

## STUDY DESCRIPTION

### Section 1: Title of the Data Set

<b>Title</b>	Voluntary Medical Male Circumcision services for HIV prevention, FY2010-FY2016 [dataset]
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### Section 2: Study Specific Information

<b>Abstract of Data Set*</b> <i>1500 Characters Max</i>	From 2010 through 2016 routine Voluntary Medical Male Circumcision (VMMC) program data were collected from national ministries of health service delivery sites funded by the Centers for Disease Control and Prevention (CDC) in 12 World Health Organization-prioritized countries in southern and eastern Africa with generalized HIV epidemics and low male circumcision prevalence. Data on the total number of VMMC procedures performed, the number of device-based VMMCs performed (2013-2016), client age group, uptake of HIV testing services, results of HIV testing offered at VMMC sites, adherence to post-operative follow-up and post-operative moderate or severe adverse events (2010-2012) among men receiving VMMC services were reported based on client record review and aggregated at the country level by year.
<b>Site Information</b>	Country-level aggregated data on men accessing health facilities and consenting to VMMC in Botswana, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Rwanda, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe
<b>Primary Disease or Condition Being Studied or Focus of the Study</b>	HIV, Male Circumcision
<b>Key Search Terms</b> <i>8 Max</i>	HIV; Voluntary Medical Male Circumcision; Men; Program Evaluation; Eastern Africa; Southern Africa; HIV Testing; Health Care Utilization

### Section 3: Sponsor/Owner/Collaborators

<b>Investigator Information (Specify name, title, and affiliation)</b>	Carlos Toledo, Stephanie M. Davis, Jonas Hines, Lawrence Hinkle and Naomi Bock, Centers for Disease Control and Prevention, Division of Global HIV & TB, HIV Prevention Branch
<b>Name of Sponsor</b>	Centers for Disease Control and Prevention (CDC), Center for Global Health (CGH), Division of Global HIV & TB (DGHT)
<b>Collaborators</b>	<ul style="list-style-type: none"> <li>• CDC/DGHT/Botswana</li> <li>• CDC/DGHT/Ethiopia</li> <li>• CDC/DGHT/Kenya</li> <li>• CDC/DGHT/Malawi</li> <li>• CDC/DGHT/Mozambique</li> <li>• CDC/DGHT/Namibia</li> <li>• CDC/DGHT/Rwanda</li> <li>• CDC/DGHT/South Africa</li> <li>• CDC/DGHT/Tanzania</li> <li>• CDC/DGHT/Uganda</li> <li>• CDC/DGHT/Zambia</li> <li>• CDC/DGHT/Zimbabwe</li> <li>• Ministry of Health and Wellness, Botswana</li> <li>• National AIDS and STIs Control Programme, Kenya</li> <li>• Ministry of Health, Malawi</li> <li>• Ministry of Health, Mozambique</li> <li>• Ministry of Health and Social Services, Namibia</li> <li>• Ministry of Health, Rwanda</li> <li>• National Department of Health, South Africa</li> <li>• National AIDS Control Program, Ministry of Health, Community Development, Gender, Elderly and Children, Tanzania</li> <li>• Ministry of Health, Zambia</li> <li>• Ministry of Health and Child Care, Zimbabwe</li> </ul>

### Section 4: Oversight

<b>Human Subjects Protection Review Board</b>	<b>Board Name:</b>	Not Applicable – Not human subjects research
<b>Data Monitoring Committee</b>	<b>Board Affiliation:</b>	Not Applicable
		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

### Section 5: Study Type

	<input type="checkbox"/> <b>Interventional Study Type</b>	<input checked="" type="checkbox"/> <b>Observational Study Type</b>
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## STUDY DESCRIPTION

<b>Study Type</b>	<b>Interventional Study Type:</b>	Choose an item.	<b>Observational Study Type:</b>	Ecologic or Community Studies
	<b>Brief Description of Interventional Study Model:</b>		<b>Specify If Other Type of Observational Study Selected:</b>	

### Section 6: Study Status

<b>Data Collection Start Date</b>	October	2009
<b>Data Collection End Date</b>	September	2016

### Section 7: Study Design

(Note: Complete only the section that pertains to the study type selected in Section 5.)

#### Interventional Study Design:

<b>Intervention Name(s) and Brief Description</b>			
<b>Primary Purpose of Intervention</b>	Choose an item.		
	<b>Specify, If other Selected:</b>		
<b>Masking (Check all that apply)</b>	<input type="checkbox"/> No Masking <input type="checkbox"/> Participant <input type="checkbox"/> Care Provider <input type="checkbox"/> Investigator <input type="checkbox"/> Outcomes Assessor <input type="checkbox"/> Other: Click or tap here to enter text.		
<b>Allocation</b>	Choose an item.		
<b>Type of Randomization Used (If Randomization Used)</b>			
<b>Unit of Assignment (If Not At the Individual Level)</b>			
<b>Biospecimen Collected</b>	Choose an item.		
<b>Biospecimen Description</b>			
<b>Biospecimen Retention (Check all that apply)</b>	<input type="checkbox"/> None Stored <input type="checkbox"/> No Link <input type="checkbox"/> Destroyed <input type="checkbox"/> Link Removed	<input type="checkbox"/> Link Retained: <b>Justification:</b> Click here to enter text. <b>Institution:</b> Click here to enter text. <b>Location:</b> Click here to enter text. <b>Duration (date when link will be destroyed):</b> Click here to enter text.	<input type="checkbox"/> Storage of Specimens: <b>Institution:</b> Click here to enter text. <b>Location:</b> Click here to enter text. <b>Duration (date when link will be destroyed):</b> Click here to enter text.
<b>Name of Arm</b>			
<b>Unit of Assignment (If Not Participant)</b>			
<b>Target Number of Participants</b>			
<b>Number of Participants Enrolled</b>			
<b>Number of Participants Analyzed</b>			
<b>Analysis Population Description</b>			

## STUDY DESCRIPTION

### Observational Study Design:

<b>Intervention Name(s) and Brief Description</b>	Voluntary medical male circumcision performed for HIV prevention under local anesthesia in medical settings by trained clinicians		
<b>Time Perspective</b>	Retrospective		
	<b>Specify, if Other Selected:</b>		
<b>Biospecimen Collected</b>	No		
<b>Biospecimen Description</b>	Not applicable		
<b>Biospecimen Retention</b>	<input checked="" type="checkbox"/> <b>None Stored</b> <input type="checkbox"/> <b>No Link</b> <input type="checkbox"/> <b>Destroyed</b> <input type="checkbox"/> <b>Link Removed</b>	<input type="checkbox"/> <b>Link Retained:</b> <b>Justification:</b> Click here to enter text. <b>Institution:</b> Click here to enter text. <b>Location:</b> Click here to enter text. <b>Duration (date when link will be destroyed):</b> Click here to enter text.	<input type="checkbox"/> <b>Storage of Specimens:</b> <b>Institution:</b> Click here to enter text. <b>Location:</b> Click here to enter text. <b>Duration (date when link will be destroyed):</b> Click here to enter text.
<b>Enrollment</b>	VMMC sites across 12 countries: 5,880,372 VMMC procedures were performed during the time period under study (FY2010-FY2016)		
<b>Target Follow-Up Duration</b>	No follow-up data collection		
<b>Group/Cohort Description(s)</b>	Single group		
<b>Name of Group/Cohort</b>	VMMC clients at CDC-supported sites by country		
<b>Number of Participants Analyzed</b>	5,880,372		

### Section 8: Outcome Measures

Outcome	Name/Description	Metric/Scale and Unit of Measure	Timeframe Measurement
Primary	Total number of VMMC procedures performed	Number of VMMC procedures performed	Annual
Primary	Number of device-based VMMCs performed	Number of device-based VMMC procedures performed	Annual
Primary	Age group of clients	Percentage of men receiving VMMC services who were <15 , 15-29 , and ≥30 years (2013-2016); and <15, ≥15, 15-19, 20-24, and ≥25 years (2010-2012)	Annual
Primary	Uptake of HIV testing services at VMMC sites	Percentage of men accepting HIV testing	Annual
Primary	Results of HIV testing offered at VMMC sites	Percentage of men testing positive for HIV	Annual
Primary	Adherence to post-operative follow-up	Percentage of men returning for assessment at the circumcising site within 14 days of surgery	Annual
Primary	Post-operative moderate or severe adverse events	Number of adverse events	Annual
Choose an item.			
Choose an item.			
Choose an item.			

### Section 9: Eligibility and Sampling

Inclusion Criteria	<b>Sex</b>	Males
Inclusion Criteria	<b>Age (indicate unit of time)</b>	None
Inclusion Criteria	<b>Other</b>	Provided informed consent for VMMC. Consenting for minors adhered to national standards
Inclusion Criteria	<b>Other</b>	Attending CDC-supported VMMC sites
Inclusion/Exclusion	<b>Other</b>	
Inclusion/Exclusion	<b>Other</b>	
Inclusion/Exclusion	<b>Other</b>	
<b>Study Population Description (Observational Study Design Only)</b>	All men receiving VMMC services from CDC-supported implementing partners that provide VMMC services for HIV prevention in each of the 12 countries.	
<b>Sampling Methods (Observational Study Design Only)</b>	Non-Probability Sample	
<b>Additional Sampling Methods Information</b>	None	

## STUDY DESCRIPTION

(Observational Study Design Only)

### Section 10: References to Study Publications

<b>Reference to Study Publications</b>	CDC. Voluntary medical male circumcision—southern and eastern Africa, 2010–2012. MMWR Morb Mortal Wkly Rep 2013;62(47):953–7.  Hines JZ, Ntsuape OC, Malaba K, Zegeye T, Serrem K, Oduyo-June E, et al. Scale-Up of Voluntary Medical Male Circumcision Services for HIV Prevention — 12 Countries in Southern and Eastern Africa, 2013–2016. MMWR Morb Mortal Wkly Rep. 2017 Dec 1; 66(47)1285-1290:1285-1290.
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## Data Use Statement

### De-identified Data

#### Background

In support of its mission, the Centers for Disease Control and Prevention (CDC) collects, generates, stores, uses, and routinely provides access to public health data. Public health and scientific advancement are best served when public health data are released to, or shared with, other public health agencies, academic researchers, private researchers (if appropriate) and other partners in an open, timely, and appropriate way. Pursuant to its mission, the CDC *Policy on Public Health and Nonresearch Data Management and Access, January 26, 2016* seeks to make accessible public health data it has collected and generated subject to limits imposed by law, ethical considerations, resources, technology, data quality, and protection of data from physical and electronic risks to privacy and confidentiality.

#### Data and documentation for release

The data set “Voluntary Medical Male Circumcision services for HIV prevention, FY2010-FY2016” and associated documentation is being released in compliance with the *Policy on Public Health Research and Nonresearch Data Management and Access, January 26, 2016* as Public Access and subject to the following provisions.

These data were collected with the support of the President’s Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention.

#### Provisions

By use of this data set, the user acknowledges and agrees to the following conditions:

- 1) No attempt will be made to identify records contained in the data provided under this Data Use Agreement or to link this data with other data sources for identification purposes.
- 2) Licensing – some rights reserved. This data set and documentation are available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 US license (CC BY-NC-SA 3.0 US); <https://creativecommons.org/licenses/by-nc-sa/3.0/us>

Under the terms of this license you may copy, redistribute or adapt this data set and documentation for non-commercial purposes provided that attribution is appropriately cited as below and all derivations of the data set and documentation are distributed under the same license as the original.

#### Recommended citation

Toledo C, Davis SM, Hines JZ, Hinkle L, Bock NN for the CDC VMMC Team. Voluntary Medical Male Circumcision services for HIV prevention, FY2010-FY2016 [dataset]. 1 Dec 2017. Available from: <http://www.malecircumcision.org>.

#### General disclaimer

Every effort has been made to provide accurate and complete information contained in this data set and documentation. However, we cannot guarantee that there will be no errors. The Centers for Disease Control and Prevention does not assume any legal liability for the accuracy, completeness, or usefulness of any information, product, or process disclosed herein, or represents that use of such information, product, or process would not infringe on privately owned rights.

## VMMC Data Dictionary

### **Description of the CSV files:**

Date sets include data from two publications (see References) covering the reporting periods of 2010-2012 and 2013-2016. All variables were not reported for both time periods and response categories differed for age.

- (1) VMMC\_AGGREGATE.csv: Aggregate counts of VMMC procedures performed in each fiscal year
- (2) VMMC\_DISAGGREGATE.csv: Disaggregate data on total number of VMMC procedures performed by country – including overall number of VMMC procedures performed, age group, use of device for VMMC procedures (2013-2016), HIV testing services (HTS), number of HIV positive persons, post-operative follow-up after 14 days of VMMC procedure and post-operative moderate and serious adverse events (2010-2012).

### **Coding for Missing Values:**

Missing values are coded as “99999999” and denote information not available, not reported or not applicable.

VMMC Data Dictionary

VMMC_AGGREGATE					
Variable name	Description of variable/variable label	Variable type	Variable length	Response values	Relevant notes
Country	Reporting Countries	Character	3	BWA=Botswana ETH=Ethiopia KEN=Kenya MWI=Malawi MOZ=Mozambique NAM=Namibia RWA=Rwanda ZAF=South Africa TZA=Tanzania UGA=Uganda ZMB=Zambia ZWE=Zimbabwe ALL=All countries	ISO ALPHA-3 country code used to identify country.
YR2010	Number of VMMC procedures performed in fiscal year 2010	Numeric	8	99999999=Not applicable/Not reported	Year, in most cases, corresponds to the U.S. federal fiscal year, which begins October of the previous year through September of the named year. (e.g., FY 2010 covers October 1, 2009 through September 30, 2010).  In some cases, calendar year was used instead of the fiscal year. For further information see "Additional country-specific information on data".
YR2011	Number of VMMC procedures performed in fiscal year 2011	Numeric	8	99999999=Not applicable/Not reported	Year, in most cases, corresponds to the U.S. federal fiscal year, which begins October of the previous year through September of the named year. (e.g., FY 2010 covers October 1, 2009 through September 30, 2010).

VMMC Data Dictionary

VMMC_AGGREGATE					
Variable name	Description of variable/variable label	Variable type	Variable length	Response values	Relevant notes
					In some cases, calendar year was used instead of the fiscal year. For further information see "Additional country-specific information on data".
YR2012	Number of VMMC procedures performed in fiscal year 2012	Numeric	8	99999999=Not applicable/Not reported	Year, in most cases, corresponds to the U.S. federal fiscal year, which begins October of the previous year through September of the named year. (e.g., FY 2010 covers October 1, 2009 through September 30, 2010).  In some cases, calendar year was used instead of the fiscal year. For further information see "Additional country-specific information on data".
YR2013	Number of VMMC procedures performed in fiscal year 2013	Numeric	8	99999999=Not applicable/Not reported	
YR2014	Number of VMMC procedures performed in fiscal year 2014	Numeric	8	99999999=Not applicable/Not reported	
YR2015	Number of VMMC procedures performed in fiscal year 2015	Numeric	8	99999999=Not applicable/Not reported	
YR2016	Number of VMMC procedures performed in fiscal year 2016	Numeric	8	99999999=Not applicable/Not reported	



VMMC Data Dictionary

VMMC_AGGREGATE					
Variable name	Description of variable/variable label	Variable type	Variable length	Response values	Relevant notes
YR1012	Total number of VMMC procedures performed for fiscal years 2010 through 2012	Numeric	8	99999999=Not applicable/Not reported	
YR1316	Total number of VMMC procedures performed for fiscal years 2013 through 2016	Numeric	8	99999999=Not applicable/Not reported	

VMMC_DISAGGREGATE					
Variable name	Description of variable/variable label	Variable type	Variable length	Response values	Relevant notes
Country	Reporting Countries	Character	3	BWA=Botswana ETH=Ethiopia KEN=Kenya MWI=Malawi MOZ=Mozambique NAM=Namibia RWA=Rwanda ZAF=South Africa TZA=Tanzania UGA=Uganda ZMB=Zambia ZWE=Zimbabwe ALL=All Countries	ISO ALPHA-3 country code used to identify country.

VMMC Data Dictionary

<b>VMMC_DISAGGREGATE</b>					
<b>Variable name</b>	<b>Description of variable/variable label</b>	<b>Variable type</b>	<b>Variable length</b>	<b>Response values</b>	<b>Relevant notes</b>
Year	Fiscal Year	Numeric	4	Date value: YYYY 2010 2011 2012 2013 2014 2015 2016	Year, in most cases, corresponds to the U.S. federal fiscal year, which begins October of the previous year through September of the named year. (e.g., FY 2010 covers October 1, 2009 through September 30, 2010).  In some cases, calendar year was used instead of the fiscal year. For further information see "Additional country-specific information on data".
TOTAL_VMMC	Total number of VMMC procedures performed	Numeric	8	99999999=Not applicable/Not reported	
AGE_UNDER15	Number of VMMCs performed on clients <15 years of age	Numeric	8	99999999=Not applicable/Not reported	In some cases for the 2010-2012 reporting period, countries reported different age groups than those listed in the data set. For further information see "Additional country-specific information on data".
AGE_15MORE	Number of VMMCs performed on clients ≥15 years of age	Numeric	8	99999999=Not applicable/Not reported	This age group was used for the 2010-2012 reporting period.
AGE15_19	Number of VMMCs performed on clients 15-19 years of age	Numeric	8	99999999=Not applicable/Not reported	This age group was used for the 2010-2012 reporting period.
AGE20_24	Number of VMMCs performed on clients 20-24 years of age	Numeric	8	99999999=Not applicable/Not reported	This age group was used for the 2010-2012 reporting period.
AGE_OVER25	Number of VMMCs performed on	Numeric	8	99999999=Not applicable/Not reported	This age group was used for the 2010-2012 reporting period.

VMMC Data Dictionary

VMMC_DISAGGREGATE					
Variable name	Description of variable/variable label	Variable type	Variable length	Response values	Relevant notes
	clients ≥25 years of age				
AGE15_29	Number of VMMCs performed on clients 15-29 years of age	Numeric	8	99999999=Not applicable/Not reported	This age group was used for the 2013-2016 reporting period.
AGE_30MORE	Number of VMMCs performed on clients ≥30 years of age	Numeric	8	99999999=Not applicable/Not reported	This age group was used for the 2013-2016 reporting period.
DEVICE	Number of VMMCs performed using devices	Numeric	8	99999999=Not applicable/Not reported	Some circumcision procedures were performed with circumcision devices rather than through surgery. Circumcision devices pre-qualified by WHO include the PrePex and ShangRing. However, PrePex was the predominant device in use in these 12 countries during 2013–2016. Device usage was reported only for 2013-2016 reporting period.
HTS	HTS uptake among VMMC clients (number of clients)	Numeric	8	99999999=Not applicable/Not reported	HTS is HIV Testing Services.  HIV testing services did not include clients with indeterminate results or those who might have been tested elsewhere recently.  There were certain cases in which HTS uptake was reported for both clients who received VMMC services and for those who presented at the clinic for other reasons. Therefore, it is possible that the number for clients accepting these services will be greater than the

VMMC Data Dictionary

VMMC_DISAGGREGATE					
Variable name	Description of variable/variable label	Variable type	Variable length	Response values	Relevant notes
					number of VMMC clients. For further information, see “Additional country-specific information on data”.
POS	Number of clients testing HIV positive	Numeric	8	99999999=Not applicable/Not reported	HIV prevalence is calculated by dividing the number of clients testing positive by the number of clients undergoing HIV testing services at VMMC sites.
FU	Post-operative follow-up within 14 days of VMMC (number of clients)	Numeric	8	99999999=Not applicable/Not reported	The number of clients who followed-up for post-procedure care within 14 days.
ADVERSE	Number of post-operative moderate or severe adverse events (AEs)	Numeric	8	99999999=Not applicable/Not reported	Data for adverse events were reported only for 2010-2012 reporting period.

Please refer to the PEPFAR Monitoring, Evaluation, and Reporting Indicator Reference Guide (indicator code: VMMC\_CIRC) at <https://www.pepfar.gov/reports/guidance/> for additional information on variations in the indicator over time.

**Additional country-specific information on data:**

Data for 2010-2012:

Country	Relevant Notes
Kenya	Data for 2010 and 2011 are reported from January-December, but data from 2012 are from October-September; Only reported age groups as 1-14 years and ≥15 years for 2011
Malawi	Data are from APR results and CDC Malawi’s partner reports for 2012; Only reported age groups as 1-14 years and ≥15 years for 2011

## VMMC Data Dictionary

South Africa	Data are reported from January-December for 2010-2012; Age is missing for some clients in 2011
Tanzania	Data are reported from January-December for 2010-2012 and are from APR reports and Tanzania’s national database; Data for post-operative follow-up visits are within 48 hours of surgery, not 14 days; Reported age groups as <15, 15–25, and ≥26 years  Tanzania's national database collects HTS data on all patients regardless of whether they received VMMC. HTS acceptance among VMMC clients in this table has been computed by using HTS data from all clients testing at the VMMC site.
Mozambique	Only reported age groups as 1-14 years and ≥15 years for 2010-2012
Uganda	Only reported age groups as 1-14 years and ≥15 years for 2010-2012; Age is missing for some clients in 2012
Namibia	Only reported age groups as 1-14 years and ≥15 years for 2011

### References

CDC. Voluntary medical male circumcision—southern and eastern Africa, 2010–2012. *MMWR Morb Mortal Wkly Rep* 2013;62(47):953–7.

Hines JZ, Ntsuape OC, Malaba K, Zegeye T, Serrem K, Odoyo-June E, et al. Scale-Up of Voluntary Medical Male Circumcision Services for HIV Prevention — 12 Countries in Southern and Eastern Africa, 2013–2016. *MMWR Morb Mortal Wkly Rep*. 2017 Dec 1; 66(47):1285-1290.

## QUALITY ASSURANCE (QA) PROCEDURES FOR DATA COLLECTION/CLEANING, DATA CONTEXT AND LIMITATIONS

### QA Procedures For Data Collection/Cleaning, Data Context and Limitations

**Instructions:** This checklist provides an evaluation matrix for QA procedures related to accuracy, consistency and completeness of DGHT data.

Please mark "Yes" if the component has been investigated. If corrections have been made to address the component. Provide any documentation of the procedures taken in altering the data set to correct the issue in the column entitled "Relevant Notes/Steps Taken" or in an appendix(ces) and note the relevant appendix(ces) under "Relevant Notes/Steps Taken."

Please mark "Not Applicable" only if the issue is not relevant to the data set. For example, if the data set contains no skip patterns, then "Implement Validation Rules" would be not applicable. If the data set contains skip patterns, although after evaluating the responses, no errors were found, then "Yes" should be selected instead, with a statement that the relevant variables were investigated, but that no action was needed.

You should only mark "No" if, for a specific reason, an active decision was made *not* to alter the data in response to any concerns raised. Please provide a full explanation and documentation for the rationale of this decision.

### QA Procedures During Data Collection/Cleaning

**Instructions:** Provide any documentation of the procedures taken to ensure the quality of the data during data collection or data cleaning. This can include for example, double-data entry to ensure data accuracy, review of 5% sample of data against original records.

## QUALITY ASSURANCE (QA) PROCEDURES FOR DATA COLLECTION/CLEANING, DATA CONTEXT AND LIMITATIONS

### QA Procedures During Data Collection/Cleaning

No documentation of any QA procedures taken by the data collection team was provided. Upon initial inspection of the data, arithmetic errors and non-standardized formats for numbers were noted. The VMMC team provided an updated data set with these issues resolved. See Additional Data Quality Notes below for details.

Data were collected from VMMC client medical forms, which varied across countries, as did the procedures for collecting those forms and reporting data.

Variations in data collection method:

Ethiopia: Data were captured using standard JHPIEGO data capturing tool and summarized data were reported to head office on monthly basis after quality check, JHPIEGO submitted quarterly report on key VMMC performance indicators with disaggregation, to Columbia University/International Center for AIDS Care and Treatment Programs (CU/ICAP).

Kenya: Routine service data were collected from VMMC program by Ministry of Health. Forms were checked for completeness by site supervisor and compiled into monthly facility reports. The reports were compiled to district reports and manually entered into secure database National AIDS & STI Control Program (NASCOP).

Malawi: Aggregate number of VMMC procedures were reported through DHIS. These data in turn were aggregated and reported to the Ministry of Health on quarterly basis. CDC also collected monthly data directly from fund partners.

Mozambique: De-identified data were transferred to CDC-Mozambique via a password-protected secure web portal called DevResults. Copies of the data were also transferred to the US Office of Global AIDS Coordination (OGAC) via secure web portal called DATIM.

Namibia: Data were collected at health facilities and recorded in the Male Circumcision register. The data were aggregated and sent to district, regional offices, and national coordinating office.

Rwanda: All entries in the VMMC registers at the facilities offering VMMC services were reported as an aggregate number through the Rwanda HMIS/DHIS 2 system.

South Africa: South Africa public facilities reported VMMC procedures performed through a District Health Information System, these data were aggregated and reported to National Department of Health on quarterly basis. CDC also collected monthly data directly from fund partners.

Tanzania: Data quality was assessed daily at the site before the procedure including eligibility of the individual and consent form. Site manager checks the daily records. All recorded data were regularly checked and verified during routine supportive supervision. Monitoring and evaluation (M&E) program staff together with Regional or District AIDS Care Coordinator and Male Circumcision Site Manager conducted data quality and validity check exercise to ensure all M&E tools were kept confidential, were properly recorded, and that monthly reports were congruent with the records/data available.

Uganda: CDC Uganda created VMMC/SMC Operational Center to collect site level data and reported directly to the Ministry of Health within 24 hours. The client data were collected by SMC registers and reported to SMC Call center/Operational center daily.

Zambia: Data from sites were transmitted centrally to the Ministry of Health through the health management information system. PEPFAR supported partners also submitted their data to the in country interagency PEPFAR team. There were no duplication in data submission.

Data Limitations:

(as noted in [CDC, 2013](#)):

"First, several countries did not begin scaling up VMMC until 2010 or 2011, which is partially responsible for missing data. Second, because of differing numbers of countries included in the analyses of different variables across years, trends found might not be representative of all VMMC clients. Third, ministry of health-approved client-level data collection tools were not identical across countries, which contributed to difficulties in data aggregation across countries, including the lower age limit for VMMC clients. Finally, some national ministries of health have similar but not identical definitions

## QUALITY ASSURANCE (QA) PROCEDURES FOR DATA COLLECTION/CLEANING, DATA CONTEXT AND LIMITATIONS

for classifying type, severity, and clinical signs for VMMC AEs. Although PEPFAR guidance for AE reporting is used in all of PEPFAR's VMMC programs, discrepant diagnoses and management might result in differences in reporting.”

(as noted in [Hines, et al., 2017](#))

“During 2013–2014, client age was reported as <15 or ≥15 years; during 2015–2016, age was categorized as <15 years, 15–29 years, and ≥30 years.”

“The findings in this report are subject to at least four limitations. First, the findings reflect results from CDC-supported VMMC programs rather than national, PEPFAR, or global totals. Data entry errors and reporting variations are possible, and data were incomplete for some countries in some years. Second, during 2013–2014, the disaggregated age group indicator definition prevented reporting on males aged 15–29 years. Third, use of HIV testing services did not include clients with indeterminate results or those who might have been tested elsewhere recently, possibly affecting the HIV prevalence estimate among VMMC clients. Finally, follow-up within 14 days was likely underestimated because reported data might not capture males who sought care at another health care site different from the one where they underwent circumcision.”

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Data were collected in the context of a scale-up effort for the VMMC program, with variations in the implementation of the scale-up program between each participating country and within the countries themselves, including different rates at which clinics offering VMMC services were opened or brought on-line (and in some cases, closed), as well as the outreach programs conducted to inform potential VMMC recipients about the program.

The number of adverse events was not reported during 2013–2016 because of data quality concerns.



## QUALITY ASSURANCE (QA) PROCEDURES FOR DATA COLLECTION/CLEANING, DATA CONTEXT AND LIMITATIONS

Components	Yes/No/NA	Relevant Notes/Steps Taken
<b>ACCURACY: To what extent does the data correctly describe the information?</b>		
<p><b>Compare data to standard/valid values</b></p> <p>Description: Ensure that values reported are valid for the data element that they represent and that no errant values are present.</p> <p>If necessary, please note how errant values were corrected.</p>	NA	Values in the data set represent programmatic data which are counts of the number of VMMC procedures performed. There were no standard values.
<p><b>Evaluate error values</b></p> <p>Description: Report the percentage of values that are error values compared to known standard/valid values and any data element containing an abnormally high number of error values.</p> <p>If necessary, please note how errant values were corrected.</p>	Yes	Data from CDC-supported sites were pooled by CDC country offices from local VMMC implementing partners and used to generate summary statistics. Because aggregated data were submitted by the reporting countries, other potential data limitations could not be explored.
<p><b>Implement validation rules</b></p> <p>Description: If the data protocol includes skip patterns or other validation rules, ensure that these rules have been followed (e.g., questions that should have been skipped over because of a skip pattern were indeed marked as missing or not applicable)</p> <p>If necessary, please note how errant values were corrected.</p>	NA	There were no skip patterns. No validation rules applicable.
<b>CONSISTENCY: Do data follow consistent syntactical format, without contradiction?</b>		
<p><b>Check for consistency in data collection methods across time/sites</b></p> <p>Description: Evaluate whether data quality varies notably across multiple times (i.e., specific years or months of data collection) or sites (if data are collected from multiple sites).</p> <p>If necessary, record any notable patterns and provide an explanation for the variance.</p>	Yes	<p>Data were collected from VMMC client medical forms, which varied across countries, as did the procedures for collecting those forms and reporting data. Please refer to 'Variations form data collection methods' section "QA Procedures During Data Collection/Cleaning" above for further detail.</p> <p>Variations in the collection of age group data and the use of calendar years vs. another 12-month period of demarcation were noted among sites. Please see <a href="#">Additional Data Quality Notes</a> below for further detail.</p>
<p><b>Check for consistency in reporting values across time/sites</b></p> <p>Description: Evaluate whether missing data varies notably across multiple times (i.e., specific years or months of data collection) or sites (if data are collected from multiple sites).</p> <p>If necessary, record any notable patterns and provide an explanation for the variance.</p>	Yes	<p>Variations in collection of age group data were noted among sites. Please see <a href="#">Additional Data Quality Notes</a> below for further detail.</p> <p>Definitions for HIV Testing and Counseling acceptance among VMMC clients varied slightly during 2010-2012. Please refer to the PEPFAR Monitoring, Evaluation, and Reporting Indicators Reference Guidance (indicator code: VMMC_CIRC) at <a href="https://www.pepfar.gov/reports/guidance/">https://www.pepfar.gov/reports/guidance/</a> for additional information on variations. See <a href="#">Additional Data Quality Notes</a> section below.</p>
<p><b>Check for consistency in variable definitions across time/site</b></p> <p>Description: If data from multiple sites or time administrations were merged together to create the data set, ensure that variable and value labels were used consistently across all administrations.</p>	Yes	Over time, countries changed how they reported age group. Additionally, definitions of HIV Testing and Counseling acceptance among VMMC clients varied during 2010-2012. Please refer to the PEPFAR Monitoring, Evaluation, and Reporting Indicators Reference Guidance (indicator code: VMMC_CIRC) at <a href="#">Additional Data Quality Notes</a> section below.

QUALITY ASSURANCE (QA) PROCEDURES FOR DATA COLLECTION/CLEANING, DATA CONTEXT AND LIMITATIONS

Components	Yes/No/NA	Relevant Notes/Steps Taken
If necessary, record any notable patterns and provide an explanation for the variance (and how variances were corrected).		<a href="https://www.pepfar.gov/reports/guidance/">https://www.pepfar.gov/reports/guidance/</a> for additional information on variations. See Additional Data Quality Notes below.
<b>COMPLETENESS: What number of completed fields are in a data record(s)?</b>		
<b>Compare data values/number of cases with analytic plan</b> Description: Compare the number of cases and the number of data elements present in the transformed data set against the original analytic plan.	Yes	Data presented reflect the variables found in two MMWR manuscripts published by the researchers (CDC; Hines et al.) with the exception of some totals that can be derived from the data set.
<b>Evaluate eligible participants with missing key information</b> Description: Report on the percentage of participants who are missing data on variables identified as key outcome or evaluation variables.	NA	In certain cases, data concerning the age range of the participants were not included as individual countries used different age groups for reporting. For further information, see Additional Data Quality Notes below.
<b>TIMELINESS: Are data timely enough to influence management decision-making?</b>		
<b>Frequency of data availability</b> Description: Assess how often are the data available?	Yes	Data were aggregated on a monthly basis from individual level clinical records.
<b>Recency of data</b> Description: How current is the reported data?	Yes	Data on VMMC procedures performed between October 2009 and September 2016 are included.
<b>Timely data reporting</b> Description: Are the data reported as soon as possible after collection?	Yes	Monthly reports are compiled by site managers and sent to district authorities who in turn report to regional medical officers. The exact flow of the data varied from country to country and is summarized "QA Procedures During Data Collection/Cleaning" above.
<b>VALIDITY: Does data clearly and adequately represent the intended result?</b>		
<b>Validity of the measure</b> Description: Does the information collected measure what it is supposed to measure?	Yes	Data represent counts of events, as recorded on patient information forms. Indicators are consistent with standard PEPFAR indicators concerning VMMC program effectiveness.
<b>Range of data values</b> Description: Does the data values fall within the valid range?	NA	Data are aggregate country level data on VMMC procedures for HIV prevention. The values provided do not exceed the male population of each country.
<b>Method of data collection</b> Description: Has the method of data collection been researched?	Yes	Data were collected from VMMC client medical forms, which varied across countries, as did the procedures for obtaining a final count. Please refer to Variations in data collection methods' section in "QA Procedures During Data Collection/Cleaning" above for further detail.

## QUALITY ASSURANCE (QA) PROCEDURES FOR DATA COLLECTION/CLEANING, DATA CONTEXT AND LIMITATIONS

### ADDITIONAL DATA QUALITY NOTES:

Countries had some variance in the ways in which they reported both age groupings for their data and for the ways in which they demarcated a year, whether by a calendar year (i.e., January-December) or another 12 month period.

Country	Relevant Notes
Kenya	Data for 2010 and 2011 are reported from January-December, but data from 2012 are from October-September; Only reported age groups as 1-14 years and ≥15 years for 2011
Malawi	Data are from Annual Progress Report (APR) results and CDC Malawi’s partner reports for 2012; Only reported age groups as 1-14 years and ≥15 years for 2011
South Africa	Data are reported from January-December for 2010-2012; Age is missing for some clients in 2011
Tanzania	Data are reported from January-December for 2010-2012 and are from APR reports and Tanzania’s national database; Data for post-operative follow-up visits are within 48 hours of surgery, not 14 days; Reported age groups as <15, 15–25, and ≥26 years  Tanzania’s national database collects HTS data on all patients regardless of whether they received VMMC. HTS acceptance among VMMC clients in this table has been imputed by using HTS data from all clients testing at the VMMC site.
Mozambique	Only reported age groups as 1-14 years and ≥15 years for 2010-2012
Uganda	Only reported age groups as 1-14 years and ≥15 years for 2010-2012; age is missing for some clients in 2012
Namibia	Only reported age groups as 1-14 years and ≥15 years for 2011

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#### References:

CDC. Voluntary medical male circumcision—southern and eastern Africa, 2010-2012. *MMWR Morb Mortal Wkly Rep* 2013;62:953–7.

Hines JZ, Ntsuape OC, Malaba K, Zegeye T, Serrem K, Odoyo-June E, et al. Scale-Up of Voluntary Medical Male Circumcision Services for HIV Prevention — 12 Countries in Southern and Eastern Africa, 2013–2016. *MMWR Morb Mortal Wkly Rep*. 2017 Dec 1; 66(47):1285-1290.

## DATA TRANSFORMATION PROCEDURES, LIMITATIONS, AND REDACTIONS

<b>Data Transformation Procedures, Limitations, and Redactions</b>
<p><b>Instructions:</b> In the Drop-down for “Yes/No/NA, please indicate “Yes” if the component has been investigated. If corrections have been made to address the component. Provide any documentation of the procedures taken in altering the data set to correct the issue in the column entitled “Relevant Notes/Steps Taken” or in an appendix(ces) and note the relevant appendix(ces) under “Relevant Notes/Steps Taken.”</p> <p>Please indicate “NA” (Not Applicable) only if the issue is not relevant to the data set. For example, if the data set contains no textual variables, then “evaluating textual variables for confidential information” would be not applicable.</p> <p>A field should only be marked “No” if, for a specific reason, an active decision was made <i>not</i> to alter the data in response to any concerns raised. Please provide a full explanation and documentation for the rationale of this decision in the column entitled “Relevant Notes/Steps Taken”.</p>

Components	Yes/No/NA	Relevant Notes/Steps Taken
<b>REVIEW OF VARIABLE NAMES AND VALUES</b>		
Evaluate variable names and labels for completeness, consistency, meaningfulness	Yes	Renamed variables to meet Data Management requirements (less than 32 characters per variable). Values for Country were recoded to use the ISO-ALPHA-3 codes. Please refer to “Country Recode” below for a list of ISO-ALPHA-3 codes used to indicate each country.
Remove temporary, administrative, or dummy variables	NA	No administrative variables noted.
Evaluate textual variables for confidential information	NA	No text variables present in data set.
Remove repetitious variables	NA	No repetitious variables noted.
Identify constructed/derived variables	NA	No constructed/derived variables present in the data set.
Identify sampling weight variables	NA	No sampling weights present in the data set.
<b>IDENTIFY AND ADDRESS MISSING DATA</b>		
Evaluate missing value code formats (and alter as necessary)	Yes	Researchers used blanks and dashes (--) to refer to missing values and cases where no data were reported (including if the VMMC program was not implemented) and where a variable was not applicable. Zeroes were used for records where there were no VMMCs reported but program was implemented.
Evaluate missing value codes (and alter as necessary)	Yes	Researchers used blanks and dashes (--) to refer to missing values and cases where no data were reported (including if the VMMC program was not implemented) and where a variable was not applicable.
Evaluate if "Blanks" used as coding missing values	Yes	Researchers used blanks and dashes (--) to refer to missing values and cases where no data were reported (including if the VMMC program was not implemented) and where a variable was not applicable.
Evaluate if differing types of missing data are all coded using the same value	Yes	The original data provided no way to distinguish between different reasons for missing information. Blanks and values noted with dashes were recoded to 99999999 to indicate that data were not reported (including cases where the VMMC program had not yet been implemented).
Use statistical methods to impute missing data	NA	No imputation performed.
Identify variables with greater than expected missing values	Yes	No variable had greater than expected missing values. All data were counts.  Aggregate data were not present for 5 of the 12 countries in 2010, 4 countries in 2011, and 3 countries in 2012.

## DATA TRANSFORMATION PROCEDURES, LIMITATIONS, AND REDACTIONS

Components	Yes/No/NA	Relevant Notes/Steps Taken
<b>REVIEW OF IDENTIFIABLE DATA AND METHODS FOR PROTECTION AND CONFIDENTIALITY</b>		
Evaluate data for direct identifiers	NA	The data are not individual/respondent level data, but programmatic aggregate data at country level. There are no direct identifiers.
Evaluate data for quasi-identifiers	NA	All data presented are aggregated at the country level.
Evaluate if external data sources can potentially be used to re-identify individuals	NA	All data presented are aggregated at the country level.
Evaluate outliers in data that could potentially identify individuals	NA	All data presented are aggregated at the country level.
Evaluate data for geographic variables	NA	The data contain only geographic identifiers at the country-level.
Specify de-identification procedures performed on data	NA	No direct identifiers, quasi-identifiers, or individual-level data were collected.
Identify if variables were masked to de-identify the data	NA	No direct identifiers, quasi-identifiers, or individual-level data were collected.
Identify if variables were aggregated/grouped to de-identify the data	NA	No direct identifiers, quasi-identifiers, or individual-level data were collected.
Other additional methods used to de-identify data	NA	No direct identifiers, quasi-identifiers, or individual-level data were collected.
<b>FILE FORMAT AND FILE NAMES</b>		
Verify file format of data	Yes	CSV file format used
Verify file name	Yes	Files were named: VMMC_Aggregate, VMMC_Disaggregate
Verify that no special characters and spaces were used in file name	Yes	No special characters used. Underscore used for space between words.
<b>DATA QUALITY</b>		
Compare transformed data with original data	Yes	The transformed files were read correctly when imported into SAS. Ensured that all cases and variables were displayed and accounted for.
Evaluate participants' inclusion and exclusion criteria to determine if the data set meets these criteria	NA	Data were not available at the individual level to verify application of the inclusion/exclusion criteria.
Determine percentage of missing values across all variables in the data set	Yes	Variables Age15_29, Age30, Device, FU had a comparatively higher percent of missing data, primarily because they were Not Applicable/Not Reported in several cases. See "Data Completeness" below for further details.
Evaluate transformed data for corrupt records/file	Yes	Data were tested by converting the SAS file to CSV format and vice versa. All data files imported correctly after transformation, with no corrupt records.
Evaluate transformed data for data type mismatch	Yes	All variables are displayed and retained in the same format as the original data. No mismatches between variable types were noted.
Evaluate numbers and dates for standard representation	Yes	Year variable was formatted to be categorical data with YYYY format. Country was recoded to the ISO-ALPHA3 code assigned to the country. Please see "Country Recode" below for further details. All other variables represented counts.

## DATA TRANSFORMATION PROCEDURES, LIMITATIONS, AND REDACTIONS

### LIMITATIONS AND REDACTIONS

#### COUNTRY RECODE:

Country names within the data set were recoded into their ISO-ALPHA3 country code (see table below).

COUNTRY VALUES IN ORIGINAL DATA	RECODED VALUES
Botswana	BWA
Ethiopia	ETH
Kenya	KEN
Malawi	MWI
Mozambique	MOZ
Namibia	NAM
Rwanda	RWA
South Africa	ZAF
Tanzania	TZA
Uganda	UGA
Zambia	ZMB
Zimbabwe	ZWE
All Countries	ALL

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#### DATA COMPLETENESS:

The sum of the values of the following disaggregated indicators was <85% or >100% of the total number of VMMCs reported for a given year:

Country	Year for which the data were excluded	Variable name for which the data were excluded
Botswana	2013	AGE15_29, Age_30MORE
Botswana	2014	AGE15_29, Age_30MORE, FU
Botswana	2016	AGE_UNDER15, AGE15_29, AGE_30MORE, DEVICE, HTS, POS, FU
Kenya	2013	AGE15_29, AGE_30MORE, FU
Kenya	2014	AGE15_29, AGE_30MORE
Malawi	2013	AGE15_29, AGE_30MORE
Malawi	2014	AGE15_29, AGE_30MORE

## DATA TRANSFORMATION PROCEDURES, LIMITATIONS, AND REDACTIONS

Mozambique	2013	AGE15_29, AGE_30MORE, HTS, POS, FU
Mozambique	2014	AGE15_29, AGE_30MORE, HTS, POS
Mozambique	2016	FU
Rwanda	2014	AGE_UNDER15, AGE15_29, AGE_30MORE,
Rwanda	2015	FU
Rwanda	2016	FU
South Africa	2013	AGE15_29, AGE_30MORE, HTS, POS
South Africa	2014	AGE15_29, AGE_30MORE, HTS, POS
South Africa	2015	AGE15_29, AGE_30MORE
South Africa	2016	AGE15_29, AGE_30MORE, HTS, POS
Tanzania	2013	AGE15_29, AGE_30MORE, HTS, POS, FU
Tanzania	2014	AGE15_29, AGE_30MORE, FU
Uganda	2013	AGE15_29, AGE_30MORE, DEVICE, POS, FU
Uganda	2014	AGE15_29, AGE_30MORE, DEVICE, POS, FU
Uganda	2015	AGE_UNDER15, AGE15_29, AGE_30MORE, DEVICE, HTS, POS, FU
Uganda	2016	AGE_UNDER15, AGE15_29, AGE_30MORE, FU
Zambia	2013	AGE15_29, AGE_30MORE, DEVICE
Zambia	2014	AGE15_29, AGE_30MORE, FU
Zimbabwe	2013	AGE15_29, AGE_30MORE, FU
Zimbabwe	2014	AGE15_29, AGE_30MORE

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HTS (uptake of HIV screening) exceeds 100% for several countries because some countries reported individuals tested at VMMC clinics who did not undergo male circumcision.

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No HIV testing algorithms were provided as part of the study protocol.

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References:

CDC. Voluntary medical male circumcision—southern and eastern Africa, 2010–2012. *MMWR Morb Mortal Wkly Rep* 2013;62(47):953–7.

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