

# Uneven progress on the voluntary medical male circumcision

## Programme across 15 eastern and southern African countries in the face of the COVID-19 pandemic

### Introduction

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Despite considerable progress in responding to the HIV epidemic over the past four decades, in 2020, an estimated 20 600 000 [16 800 000 - 24 400 000] million people were living with HIV in Eastern and Southern Africa, with over 670 000 [470 000 - 930 000] million people having newly acquired HIV and 35 000 [28 000 - 43 000] dying from AIDS-related illnesses that year (1).

A combination of behavioural, biomedical, and structural approaches to HIV prevention tailored to reach the populations at risk can achieve steep reductions in new HIV infections.

Voluntary medical male circumcision (VMMC) has been recommended by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) since 2007 as part of a broader package of interventions designed to reduce HIV incidence among men in a generalised epidemic. It is a one-time, efficient, safe, cost-effective intervention (2). VMMC offers men partial protection against HIV (3–5) and offers both women and men protection against other sexually transmitted infections, including human papillomavirus. Importantly, VMMC services reach men and adolescent boys who typically face barriers to accessing health care compared to women (6). VMMC also provides an opportunity to increase awareness of HIV status among millions of men and boys who might otherwise not have the opportunity to test for HIV (7). VMMC protective effects also extend to female sexual partners of circumcised men—for example, there is a protection association between male circumcision and of, cervical cancer, cervical dysplasia, HSV-2 infection, chlamydia, and syphilis (8).

This short brief is a review of progress in provision of VMMC from 2007 to 2020. It builds from the annual progress brief released in 2021 and gives an analysis of the age groups covered and the subnational locations where programmes were delivered, the impact of the COVID-19 pandemic, and the overall impact of VMMC on averting new HIV infections.

The brief will be useful to country VMMC managers, VMMC country and global stakeholders, community-led organisations in SSA working with men and boys, implementing partners, United Nations joint programme co-sponsors, the VMMC steering and coordination group, donor partners and HIV prevention policy-makers.

### Programme progress

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Following the 2016 Political Declaration on Ending AIDS, which provided the overarching framework for taking forward HIV responses and monitoring progress, global programmatic Fast-Track targets were set, including for VMMC (9). The intention was to provide VMMC services to 25 million additional men and boys by 2020, translating to about 5 million per year. Table 1 and Figure 1 show the total numbers of VMMCs conducted in people aged 10 years and over in each VMMC priority country<sup>1</sup> every year since 2008.

The latest country data reported to UNAIDS show widely varying progress in numbers and coverage of VMMC services for HIV prevention. VMMC programme momentum in 2020 has been uneven across the priority countries. The gains made by the highest-performing VMMC programmes have been tempered by insufficient progress in other countries.

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1. Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

**Table 1.** Annual provision of voluntary medical male circumcision (VMMC) in 15 eastern and southern African countries 2008-2020 <sup>a,b</sup>

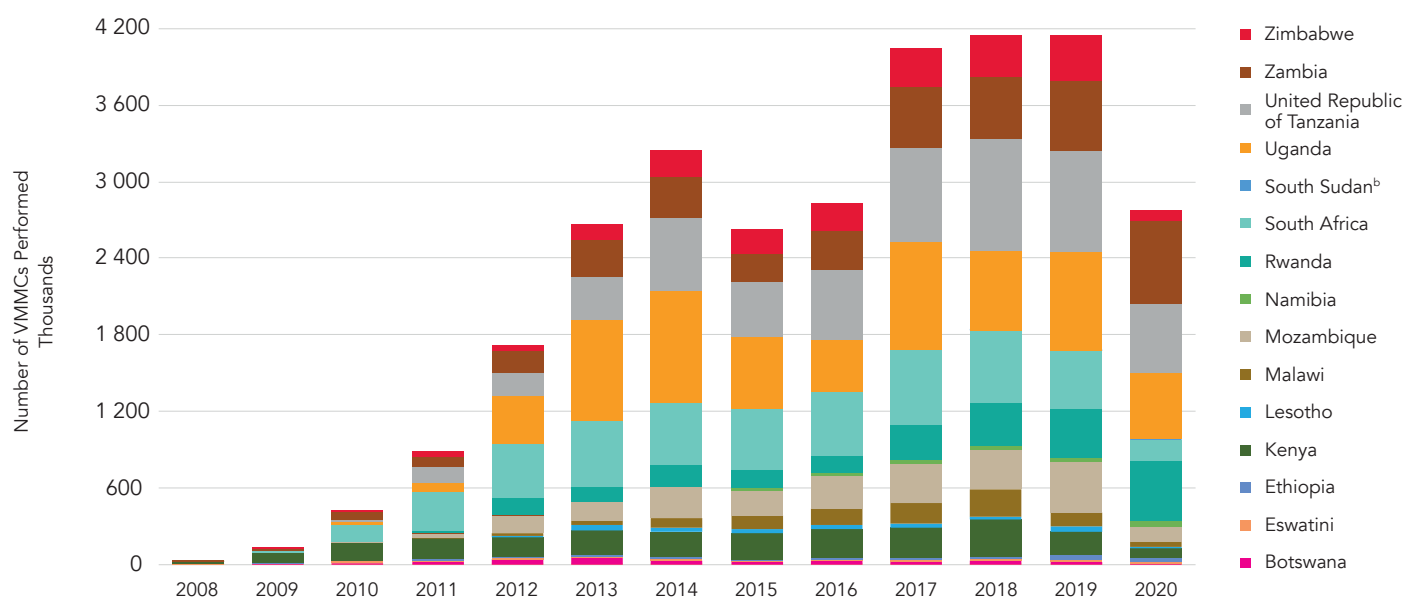
|                             | 2008          | 2009           | 2010           | 2011           | 2012             | 2013             | 2014             | 2015             | 2016              | 2017              | 2018              | 2019              | 2020              | Total<br>2016-<br>2020 | Total<br>2008-<br>2020 |
|-----------------------------|---------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------------|------------------------|
| Botswana                    | 0             | 5 424          | 5 773          | 14 661         | 38 005           | 46 793           | 30 033           | 15 722           | 24 042            | 19 756            | 24 207            | 17 123            | 3 171             | <b>88 299</b>          | <b>244 710</b>         |
| Eswatini                    | 1 110         | 4 336          | 18 869         | 13 791         | 9 977            | 10 105           | 12 289           | 12 952           | 17 374            | 18 138            | 14 316            | 17 360            | 8 639             | <b>75 827</b>          | <b>159 256</b>         |
| Ethiopia                    | 0             | 0              | 0              | 0              | 10 835           | 37 655           | 36 245           | 25 966           | 34 157            | 25 150            | 26 448            | 34 144            | 9 802             | <b>129 701</b>         | <b>240 402</b>         |
| Kenya                       | 11 663        | 80 719         | 139 905        | 159 196        | 151 517          | 190 580          | 193 576          | 207 014          | 219 086           | 233 879           | 286 899           | 91 863            | 77 120            | <b>1 008 847</b>       | <b>2 143 017</b>       |
| Lesotho                     | 0             | 0              | 0              | 0              | 10 835           | 37 655           | 36 245           | 25 966           | 34 157            | 25 150            | 26 448            | 34 144            | 9 802             | <b>129 701</b>         | <b>240 402</b>         |
| Malawi                      | 589           | 1 234          | 1 296          | 11 881         | 21 250           | 40 835           | 80 419           | 108 672          | 129 975           | 166 350           | 210 239           | 114 465           | 47 316            | <b>668 345</b>         | <b>934 521</b>         |
| Mozambique                  | 0             | 100            | 7 633          | 29 592         | 135 000          | 146 046          | 240 507          | 198 340          | 253 079           | 315 380           | 311 891           | 390 589           | 113 227           | <b>1 384 166</b>       | <b>2 141 384</b>       |
| Namibia                     | 0             | 224            | 1 763          | 6 123          | 4 863            | 1 182            | 4 165            | 17 388           | 27 340            | 30 134            | 34 942            | 40 868            | 45 881            | <b>179 165</b>         | <b>214 873</b>         |
| Rwanda                      | 0             | 0              | 1 694          | 25 000         | 138 711          | 116 029          | 173 191          | 138 216          | 137 218           | 264 973           | 327 904           | 382 223           | 471 926           | <b>1 584 244</b>       | <b>2 177 085</b>       |
| South Africa                | 5 190         | 9 168          | 131 117        | 296 726        | 422 009          | 514 991          | 482 474          | 485 552          | 497 186           | 591 941           | 572 442           | 451 636           | 164 699           | <b>2 277 904</b>       | <b>4 625 131</b>       |
| South Sudan <sup>b</sup>    | NA            | NA             | NA             | NA             | NA               | NA               | NA               | NA               | NA                | NA                | 1 147             | 1 453             | 1 747             | <b>4 347</b>           | <b>4 347</b>           |
| Uganda                      | 0             | 0              | 21 072         | 77 756         | 368 490          | 801 678          | 878 109          | 556 546          | 411 459           | 847 633           | 619 082           | 768 882           | 516 615           | <b>3 163 671</b>       | <b>5 867 322</b>       |
| United Republic of Tanzania | 0             | 1 033          | 18 026         | 120 261        | 183 480          | 329 729          | 573 845          | 435 302          | 548 390           | 730 435           | 885 599           | 799 456           | 539 859           | <b>3 503 739</b>       | <b>5 165 415</b>       |
| Zambia                      | 2 758         | 17 180         | 61 911         | 85 151         | 73 992           | 294 466          | 315 168          | 222 481          | 311 792           | 483 816           | 482 183           | 549 655           | 661 796           | <b>2 489 242</b>       | <b>3 662 349</b>       |
| Zimbabwe                    | 0             | 2 801          | 11 176         | 36 603         | 40 755           | 112 084          | 209 125          | 188 732          | 205 784           | 301 366           | 326 012           | 354 819           | 82 060            | <b>1 270 041</b>       | <b>1 871 317</b>       |
| <b>Total</b>                | <b>21 310</b> | <b>122 988</b> | <b>422 924</b> | <b>884 283</b> | <b>1 710 845</b> | <b>2 658 566</b> | <b>3 240 977</b> | <b>2 622 627</b> | <b>2 827 188</b>  | <b>4 044 740</b>  | <b>4 146 320</b>  | <b>4 145 578</b>  | <b>2 778 644</b>  | <b>17 942 470</b>      | <b>29 626 990</b>      |
| <b>Cumulative totals</b>    |               |                |                |                |                  |                  |                  |                  | <b>14 511 708</b> | <b>18 556 448</b> | <b>22 702 768</b> | <b>26 848 346</b> | <b>29 605 680</b> |                        |                        |

a Countries with available data: Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

b South Sudan commenced its VMMC programme later in 2017 and reported its data for the first time in 2018.

Source: UNAIDS Global AIDS Monitoring, 2021 (<https://aidsinfo.unaids.org/>).

**Figure 1.** Annual provision of voluntary medical male circumcision (VMMC) in 15 eastern and southern African countries,<sup>a</sup> 2008–2020

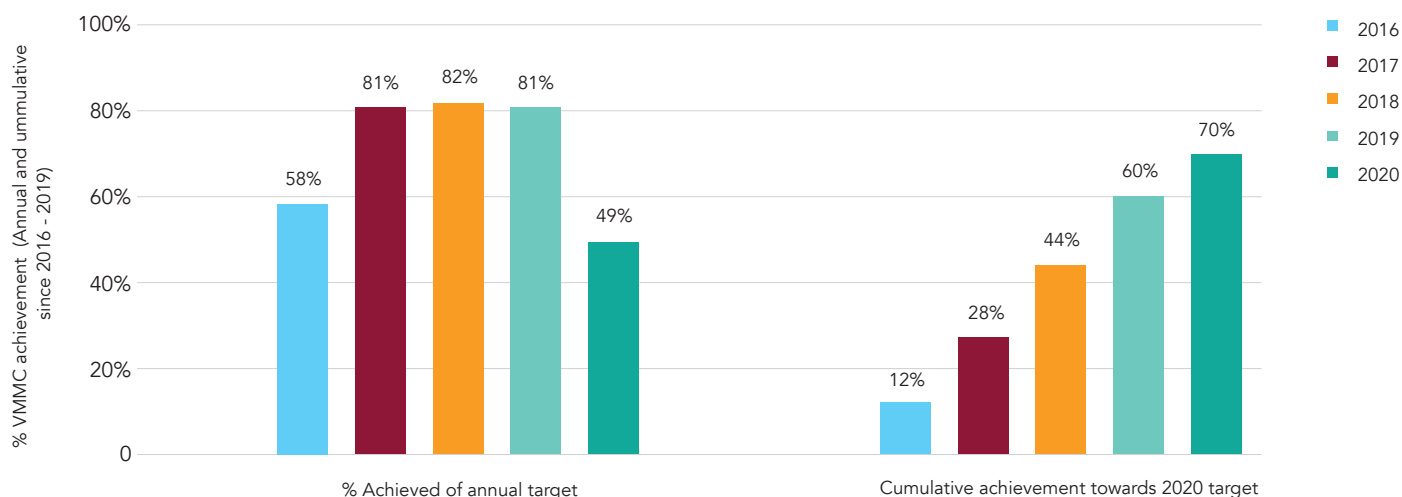


a Countries with available data: Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

b South Sudan commenced its VMMC programme later in 2017 and reported its data for the first time in 2018.

Source: UNAIDS Global AIDS Monitoring, 2021 (<https://aidsinfo.unaids.org/>).

**Figure 2.** Annual voluntary medical male circumcision (VMMC) programme achievements towards yearly targets (2016–2020) and cumulative number of VMMCs towards the 2020 global targets in 15 eastern and southern African countries <sup>a</sup>

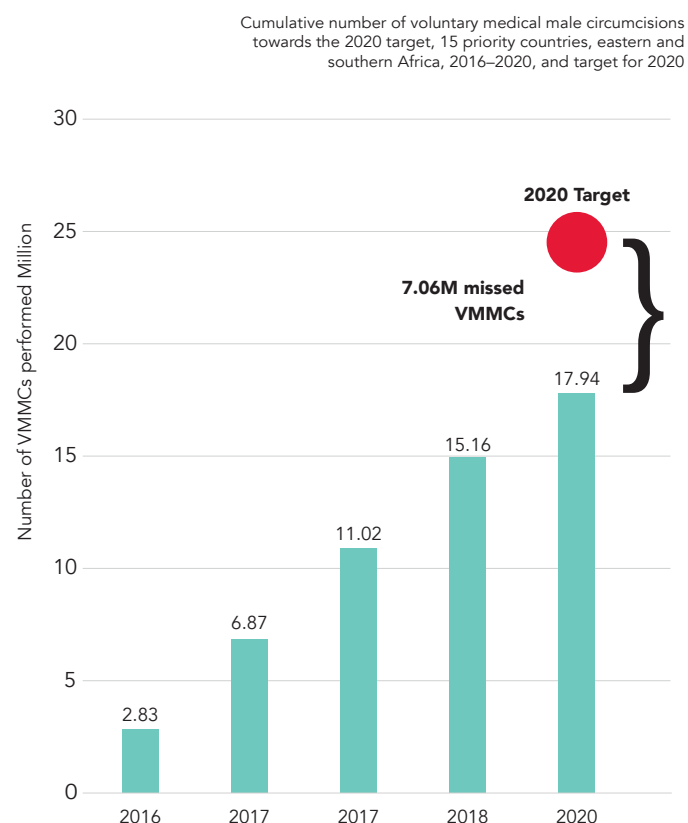


<sup>a</sup> Countries with available data: Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

Source: UNAIDS Global AIDS Monitoring, 2021 (<https://aidsinfo.unaids.org/>).

A total of 18 million men and boys underwent VMMC in 2016–2020, falling short of the 2020 target of 25 million by over 7 million (Figure 3).

**Figure 3.** Cumulative number of men and boys opting for voluntary medical male circumcision towards the 2020 target in 15 priority countries, eastern and southern Africa<sup>a</sup>, 2016–2020, and target for 2020



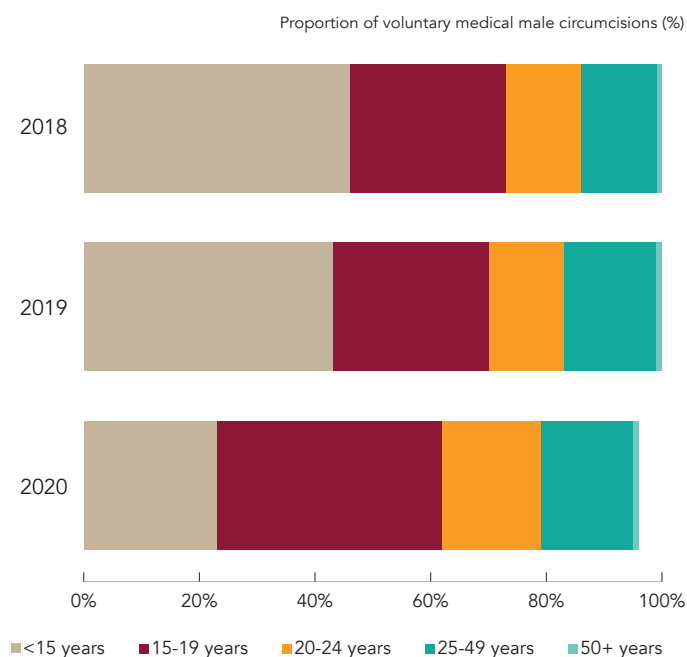
<sup>a</sup> Countries with available data: Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

Source: UNAIDS Global AIDS Monitoring, 2021 (<https://aidsinfo.unaids.org/>).

### Age disaggregates

Updated WHO guidance in 2020 recommends focusing VMMC services on males aged 15 years and over (10). There has been a steady increase in the percentage of VMMCs conducted among men aged 15 years and over in several countries (Figure 4). In other countries, however, including Eswatini, Lesotho, Mozambique, and Zimbabwe, at least 30% of VMMCs in 2020 were in males aged under 15 years.

**Figure 4.** Proportion of men and boys accessing voluntary medical male circumcision (VMMC) by age group in 10 eastern and southern African countries, <sup>a</sup> with available data 2018–2020



<sup>a</sup> Countries with available data: Botswana, Eswatini, Kenya, Lesotho, Mozambique, Rwanda, South Sudan, United Republic of Tanzania, Zambia, Zimbabwe.

Source: UNAIDS Global AIDS Monitoring, 2021 (<https://aidsinfo.unaids.org/>).

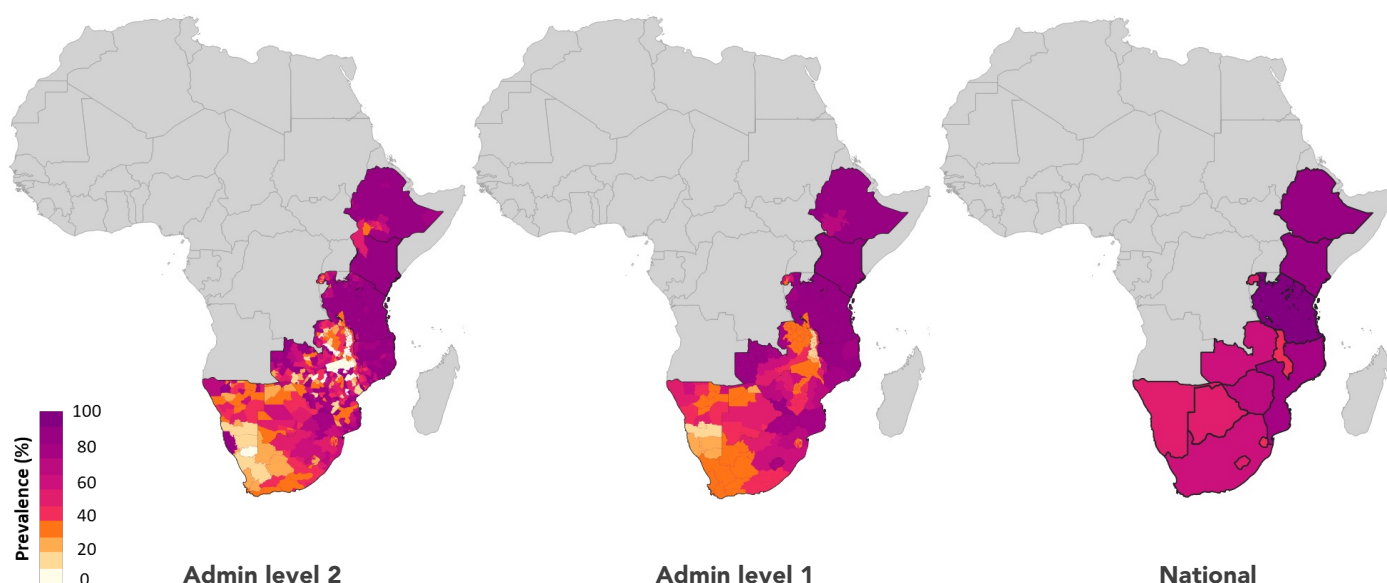
## VMMC coverage mapping in national and subnational administrative areas

Good-quality VMMC data standardized for reliable and consistent programme planning and management in high-priority countries can be challenging to collect. The online Decision Makers' Program Planning Toolkit (DMPPT) 2.0 was used to provide VMMC coverage estimates and support countries to set age-specific and geographical targets. Using data from 13 countries, and excluding non-targeted regions of Ethiopia, Kenya, Mozambique and the United Republic of Tanzania, almost half (49%, 290/590) of subnational locations had VMMC coverage below 60%, and only 27% (160/590) had coverage of 90% or more (Figure 4).

Making VMMC services routine and sustaining access to VMMC services for adolescent boys 15 years of age and over are required for districts with coverage over 90%. Intensified efforts to reach at least 90% coverage are needed for subnational areas with coverage of 60–90% and scale-up plans for subnational areas with coverage below 60% should be in place.

There are significant inequality gaps in VMMC services with higher proportions of men from higher wealth quintiles reporting being circumcised compared with those from lower wealth quintiles (11). In some subnational locations of regions such as Mpumalanga and Eastern Cape provinces of South Africa, this gap is being addressed by VMMC services providers partnering with traditional initiation schools, often located in rural areas of low wealth quintiles, to provide medical male circumcision services.

**Figure 5.** Voluntary medical male circumcision (VMMC) coverage by district across eastern and southern African countries <sup>a</sup>



<sup>a</sup> Countries with available data: Botswana, Eswatini, Ethiopia, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, United Republic of Tanzania, Zambia, Zimbabwe. Countries that did not have final validated data in DMPPT 2.0 (South Sudan, Uganda) are not included.

Admin level 1: provincial/regional level; admin level 2: district level.

Source: data from DMPPT 2.0, apart from coverage data for South Africa, which were from a special analysis by Avenir Health, 2020.

## VMMC services under COVID-19

The COVID-19 pandemic has placed stresses on health systems and services. The lockdowns and physical distancing measures necessary to mitigate the spread of COVID-19 have made it difficult or impossible to continue many HIV programmes and services.

VMMC programme implementation was severely impacted by COVID-19 in 2020 (Figure 1), with service disruptions causing a steep drop in the number of men and boys receiving VMMC services, from 4.1 million in 2019 to 2.8 million in 2020.

At the same time, however, many countries adopted efficient adaptations to address VMMC service disruptions, ensuring VMMC risk-adjusted strategies across programmes. There was strict adoption of a risk-adjusted strategy in demand creation by ensuring safety precautions for staff, clients, and community

members; safe client transportation to and from VMMC facilities by observing transport capacity and infection control; screening and sanitizing of clients before entry to facilities; and use of visible markings at facilities to indicate social distancing. Client bookings and training of field mobilizers and service providers were done virtually to minimize person contact.

As the COVID-19 pandemic continued, programme sites performed site-readiness assessments to inform resumption of VMMC services. Consequently, safe continuation of VMMC services has ensured COVID-19 transmission prevention measures were in place at VMMC sites, with sites implementing changes to client flow and using mobilization tools to replace interpersonal contact. At the community level, adaptations to demand creation for VMMC include safe outreach, limiting mass gatherings to fewer than 50 people, use of open spaces such as sports fields, limiting client transport to 70% capacity or less, passive mobilization methods, and procurement of mobile clinics for safe outreach services.<sup>2</sup>

2. This is from a synthesis of covid adaptations information and data by PEPFAR supported implementing partners.

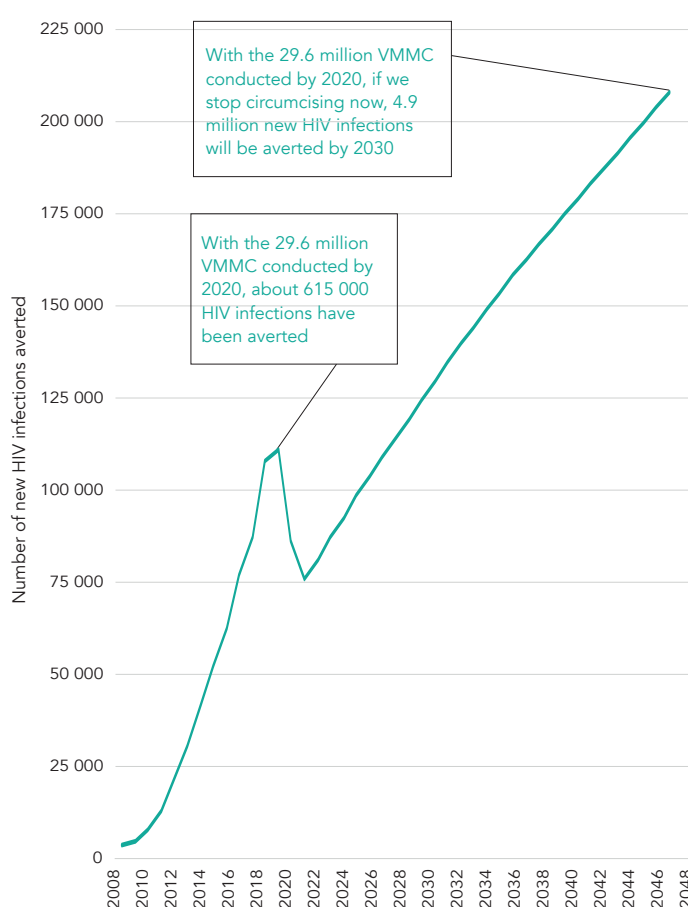
## Impact of VMMC: HIV infections averted

Through a special analysis with Avenir Health, the impact of VMMC on averting new HIV infections was assessed by creating two mathematical model scenarios:

- Actual: this scenario uses the reported number of VMMCs conducted from 2008 to 2020.
- No VMMC: this scenario assumes that VMMC programmes never started, and circumcision coverage remained constant at the 2008 level.

The results indicate that 615 000 new HIV infections were averted between 2008 and 2020 by the 29.5 million VMMCs conducted during this period (Figure 6). This represents 1 infection averted for every 48 VMMCs performed. HIV infections averted during 2008–2020 represent only one of the benefits of VMMC. Since most VMMCs are conducted among young men and boys, the benefits continue as beneficiaries age through their highest-risk years. Estimation of the full benefit needs to account for infections averted after 2020 due to VMMCs conducted between 2008 and 2020 (Figure 6). Through 2030, 1.6 million infections are estimated to be averted, with a ratio of 1 infection averted per 19 VMMCs performed.

**Figure 6.** Number of new HIV infections averted due to voluntary medical male circumcision (VMMC) conducted since programme inception in 2008 for 15 countries from eastern and southern African <sup>a</sup>



<sup>a</sup> Countries with available data used in the analysis: Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

Source: Special analysis by Avenir Health, 2020.

In the longer term, more of the benefit reaches women. For the period 2008–2020, according to the analysis 71% of HIV infections averted were among males (430 000) and 29% (180 000) were among females due to reduced prevalence of HIV among male sexual partners (decreased exposure). By 2030 a third of HIV infections averted will be among females, and by 2050 43% of cumulative infections averted will be among females.

These projections past 2020 assume that all other interventions remain at their current levels, including antiretroviral therapy and condom use. The numbers of cases averted above therefore represents the likely maximum impact. If the coverage of other interventions increases, then incidence will be lower, and the number of infections averted by VMMC will be smaller. If all countries achieve the UNAIDS targets by 2030, incidence will be sharply reduced.

## Conclusion

The status of VMMC programmes shows widely varying coverage of male circumcision. The COVID-19 pandemic substantially impacted VMMC services for HIV prevention, and the 2020 VMMC targets were missed. At the same time, examples of successful VMMC programmes exist in many settings. There are significant gaps in VMMC programming with inequitable access.

VMMC remains a key pillar of combination HIV prevention. Mathematical modelling has shown that it is cost-effective, and even cost-saving (12) HIV prevention intervention in high HIV burden setting in Eastern and Southern Africa. Now that countries are resuming VMMC services, the focus should be on enhancing uptake to continue to contribute to reducing HIV incidence and to maximize reach of other services to adolescent boys and men. In areas where the prevalence of circumcision among sexually active men is already high, a focus on sustaining and expanding VMMC services for adolescent boys is needed to maintain these high coverage levels. Accordingly, continued progress towards VMMC coverage targets in all high-priority countries must accelerate, and support must be intensified.

## References

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1. AIDSinfo. Geneva: Joint United Nations Programme on HIV/AIDS; 2021 (<https://aidsinfo.unaids.org/>).
2. New data on male circumcision and HIV prevention: policy and programme implications. WHO/UNAIDS technical consultation on male circumcision and HIV prevention: research implications for policy and programming. Montreux, 6–8 March 2007 (<https://www.who.int/publications/i/item/9789241595988>).
3. Gray RH, Kigozi G, Serwadda D, et al. Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial. *Lancet*. 2007;369:657–666.
4. Bailey RC, Moses S, Parker CB, et al. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet*. 2007;369:643–656.
5. Auvert B, Taljaard D, Lagarde E, et al. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. *PLoS Med*. 2005;2:e298.
6. Davis SM, Hines JZ, Habel M, 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.
7. Reed JB, Njeuhmeli E, Thomas AG, et al. Voluntary medical male circumcision: an HIV prevention priority for PEPFAR. *J Acquir Immune Defic Syndr*. 2012;1999(60 Suppl 3):S88–S95.
8. Grund JM, Bryant TS, Jackson I, et al. Association between male circumcision and women's biomedical health outcomes: a systematic review. *Lancet Glob Health*. 2017;5:e1113–e1122.
9. 2021 UNAIDS global AIDS update: confronting inequalities—lessons for pandemic responses from 40 years of AIDS. Geneva: Joint United Nations Programme on HIV/AIDS; 2021 (<https://www.unaids.org/en/resources/documents/2021/2021-global-aids-update>).
10. On the Fast-Track to end AIDS: UNAIDS 2016–2021 strategy. Geneva: Joint United Nations Programme on HIV/AIDS; 2015 ([https://www.unaids.org/sites/default/files/media\\_asset/20151027\\_UNAIDS\\_PCB37\\_15\\_18\\_EN\\_rev1.pdf](https://www.unaids.org/sites/default/files/media_asset/20151027_UNAIDS_PCB37_15_18_EN_rev1.pdf)).
11. 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 (<https://apps.who.int/iris/rest/bitstreams/1296029/retrieve>).
12. The HIV Modelling Consortium: Cost-effectiveness of voluntary medical male circumcision (VMMC) for HIV prevention across sub-Saharan Africa: results from five independent models, Presented at VMMC Satellite Session, ICASA2021, Durban South Africa; Manuscript in preparation, 2022

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