 2017;31(7):1025–34 (<https://doi.org/10.1097/QAD.0000000000001440> PMID: 28350578).
- 23 Kaufman ZA, DeCelles J, Bhauti K, Hershow RB, Weiss HA, Chaibva C, et al. A sport-based intervention to increase uptake of voluntary medical male circumcision among adolescent male students: results from the MCUTS 2 cluster-randomized trial in Bulawayo, Zimbabwe. *J Acquir Immune Defic Syndr.* 2016;72(4):S292–8.
- 24 Kennedy CE, Yeh PT, Atkins K, Fonner VA, Sweat MD, O’Reilly KR, et al. Economic compensation interventions to increase uptake of voluntary medical male circumcision for HIV prevention: a systematic review and meta-analysis. *PLoS ONE.* 2020;15(1):e0227623 (<https://doi.org/10.1371/journal.pone.0227623>).
- 25 Male involvement in the prevention of mother-to-child transmission of HIV. World Health Organization Department of Reproductive Health and Research (<https://www.who.int/reproductivehealth/publications/rtis/9789241503679/en/>, accessed 25 October 2021).
- 26 Nurse-Findlay S, Kuruvilla S, Festin M, Bloem P, Svanemyr J, Vogelsong K, et al. Engaging men and boys in RMNCH knowledge summary: women’s & children’s health. Partnership for Maternal, Newborn & Child Health. 2013:1–4.
- 27 Mangeni JN, Mwangi A, Mbuga S, et al. Male involvement in maternal health care as a determinant of utilization of skilled birth attendants in Kenya. *DHS Working Papers.* 2013;93 (<https://dhsprogram.com/pubs/pdf/WP93/WP93.pdf>).
- 28 Tokhi M, Comrie-Thomson L, Davis J, Portela A, Chersich M, Luchters S. Involving men to improve maternal and newborn health: a systematic review of the effectiveness of interventions. *PLoS One.* 2018;13(1):e0191620. doi:10.1371/journal.pone.0191620.
- 29 Gopal, P, Fisher, D, Seruwagi, G, et al. Male involvement in reproductive, maternal, newborn, and child health: evaluating gaps between policy and practice in Uganda. *Reprod Health.* 2020;17:114 (<https://doi.org/10.1186/s12978-020-00961-4>).



- 30 Odeny et al. Male partner antenatal clinic attendance is associated with increased uptake of maternal health services and infant BCG immunization: a national survey in Kenya. *BMC Pregnancy and Childbirth*. 2019;19:284 (<https://doi.org/10.1186/s12884-019-2438-9>).
- 31 Natai CC, Gervais N, Sikira FM, et al. Association between male involvement during antenatal care and use of maternal health services in Mwanza City, Northwestern Tanzania: a cross-sectional study. *BMJ Open* 2020;10:e036211. doi:10.1136/bmjopen-2019-036211.
- 32 Msungama W, Menego G, Shaba F, et al. Sexually transmitted infections (STI) and antenatal care (ANC) clinics in Malawi: effective platforms for improving engagement of men at high HIV risk with voluntary medical male circumcision services. *Sexually Transmitted Infections*. 2021;0:(1–6). doi:10.1136/sextrans-2020-054776.
- 33 Choko AT, Corbett EL, Stallard N, Maheswaran H, Lepine A, Johnson CC, et al. HIV self-testing alone or with additional interventions, including financial incentives, and linkage to care or prevention among male partners of antenatal care clinic attendees in Malawi: an adaptive multi-arm, multi-stage cluster randomized trial. *PLoS Med*. 2019; 16(1):e1002719 (<https://doi.org/10.1371/journal.pmed.1002719>).
- 34 Mark J, Kinuthia J, Osoti AO, Gone M, Asila V, Krakowiak D, et al. Male partner linkage to clinic-based services for sexually transmitted infections and human immunodeficiency virus services following couple home-based education and testing. *Sex Transm Dis*. 2019;46(11):716–721.
- 35 Heffron R, Ngure K, Vellozo J, Kiptinness C, Quame-Amalgo J, Oluch L, et al. Implementation of a comprehensive safer conception intervention for HIV-serodiscordant couples in Kenya: uptake, use and effectiveness. *J Int AIDS Soc*. 2019;22:e25261 (<http://onlinelibrary.wiley.com/doi/10.1002/jia2.25261/full> | <https://doi.org/10.1002/jia2.25261>).
- 36 Wang Z, Yang L, Hao C, Jiang H, Zhu J, Luo Z, et al. A randomized controlled trial evaluating efficacy of a brief setting-based and theory-based intervention promoting voluntary medical male circumcision among heterosexual male sexually transmitted disease patients in China. *AIDS Behav*. 2019;23:2453–2466 (<https://doi.org/10.1007/s10461-019-02610-9>).
- 37 Grund J, Chetty-Makkan CM, Ginindza S, Munyai R, Kibbey-Green H, et al. Effectiveness of an “exclusive intervention strategy” to increase medical male circumcision uptake among men aged 25–49 years in South Africa. *BMC Public Health*. 2018;18:868 (<https://doi.org/10.1186/s12889-018-5729-6>).
- 38 Kibel M, Shah P, Ayuku D, Makorib D, Kamaara E, Choge E, et al. Acceptability of a pilot intervention of voluntary medical male circumcision and HIV education for street-connected youth in Western Kenya. *J Adolesc Health*. 2019;64:4348.
- 39 Kuteesa MO, Weiss HA, Abaasa A, Nash S, Nsubuga RN, Newton R, et al. Feasibility of conducting HIV combination prevention interventions in fishing communities in Uganda: a pilot cluster randomised trial. *PLoS ONE*. 2019;14(3):e0210719 (<https://doi.org/10.1371/journal.pone.0210719>).
- 40 Chang LW, Mbabali I, Hutton H, Amico KR, Kong X, Mulamba J, et al. Novel community health worker strategy for HIV service engagement in a hyperendemic community in Rakai, Uganda: a pragmatic, cluster-randomized trial. *PLoS Med*. 2021;18(1):e1003475 (<https://doi.org/10.1371/journal.pmed.1003475>).
- 41 Makokha M, Massawe P, Machaku M, et al. What influences adult men to use HIV prevention services: lessons from a promising male-friendly ‘VIP’ initiative to promote voluntary medical male circumcision (VMMC) services in Tanzania. Poster PED1318 presented at the 23rd International AIDS Conference. Virtual: 6–10 July 2020.
- 42 Durrell M, Aladesanmi L, Laube C, Mohan D, Kaira F, Chituwo O, et al. FRPEC209 – Financial compensation increases voluntary medical male circumcision uptake among high-risk men in Zambia. ICASA 20th conference. Kigali, Rwanda, 2–7 December 2019.
- 43 Mulhausen J, Sweeney T, Prasad R, et al. Design for health. systematic design for behavior change: discussing the approach applied to voluntary medical male circumcision. Presented at the 14th AIDS Impact Conference. London, England. 21–29 July 2019
- 44 Ning C, Jiang J, Ye L, Yang X, Wei B, et al. Comparison of three intervention models for promoting circumcision among migrant workers in Western China to reduce local sexual transmission of HIV. *PLoS ONE*. 2013;8(9):e76107. doi:10.1371/journal.pone.0076107.
- 45 Lubambi P, Nyalali K, Mphuru L, Mejia C, Aldridge S, Masika P, Simbeye D. There is an app and an approach for that: integrating human-centered design in a mobile app to increase uptake of voluntary medical male circumcision. Poster PEE1685 presented at the 23rd International AIDS Conference. Virtual: 6–10 July 2020.
- 46 Policy Brief: Improving men’s uptake of HIV testing and linkage to services. World Health Organization. February 2021 (<https://apps.who.int/iris/bitstream/handle/10665/339620/9789240018938-eng.pdf?sequence=1&isAllowed=y>, accessed 13 May 2021).
- 47 Consolidated guidelines on HIV testing services for a changing epidemic policy brief. World Health Organization. November 2019 (<https://apps.who.int/iris/bitstream/handle/10665/331697/9789240000735-eng.pdf?sequence=1&isAllowed=y>, accessed 2 March 2021).
- 48 Consolidated HIV strategic information guidelines driving impact through programme monitoring and management. World Health Organization. April 2020 (<https://apps.who.int/iris/handle/10665/331697>, accessed 26 March 2021).
- 49 PEPFAR Panorama public dashboard (<https://data.pepfar.gov/programareas>, accessed 11 March 2021).
- 50 Wirth KE, Gaolathe T, Pretorius Holme M, Mmalane M, Kadima E, Chakalisa U, et al. Population uptake of HIV testing, treatment, viral suppression, and male circumcision following a community based intervention in Botswana (Ya Tsie/BCPP): a cluster-randomised trial. *Lancet HIV*. 2020;7(6):e422–e33. doi:10.1016/s2352-3018(20)30103-x.
- 51 Barnabas RV, van Rooyen H, Tumwesigye E, Brantley J, Baeten JM, van Heerden A, et al. Uptake of antiretroviral therapy and male circumcision after community-based HIV testing and strategies for linkage to care versus standard clinic referral: a multisite, open-label, randomised controlled trial in South Africa and Uganda. *Lancet HIV*. 2016;3:e212 –20. doi: 10.1016/S2352-3018(16)00020–5.
- 52 Personal communication. Jhpiego Rwanda.
- 53 See Annex 2: Case Study 2 (Zambia).
- 54 Personal communication. Jhpiego Mozambique.
- 55 See Annex 3: Case Study 3 (Malawi).
- 56 Musiige A, Gold E, Sallet J, Twahirwa W, Mwandi Z, Chilemba A, et al. Abstract THPEE366 – Solutions for getting older men into voluntary medical male circumcision services: field lessons from Malawi. ICASA 20th conference, Kigali, Rwanda, 2–7 December 2019.
- 57 Musiige A, Kawale J, Twahira W, et al. Increasing the uptake of VMMC: lessons from AIDSFree Malawi. *AIDSFREE*: April 2019 (<https://www.malecircumcision.org/resource/increasing-uptake-vmmc-lessons-aidsfree-malawi>, accessed 8 October 2021).
- 58 Personal communication. Jhpiego Botswana. Amon.Marwiro@jhpiego.org
- 59 Personal communication. CHAPS, South Africa.
- 60 Personal communication. USAID VMMC programme.

- 61 Maphele, S. Reaching males at higher risk through STI services and the world of work. Presented at the meeting on implementing the 2017–2021 framework for voluntary medical male circumcision for the eastern and southern Africa region. Durban, South Africa, 27 February 2017 (<https://www.malecircumcision.org/resource/reaching-males-higher-risk-through-sti-services-and-world-work>, accessed 11 March 2021).
- 62 Personal communication. US Department of Defense VMMC program.
- 63 Carrasco MA, Wilkinson J, Kasdanb B, Fleming P. Systematic review of barriers and facilitators to voluntary medical male circumcision in priority countries and programmatic implications for service uptake. *Glob Public Health*. 2019;14:(1)91–111 (<https://doi.org/10.1080/17441692.2018.1465108>).
- 64 Palmer E. The factors that affect the low uptake of voluntary medical male circumcision among adult males (20–39 years of age) in Gauteng Province, South Africa. Poster THPED419 presented at the 22nd International AIDS Conference. Amsterdam, Netherlands, 23–27 July 2018.
- 65 Odero K, Otenyo J, Odima S, Akolong G, Ophwette A, Pulkol S. Barriers to uptake of voluntary medical male circumcision (VMMC) among men aged above 24 years in Turkana West Subcounty, Kenya. Poster FRPEC217 presented at ICASA 20th conference. Kigali, Rwanda, 2–7 December 2019.
- 66 Mejia C, Swai M, Zimmerman E, McElwee E, Mphuru L, Lweno Z. Behavior design methodology for uptake of voluntary medical male circumcision among fisherfolks in the lake zone of Tanzania. Poster PDD0504 presented at the 22nd International AIDS Conference. Amsterdam, Netherlands, 23–27 July 2018.
- 67 Sangweni PN, Mavundla TR, Moab PS. Factors hindering effective uptake of medical male circumcision at Untunjambili area in KwaZulu-Natal, South Africa. *Health SA Gesondheid*. 2019;24(0):a1305 (<https://doi.org/10.4102/hsag.v24i0.1305>).
- 68 Ong JJ, Neke N, Wambura M, Kuringe E, Grund JM, Plotkin M, et al. Use of lotteries for the promotion of voluntary medical male circumcision service: a discrete-choice experiment among adult men in Tanzania. *Med Decis Making*. 2019;39(4):474–485.
- 69 Report of an adolescent health services barriers assessment (AHSBA) in the United Republic of Tanzania with a focus on disadvantaged adolescents. World Health Organization, AFRO. 2019.
- 70 PEPFAR Mozambique. Adaptations to Client-Centered Services During COVID-19 VMMC. Presented online 27 October 2020 at VMMC webinar – Adaptations to VMMC service delivery in the context of COVID-19.
- 71 Grove, S. VMMC demand creation in the time of COVID19. Social and behaviour change communication. Right to Care, South Africa. Presented online 27 October 2020 at VMMC webinar – Adaptations to VMMC service delivery in the context of COVID-19.
- 72 Mildmay Uganda. VMMC demand generation activities in Mubende region during COVID 19 lockdown-FY20Q3. Presented online 27 October 2020 at VMMC webinar – Adaptations to VMMC service delivery in the context of COVID-19.
- 73 Intrahealth. VMMC service adaptation in the context of COVID 19. Presented online 27 October 2020 at VMMC webinar – Adaptations to VMMC service delivery in the context of COVID-19.
- 74 Personal communication. CHAPS South Africa.
- 75 Cork, MA, Wilson, KF, Perkins, S, et al. Mapping male circumcision for HIV prevention efforts in sub-Saharan Africa. *BMC Med*. 2020;18:189 (<https://doi.org/10.1186/s12916-020-01635-5>).





**For more information, contact:**

World Health Organization  
Global HIV, Hepatitis and STIs Programmes  
20, Avenue Appia  
1211 Geneva 27  
Switzerland

E-mail: [hiv-aids@who.int](mailto:hiv-aids@who.int)

<https://www.who.int/hiv/pub/malecircumcision/en/>

