

# Lessons Learned From Scale-Up of Voluntary Medical Male Circumcision Focusing on Adolescents: Benefits, Challenges, and Potential Opportunities for Linkages With Adolescent HIV, Sexual, and Reproductive Health Services

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**Background and Methods:** By December 2013, it was estimated that close to 6 million men had been circumcised in the 14 priority countries for scaling up voluntary medical male circumcision (VMMC), the majority being adolescents (10–19 years). This article discusses why efforts to scale up VMMC should prioritize adolescent men, drawing from new evidence and experiences at the inter-

national, country, and service delivery levels. Furthermore, we review the extent to which VMMC programs have reached adolescents, addressed their specific needs, and can be linked to their sexual and reproductive health and other key services.

**Results and Discussion:** In priority countries, adolescents represent 34%–55% of the target population to be circumcised, whereas program data from these countries show that adolescents represent between 35% and 74% of the circumcised men. VMMC for adolescents has several advantages: uptake of services among adolescents is culturally and socially more acceptable than for adults; there are fewer barriers regarding sexual abstinence during healing or female partner pressures; VMMC performed before the age of sexual debut has maximum long-term impact on reducing HIV risk at the individual level and consequently reduces the risk of transmission in the population. Offered as a comprehensive package, adolescent VMMC can potentially increase public health benefits and offers opportunities for addressing gender norms. Additional research is needed to assess whether current VMMC services address the specific needs of adolescent clients, to test adapted tools, and to assess linkages between VMMC and other adolescent-focused HIV, health, and social services.

**Key Words:** adolescent, circumcision, HIV, health

(*J Acquir Immune Defic Syndr* 2014;66:S193–S199)

## INTRODUCTION

Modeling studies conducted in 2009 and 2011 estimated that circumcising 80% of adult men between ages 15 and 49 years in 14 priority countries in Eastern and Southern Africa (Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe) within 5 years, and sustaining 80% coverage thereafter, could avert 3.4 million HIV infections within 15 years and save \$16.5 billion USD in treatment costs.<sup>1,2</sup> Voluntary medical male circumcision (VMMC) has been launched in these priority countries as a part of a comprehensive HIV prevention strategy and the programs are recording annual output

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The authors have no conflicts of interest to disclose.

Zimbabwe: The VMMC program in Zimbabwe described in this article is supported by the United States President's Emergency Plan for AIDS Relief (PEPFAR) through the United States Agency for International Development (USAID) and implemented by Population Services International (PSI) through the Zimbabwe Strengthening Private Sector Services Program, Prime Award Number 674-A-00-1000081-00. Tanzania: The Tanzania program described in this article is funded by the PEPFAR through USAID and implemented by the Maternal and Child Health Integrated Program (MCHIP) (Award No. GHS-A-00-08-00,002-000), which is led by Jhpiego—an affiliate of Johns Hopkins University. Additional funding for this work was provided by President's Emergency Program for AIDS Relief through the USAID|Health Policy Project. The Health Policy Project is a 5-year cooperative agreement funded by the USAID under Agreement No. AID-OAA-A-10-00,067, beginning September 30, 2010. It is implemented by Futures Group, in collaboration with CEDPA (part of Plan International USA), Futures Institute, Partners in Population and Development, Africa Regional Office, Population Reference Bureau, RTI International, and the White Ribbon Alliance for Safe Motherhood. The funder, USAID, played a significant technical role in study design, analysis, decision to publish, and preparation of the manuscript.

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increases. As of December 2013, it is estimated that close to 6 million men had been circumcised in the 14 VMMC priority countries.<sup>3</sup> Most clients accessing VMMC services in most of the 14 priority countries are adolescents, aged 10–19 years.<sup>4</sup>

Several factors could explain this age profile and relative receptiveness to VMMC among adolescents, and presumably their parents. In some traditionally circumcising communities, the social norm has been (and continues to be) for male circumcision to be part of rites of passage into adulthood for adolescent boys.<sup>5</sup> Therefore, older uncircumcised adult men may view VMMC as culturally inappropriate for their stage in life.<sup>6</sup> Additionally, the service delivery models used to make VMMC more accessible to adolescents often capitalize on school holidays, which also tend to coincide with seasonal preferences in VMMC-seeking behaviors.<sup>6,7</sup> Peer pressure especially in this age group may also reinforce VMMC service uptake.<sup>8</sup> Last, the social determinants of adoption/nonadoption of VMMC likely differ for young men below age 25 and those above this age.<sup>8</sup>

Adolescence has been described as “a period of momentous social, psychological, economic and biological transition.”<sup>9</sup> This period presents a crucial opportunity to introduce sexual and reproductive health (SRH) interventions, including HIV prevention, because most adolescents are not yet sexually active.<sup>10</sup> Population-based survey data in some priority VMMC settings show the age of sexual debut in these regions to be on average around 18 years,<sup>11–23</sup> and age-specific HIV incidence rates suggest that most men become infected between the age of 20–29 years.<sup>24</sup> SRH interventions for adolescents also deal with HIV care as there is a significant HIV burden among adolescents who became infected as infants through vertical transmission. Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates that the HIV burden among adolescents is substantial and that by the end of 2012 an estimated 2.1 million adolescents (aged 10–19 years) were living with HIV.<sup>24</sup>

Adolescents experience challenges in accessing and receiving health services because of policies that prevent them from independently seeking services without parental consent, judgmental provider attitudes about sexual activity among young people, and services that are not tailored to the needs of youth. In Zimbabwe, for example, adolescents younger than 16 years are barred by law from accessing contraceptives and those aged 16 and 17 years can only access contraception with parental consent, which most are unlikely to seek.<sup>25</sup> Adolescent men are particularly difficult to reach because their limited knowledge of health services and their perception that SRH services are for women influences their desire to access services.

We synthesize new evidence from VMMC in adolescents; and discuss why VMMC services could benefit from prioritizing this group. The synthesis draws from experience with VMMC implementation at the international, country, and service delivery level. At the international level, we examine the policy environment, international guidance, and current gaps for adolescent VMMC services and HIV prevention in general. At the country level, we assess VMMC program implementation and use selected programs to illustrate how the age-specific targets were met. Finally,

at the service delivery level, we draw lessons from experiences in priority countries in reaching adolescents with VMMC services.

## METHODS

We conducted a literature review using the key words “medical male circumcision AND adolescents” and consulted documentation relevant to VMMC and adolescents using PubMed and Google Scholar, as well as searching World Health Organization and United Nations Children’s Fund (UNICEF) databases for documents on international guidance, policy environment, and global technical reviews related to adolescent HIV and SRH more broadly.

We analyzed epidemiological, demographic, and sexual behavior data as well as program data from VMMC priority countries to evaluate the extent to which VMMC country programs have reached different age groups of men. We extracted data from the most recent country Demographic and Health Survey (DHS) between 2006 and 2011<sup>11–23</sup> and from Spectrum, a publicly available site for health policy modeling tools ([www.futuresinstitute.org](http://www.futuresinstitute.org)), for the following indicators: proportion of men engaged in sexual activity by age 15 and 18 years (data from 13 countries); age at the time of male circumcision (data from 7 countries); population size estimates for adolescents 10–19 years; and percentage of this group relative to the total male population 10–49 years (data from 10 countries).

We estimated the projected and actual reach of eligible adolescent male clients for VMMC for 10 priority countries by estimating the age-specific male population size (10–49 years) for eight, 5-year age strata using Spectrum projections and extracted male circumcision data from DHS for the specific age groups. Using the age-specific population data and the age-specific male circumcision prevalence, we calculated the number of uncircumcised men in each of the eight, 5-year age groups. These became the eligible target populations for each 5-year age group. By dividing the eligible population in the 10- to 19-year age group by the eligible population of all eight, 5-year age groups, we estimated the percentage of the eligible population who were adolescents (projected reach). To calculate the proportion of VMMC clients who are adolescents (actual reach), we used VMMC program monitoring data supported by the President’s Emergency Program for AIDS Relief from the 10 countries for 2012. The number of clients aged 10–19 years divided by the number of clients aged 10–49 years represents the proportion of clients who are adolescents (actual reach).

Variations in the number of countries included in this analysis for the different outcomes presented above were because of limitations in the availability of demographic data from the different countries; the analysis is limited to the countries where data were accessible (Table 1).

Last, we conducted a secondary analysis of VMMC program data from Zimbabwe and Tanzania on male circumcision outputs between 2009 and 2013, published as a case study in PLoS One in 2014 describing the age distribution of VMMC clients and their respective demographic and behavior characteristics, and the demand creation and

**TABLE 1.** List of Priority Countries That Were Included/not Included From the Analysis by Outcome

Outcome	Countries Included in the Analysis	Countries Not Included in the Analysis
VMMC targets, projected and actual reach	Botswana, Lesotho, Malawi, Namibia, Rwanda, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe	Ethiopia, Kenya, Mozambique, Uganda
Age at sexual debut	Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe	Botswana
Age at male circumcision	Kenya, Malawi, Namibia, Rwanda, Swaziland, Tanzania, Uganda	Botswana, Ethiopia, Lesotho, Mozambique, Swaziland, Zambia, Zimbabwe

supply side activities that country programs implemented to increase service uptake by the specific age groups of male circumcision clients.<sup>26</sup>

## RESULTS

### Literature Review

The WHO/UNAIDS Joint Strategic Action Framework to Accelerate the Scale-Up of VMMC for HIV Prevention calls for identification of approaches to integrate and expand VMMC services for adolescent men.<sup>27</sup> Specifically, the framework recommends that service delivery packages are refined to be age appropriate; that VMMC services are integrated with youth-friendly SRH services; and that VMMC services are linked with other youth-focused programs (eg, youth centers, adolescent health corners, churches, schools, and sports). The framework also advocates for developing policy or guidance to obtain suitable informed consent for minors accessing HIV services.<sup>27</sup>

In addition, building on the HIV Investment Framework, a global systematic review focusing on effectiveness of adolescent HIV interventions identified VMMC as a key priority HIV prevention intervention for adolescents in high HIV and low male circumcision prevalence settings.<sup>28</sup> The review also identified information gaps to be filled by research to make interventions of proven efficacy, such as VMMC, more accessible to adolescents and to reach adolescents more effectively with these high-impact interventions.

Another systematic review of youth-friendly health care has shown that sustainable, effective youth programming should be age and context specific, have providers that show respect and understanding for adolescents’ special needs, and link to other health services such as SRH.<sup>29</sup> WHO has developed a programmatic options and materials document that outlines 3 implementation options for integrating VMMC with adolescent sexual and reproductive health (ASRH) services. The document proposes different packages of health education on HIV/sexually transmitted infections (STIs), sexuality, and gender norms that can be adapted to the local context at health care facilities and at the community level, and can be offered pre-, intra-, and post-male circumcision surgery. The guidance aims to provide options and support for policy makers and health professionals in male circumcision and ASRH programs to develop and strengthen ASRH-related activities.<sup>30</sup>

### Country-Level Data

The projected and actual reach of men between the ages of 10 and 19 years for 10 priority countries is presented in Figure 1. The proportion of adolescents in the total target population of uncircumcised men, aged 10–49 years (projected reach) in the different countries ranged from 34% to 55%. In all but 2 (Lesotho and Namibia) of the 10 countries, the actual reach was higher than the projected reach.

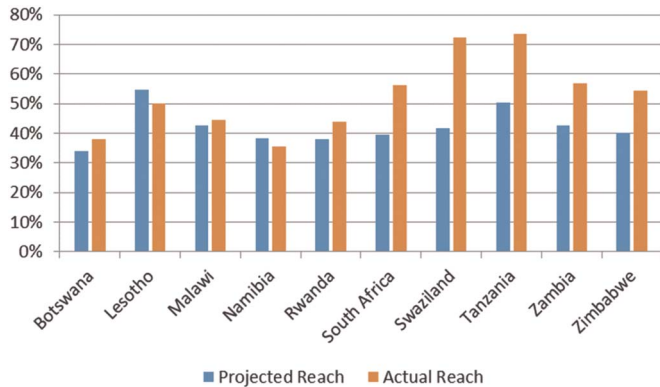
Between 4% and 22% of adolescent men in 13 VMMC priority countries reported engaging in sexual intercourse by the age of 15 years, and between 25% and 71% by age 18 years.<sup>11–23</sup> Among the 13 countries presented here, Zimbabwe has the lowest proportion reporting initiating sex by age 15 years (4%) and 18 years (25%).<sup>11</sup> In 6 of the 13 countries, more than 50% of men had engaged in sexual activities by the age of 18 (Fig. 2).

Age at circumcision (VMMC and traditional male circumcision) among circumcised men for 7 priority countries is shown in Figure 3. For 6 of these countries, more than 50% of men were circumcised before 13 years. In Rwanda, about one third of circumcisions (34%) took place before the age of 13 and more than one third of cases (35%) were performed between 13 and 19 years. Less than 20% of circumcised males in 5 of the 7 countries were circumcised after 20 years of age, with the exceptions of Rwanda (29%) and Swaziland (20%).<sup>13,15,17,19,21–23</sup>

### Service-Delivery Level Data: Tanzania and Zimbabwe

Case studies of the two countries were chosen on the basis of their efforts to reach adolescents with VMMC, following global and national guidelines and evidence from research that guided implementation; the approaches that were used to adapt services to the needs of this age group; and the monitoring data available to conduct the secondary data analysis.

In Tanzania, most (N = 146,071; 80%) of the clients circumcised in Iringa and Njombe regions between October 2009 and September 2013 were 10- to 19-year-olds, and most these adolescent clients (91%) were tested for HIV as part of the VMMC service. In the 4-year period, 789 or 0.6% of these adolescents tested HIV positive (compared with 1.4% of all VMMC clients). An analysis of self-reported behavioral data drawn from 2 years of routine client records of 80,347 clients aged 10–19 years found that 0.09%



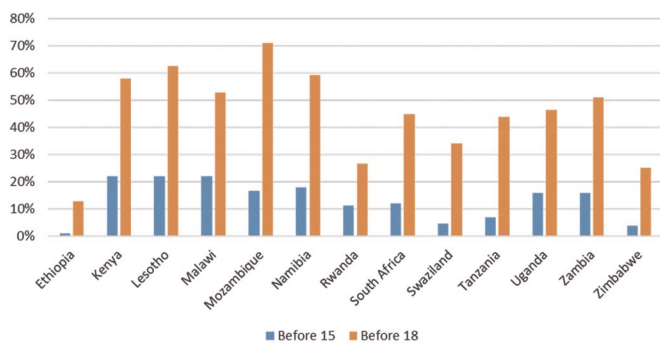
**FIGURE 1.** VMMC targets in 10 countries—projected and actual reach of adolescents. Projected reach: adolescents (10–19 years) as a percentage of all targeted clients (uncircumcised men, 10–49 years); actual reach: adolescents (10–19 years) as a percentage of all clients circumcised (10–49 years).

of 10- to 14-year-olds, and 9% of 15- to 19-year-olds reported having engaged in sexual intercourse.

In Zimbabwe, an analysis of VMMC client data (N = 20,737) collected between May 2012 and May 2013 showed that close to half (48%) of the VMMC clients were between 10 and 19 years old. HIV testing was near universal (97%) among these adolescent clients. In the 1-year period, 122 (1.5%) of the adolescent clients tested HIV positive. None of the 10- to 14-year-olds and 20.7% of the 15- to 19-year-olds reported sexual activity, according to self-reports documented in the routine data collection form (Table 2).

**Specific Communication Strategies for Adolescents Were Used in Zimbabwe**

Formative research was used to develop VMMC messages tailored for adolescents and young men aged 10–19 years. A popular Reggae artist developed several songs, radio jingles, and appeared on television, billboards, and print materials promoting the benefits of VMMC and promoting it as fashionable and leading to success; positioning VMMC as a lifestyle choice for smart men and boys aged 10–19 years.<sup>8</sup>



**FIGURE 2.** Age of sexual debut in 14 countries. For each country, the proportion of men reporting having engaged in sex by age 15 and age 18 in the most recent demographic and health survey.

Circumcised clients were encouraged to become “VMMC Champions” under the “Bring a Buddy” campaign. VMMC Champions are rewarded through specific recognition and certificates if they are able to attract friends or classmates for VMMC. This approach was used during a school holiday campaign in August/September 2010. Some champions were able to attract large groups—up to 15 friends and schoolmates—for VMMC services, increasing uptake of services sevenfold when compared with a similar period before the campaign.

To increase opportunities to reach young men, VMMC campaigns are implemented during school breaks. Intensified periods of VMMC service delivery and community mobilization before and during school breaks are combined with mass media campaigns. Mobile outreach VMMC services are delivered to clinics located close to schools and other places where young people congregate. Between 2010 and 2013, the number of VMMC clients per month during school campaigns more than tripled, as compared with the same period outside campaign months. Sixty-two percent of the overall VMMC output is attributable to school campaigns.

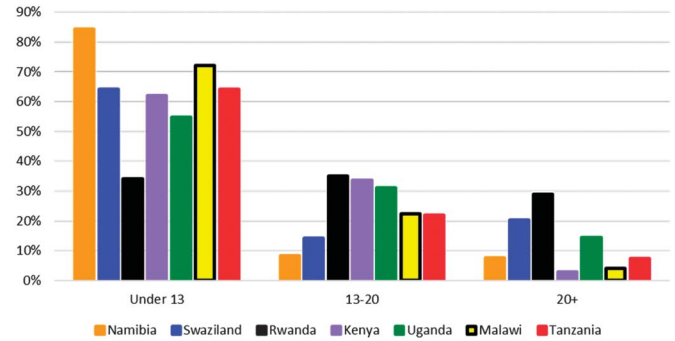
In Zimbabwe, VMMC clients below the age of 18 years are required to get the consent of their parents or caregivers for the procedure and HIV testing and are asked to assent. In cases where parents could not accompany their children to the VMMC site, written consent was sought from parents by the community mobilizers before the adolescent accessed VMMC. Service providers at the VMMC sites confirmed that parental consent had been provided through contacting the consent giver by telephone. All VMMC clients testing HIV-positive receive intensive posttest counseling that addresses psychosocial issues, disclosure support, and individual treatment and care options. Tuberculosis symptom screening and point-of-care CD4 cell count is offered routinely to every client who tests HIV positive. Clients below the age of 18 years are counseled together with their parents or caregivers. All HIV-positive adolescent clients are referred to HIV treatment clinics and are followed up by telephone and SMS messages until they have reached the referral center. Current referral tracking data suggest that 90% of all referred clients successfully access treatment services

In Tanzania, all VMMC clients receive group education and individual counseling. Providers have been trained to offer separate group education and counseling for presexually active adolescents, so that risk reduction counseling is age and sexual-activity appropriate. Parents/guardians are included in group education—and in individual counseling, particularly for the younger clients—so that parent/guardians receive the same education and counseling as their children. All clients testing HIV positive receive enhanced posttest counseling. However, providers have been trained to take special care to offer age-appropriate counseling for HIV-positive adolescents and their guardians/parents and facilitate linkages to care through escort and phone follow-up

**DISCUSSION**

Adolescents are particularly vulnerable and at risk for acquiring STIs, including HIV, as well as for early and

**FIGURE 3.** Age at circumcision in 7 African countries. Men who reported in the demographic and health survey that they had been circumcised were asked the age at which they had been circumcised.



unintended pregnancy; yet, because of their age, adolescents face significant barriers in accessing HIV prevention interventions because of community and service provider attitudes about sexuality in adolescents. Many countries have age-of-consent laws that prevent most adolescents, even those who are sexually active, from independently seeking HIV testing and counseling, which is a key gateway to multiple effective interventions for HIV prevention and other SRH services. This is particularly true for adolescent men who often regard health services as irrelevant to their own needs—believing they primarily address women and girls—and are distrustful of them. VMMC has been integrated as a key HIV prevention intervention in most countries in Eastern and Southern Africa where it has reached a higher percentage of adolescent men than older men with a comprehensive package of HIV prevention interventions with many countries having greatly increased their VMMC program outputs between 2011 and 2013.

Based on previous research conducted in Zimbabwe, we gathered that barriers to VMMC that exist for older men, such as time lost from work and the required 6-week abstinence period after surgery,<sup>8</sup> are less problematic for adolescents who can access services during school holidays and, in many instances, are not yet sexually active. Younger age groups seem to be more receptive to VMMC communication campaigns that focus on perceived social support using role models and peer influence; they are also more influenced by their parents.

Reaching adolescent men in schools through interventions that seek support from their teachers, headmasters, and parents has been very effective in attracting them to VMMC services. Furthermore, in countries where traditional circumcision is practiced, circumcision during adolescence is

normative, whereas circumcision in older men is perceived as embarrassing, shameful, inappropriate, and irrelevant.<sup>6</sup> Given the large population of adolescents relative to the male population eligible for VMMC (between 34% and 55%), targeting adolescent men for VMMC is likely to be more cost effective than trying to reach older age groups of men, who seem to require more complex, intensive, and long-term persuasion. Furthermore, positioning VMMC, with its diverse package of services and benefits, as an intervention that prepares adolescents for adulthood and portraying VMMC as a lifestyle choice for smart boys to become real men, rather than an HIV-prevention intervention, have been shown to be successful strategies to overcome barriers of uptake.<sup>8</sup>

From the epidemiological perspective, it is particularly important to reach men when they are still in their adolescent years before they initiate their sexual life and before they are exposed to HIV. DHS data from several VMMC priority countries show that less than 25% of men had sexual experience by age 15, whereas more than 50% had engaged in sexual activity by the age of 18 years. HIV incidence in men in most countries with high HIV prevalence typically peaks between the ages 20 and 29 years, suggesting that reaching men before the age of 20 years has potentially the highest magnitude of impact on prevention of primary infection.<sup>24</sup> Program data from Zimbabwe and Tanzania support these findings—showing low HIV prevalence among adolescent VMMC clients, minimal sexual activity, and very little evidence for risky sexual behavior.

VMMC, which is offered as a package of several HIV-prevention interventions, will provide an important entry point to improve SRH knowledge, behavior, and access to services among adolescent men as they interact with the service provider before, during, and after surgery

**TABLE 2.** Characteristics of Adolescents in VMMC Service Delivery in Tanzania (Iringa and Njombe Regions) and Zimbabwe Programs

	Time Frame (Months of Service Delivery Represented)	Number of 10- to 19-Yr-Olds Circumcised	Proportion of Adolescents of All VMMC Clients, %	Proportion of Adolescent Clients Tested for HIV, %	Proportion Testing Positive, %		Proportion Reporting Sexual Activity, %	
					10- to 14-Yr-Olds	15- to 19-Yr-Olds	10- to 14-Yr-Olds	15- to 19-Yr-Olds
Tanzania	October 2009–September 2013 (48)	146,071	80	91	0.7	0.4	0.09	9
Zimbabwe	May 2012–May 2013 (12)	20,737	48	97	1.7	1.2	0	20.7

(WHO/UNAIDS minimum package for male circumcision services include the following: HIV testing and counseling; active exclusion of symptomatic STIs and syndromic treatment where required; provision and promotion of correct and consistent use of male and female condoms; information and counseling on risk reduction and safer sex; male circumcision as described in the *WHO/UNAIDS/JPEIGO Technical Manual for Male Circumcision under Local Anesthesia*).

Program data from Zimbabwe show that HIV testing uptake among adolescent clients is close to 100% and on-site point-of-care CD4 cell count as well strong referral and referral tracking systems ensure that HIV-positive individuals access treatment services in a timely manner. Many of the core components of the minimum package for VMMC are the same as the key elements of adolescent and sexual reproductive health services (The International Conference on Population and Development Program's package of sexual and reproductive health services for adolescents includes: information and counseling on ASRH, including risk reduction and safer sex; family planning, including condoms; diagnosis and treatment of STIs; pregnancy care—before, during, and after the birth).<sup>31</sup> VMMC is a unique chance to offer adolescents all these services, and to present positive sexual and gender norms while attitudes toward women are forming and before boys enter into their sexual lives.<sup>30</sup> Furthermore, VMMC services can be integrated with a range of other effective health, education, counseling, and social services for adolescents that can be adapted to different stages of adolescent development.

Current VMMC programs have been designed for sexually active adults and the HIV prevention interventions offered as part of the services package, such as condom promotion and safer sexual counseling, are designed for sexually engaged individuals. Although VMMC programs in Zimbabwe and Tanzania have paid attention to adapting messaging, counseling guidelines, and education materials for adolescent clients and separating older from younger age groups during group education sessions, there has been no formal assessment of the quality of services. It will therefore be important to evaluate whether current programs do indeed meet the diverse needs and expectations of adolescents, are effective, and impact adolescent behavior after male circumcision. It will also be important to ensure that providers are adequately trained in age-appropriate counseling and youth-friendly service delivery to improve quality and consequently increase uptake of VMMC by young people.

## CONCLUSIONS

VMMC offers an excellent gateway to enhanced adolescent HIV, sexual, and reproductive health by referring adolescents to programs that can offer comprehensive ASRH services. Additional operations research is needed to assess whether current program elements are adequate for younger age groups of not yet sexually active men, how to improve the quality of current VMMC programs to make them more age appropriate and youth friendly, how to integrate VMMC services with additional ASRH services, and how to further increase access to these high impact interventions by this specific target group.

## ACKNOWLEDGMENTS

The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of USAID, UNICEF, the Bill & Melinda Gates Foundation, or the US Government. The authors gratefully acknowledge the Zimbabwe Ministry of Health and Child Care, the Tanzanian Ministry of Health and Social Welfare, Population Services International Zimbabwe, Maternal and Child Health Integrated Program, and JHPIEGO Tanzania. The authors thank USAID Zimbabwe, the Bill & Melinda Gates Foundation, and UKAID Zimbabwe for co-funding the studies and program activities implemented by PSI and also thank USAID Tanzania for providing funding for the VMMC activities undertaken by JHPIEGO-Tanzania. They would like to thank Roy Dhlamini, Ngonidzashe Madidi, Kumbirai Chatora, and Louisa Norman from PSI Zimbabwe and Frances Cowan from CeSHHAR for critical feedback, helpful discussion, and information sharing. Special thanks also to Marya Plotkin, Augustino Hellar, Flora Hezwa, Touma Ngwanakilala, and Dorica Boyee from Tanzania for their contributions to this article.

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