Implementing targeted interventions to address persistent VMMC data quality issues

A case study from uMgungundlovu District, KwaZulu-Natal

TABLE OF CONTENTS

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Background

The South African National Department of Health (NDoH) adopted the National Voluntary Medical Male Circumcision (VMMC) programme in 2010 to curb female-to-male transmission of HIV. VMMC services are publicly accessible to eligible HIV-negative males in all 52 districts, and are offered by service providers who are funded internally through domestic contracts or implementing partners funded by external donors such as the United States President's Emergency Plan for AIDS Relief (PEPFAR) (NDoH, 2020b).

The NDoH relies on quality data to ensure sustainable implementation and accurate budgeting of the VMMC programme. This data informs analysis of performance trends, performance against targets, progress towards universal VMMC coverage to prevent new female-to-male HIV infections, and strategic planning. However, with multiple service providers and their various data reporting protocols, VMMC numbers are not always accurately reported to the *NDoH's District Health Information System* (DHIS).

The uMgungundlovu Context

We have selected uMgungundlovu, a district in KwaZulu-Natal (KZN), to exemplify the data flow in a district with multiple service providers and to illustrate the possible challenges. The district is primarily supported by external service providers, including PEPFAR implementing partners and more recently (mid-2022) provincially contracted private-public partnerships with ZNB general practitioner (GP) consortia. The PEPFAR implementing partners report to their funders through their internal data reporting system called Data for Accountability, Transparency, and Impact (DATIM). In addition, they have to report to DoH facilities for DHIS capturing as well. However, the ZNB GP consortia submit their circumcision data to the province as part of their invoicing process, in addition to reporting to the District DoH.

Part of the challenge is that external service providers do not have access to DHIS and thus need to submit their records to a DoH public health facility for capturing. However, partners frequently report higher numbers on their data systems than what is reflected in the DHIS, indicating that there are bottlenecks that hinder some partner-reported data from accurately reflecting on the DHIS.

About MMC SUSTAIN | The *Medical Male Circumcision Scale-Up and Sustainability to Avert New HIV Infections* project, funded by the Bill & Melinda Gates Foundation and implemented by Genesis Analytics since 2018, is tasked with providing technical assistance to support eight South African districts to transition their VMMC programmes from scale-up to sustainability. Integral to MMC SUSTAIN's mandate is to design and implement targeted interventions addressing challenges within the VMMC programme. Data management practices and quality is a key component.

The Challenge

The National VMMC programme data management is regulated by the *District Health Management Information Systems (DHMIS) Policy and Standard Operating Procedure (SOP)*. The DHMIS SOP stipulates how data is managed at all levels of the health information system, including data flows and timelines for data submissions.

According to the DHMIS SOP, the external service provider clinician conducting a circumcision should submit the client data, including client intake files and VMMC registers, directly to either the facility manager or the DoH data capturer, according to their designated responsibility. The recipient must then ensure the entry of this data into the DHIS. However, due to poor oversight, external service providers conducting VMMC services at DoH facilities frequently leave without officially handing over the VMMC files and registers to DoH personnel. This means the data isn't captured on DHIS, and in many cases, the documents go missing, making consolidating the data difficult.

Different reporting pathways with unique requirements and multi-step data flow pathways involving numerous stakeholders, compounded by a lack of oversight, have led to data inconsistencies. These inconsistencies show between the data reported in DATIM and ZNB invoices and that recorded in DHIS; which casts doubt on the data's quality and credibility, suggesting that it may not be reliable for analysis or planning purposes.

In uMgungundlovu District these discrepancies were seen consistently between the number of circumcisions reported on DHIS and DATIM throughout all 24 health facilities that were actively performing circumcisions in 2021/2022.

This case study aims to demonstrate how the MMC SUSTAIN team and the District Department of Health in uMgungundlovu District in KZN, implemented multiple interventions to address persistent data quality issues for overall improved VMMC data quality and accuracy.

Interventions

We piloted four interventions to address these persistent data quality challenges in partnership with the district. These interventions were:

1. Monthly Verification Meetings

2. Quarterly Re-evaluations

3. DQAs

4. Data Management Orientation

1. Monthly VMMC data verification meetings

We supported data verification meetings to afford the DoH and donor-funded implementing partners the opportunity to compare the VMMC data that has been reported on DATIM and that which is on DHIS. In essence, the purpose of the district data verification meetings was to:

1. Create a platform for strengthened collaboration between district DoH and implementing partners.
2. Eliminate data variances between DHIS and partner-reported data.

The steps we took, through our Project Manager on the ground, included:

☐ **Advocating** for VMMC data verification meetings

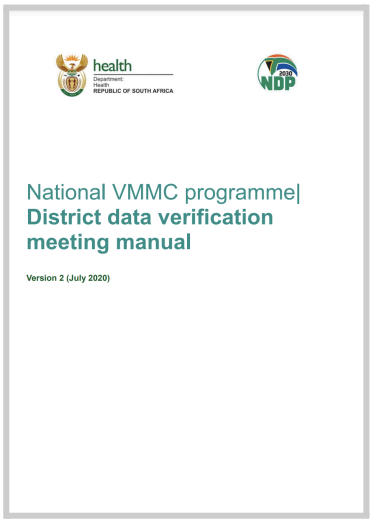
Our MMC SUSTAIN Project Manager, stressing the importance of accountability in data management, skillfully highlighted discrepancies between DATIM and DHIS data using a detailed spreadsheet. This advocacy led to the successful establishment of VMMC data verification meetings in uMgungundlovu. Subsequently, the District HIV and AIDS/STI/TB (HAST) manager recognised their value and supported the monthly review sessions in the district.

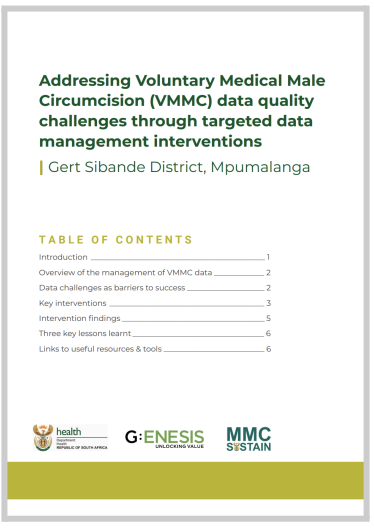
☐ **Preparing** for VMMC data verification meetings

Ahead of the District's first VMMC data verification meeting in April 2021, our MMC SUSTAIN Project Manager designed the meeting's structure and agenda based on the *National VMMC District Data Verification Meeting Manual* to ensure the necessary checks and balances were in place - such as the inclusion of the relevant agenda items and ensuring that the objectives of all the attendees were aligned. Meeting invitees included the District Data Capturer and the PEPFAR M&E Officer among others. The meeting invites were sent by the HAST co-ordinator to ensure ownership and continuation of data verification meetings (even in the absence of SUSTAIN).

Identifying & correcting data variance in verification meetings

During data verification meetings, attendees appraise the data quality on DHIS per health facility, by comparing it to the data reported by the implementing partner on DATIM. Stakeholders are responsible for different aspects of the verification process, ensuring buy-in and accountability.





Click here to view the Data Verification Meeting Manual

Click here to read about how Gert Sibande district approached similar data quality challenges.

2. Quarterly Data Re-evaluations

Every quarter, the same team that conducts the monthly data verification meetings arranges a meeting to re-evaluate the data variances identified in the previous meetings, to determine whether they have been resolved.

The quarterly re-evaluations revealed that, although the implementing partner M&E Officer and District Data Capturer are tasked with consolidating the data after the monthly data verification meetings, discrepancies persist, albeit these are to a lesser degree.

Some possible reasons for the persistence of data inconsistencies are:

1. Consolidating the data requires referring to the source documents (client intake files, the VMMC register, etc.) at the facilities, and if records are missing or incorrectly filled in, then the data cannot be updated or corrected.
2. Lack of ownership or oversight between the M&E Officer and District Data Capturer.

Facilities that had recurring data variances by the time of these re-evaluations were chosen for the next level of intervention; namely the Data Quality Audits (DQAs).

3. Data Quality Audits (DQAs)

We drafted the DQA strategy to meet the DoH's need for an approach to audit data collected by external service providers. DQAs tackle data gaps at a site level and ensure source document completeness and accuracy, reflecting true programme performance at the service delivery level. Collaborating with the NDoH, we developed the Data Audit Capture Tool as part of Continuous Quality Improvement (CQI) activities. This tool facilitates a standardised and systematic approach to DQAs and is designed for use by district and sub-district Health Information Officers and VMMC Coordinators.

The following five steps outline the DQA process in uMgungundlovu:

☐ Preparation for DQA: Site identification & communication

Our MMC SUSTAIN Project Manager conducted DQAs in six facilities to pinpoint the causes of unresolved data discrepancies. The facilities selected for DQA were based on high data variance between DHIS and DATIM identified during data verification meetings in 2021. The Project Manager visited these sites and, with either the HAST manager's or the Health Information Officer's support—or both—conducted the audits.

The assessment process commenced with the Project Manager sending communications via the district office, ensuring that sites were prepared for the upcoming assessment and all necessary documents were organised and ready.

☐ Site characteristics review

The actual review process began with an assessment of the characteristics of the site. Understanding the site characteristics, which detail the service delivery processes, is crucial for determining the assessment approach and identifying the key elements of the data management process to evaluate. The "Site Characteristics" form within the Data Audit Capture Tool guides this review, requiring the collection of information such as the site's geographic location, site type (mobile or fixed), services provided, patient volume, and the systems for linkage to care.

☐ Monitoring & Evaluation Systems I Data correlation review

Following the initial site characteristics review, the focus shifts to the site's Monitoring & Evaluation (M&E) systems, using the corresponding section of the Data Audit Capture Tool. This part of the review scrutinises the site's data management resources (if they exist and if they are used correctly) including files, registers, and dedicated personnel. This review also examines the reporting process structure, providing insights into site reporting and information flow.

Additionally, the review entails a comprehensive assessment of the consistency of the different sources of data within the site over 12 months. This was done by comparing an extract from DHIS containing 12 months of data to the site MMC register, monthly input forms, and the number of physical client records found within the site, to assess whether the four sources match.

☐ Client records review

Concluding the evaluation process, the review team actively reviewed a sample of 25 client records over 12 months to assess the accuracy of the record-keeping practices. This review checks the completeness of the patient profile, history, health checks, and surgical details including anaesthetic dosages, any adverse events, follow-up visits, and surgeon information.

☐ Dissemination & use of DQA findings

The review team documented the audit findings on the Data Audit Capture Tool for each facility. They thereafter collated this data, compiling a summative report that detailed the DQA findings from all six facilities. This report outlined the assessment's objectives, pinpointed gaps, catalogued encountered challenges, and offered recommendations to address these issues. The team distributed the report to the relevant DoH staff, implementing partners, and MMC SUSTAIN personnel for them to act on the recommendations.

4. Data Management Orientation

Training is an important intervention as it communicates expectations and empowers personnel with knowledge, skills, and tools for fulfilling those expectations. At the start of the MMC SUSTAIN project, Data Management training was held for health facility managers and implementing partner M&E officers.

During the intervention period, persistent data discrepancies were observed even after data verification meetings, and thus our MMC SUSTAIN Project Manager and the DoH Information Manager decided to curate another training session - this time, targeted at Facility Data Capturers, the District Data Team, and the District HAST team to adequately orientate those on the ground, on VMMC data management processes. We organised and delivered this training in November 2022.

Results

Though these interventions did not solve all the challenges immediately, there were many important and insightful findings. As will be seen below, data discrepancies persisted but they were to a lesser degree after the interventions.

Reduced Data Variations between DATIM & DHIS after Interventions

During all the meetings for the months shown in Figure 1 (April – August 2021), there are notable discrepancies between DATIM and DHIS in uMgungundlovu, with DATIM reporting higher numbers of circumcisions than DHIS overall (although this may be different at a facility level). Graph A shows the differences observed during the monthly data verification meetings, while Graph B shows the discrepancies observed after the interventions. There is a notable decline in differences between the data reported on the two systems during the verification meetings and after the interventions, even though these inconsistencies were not fully resolved.

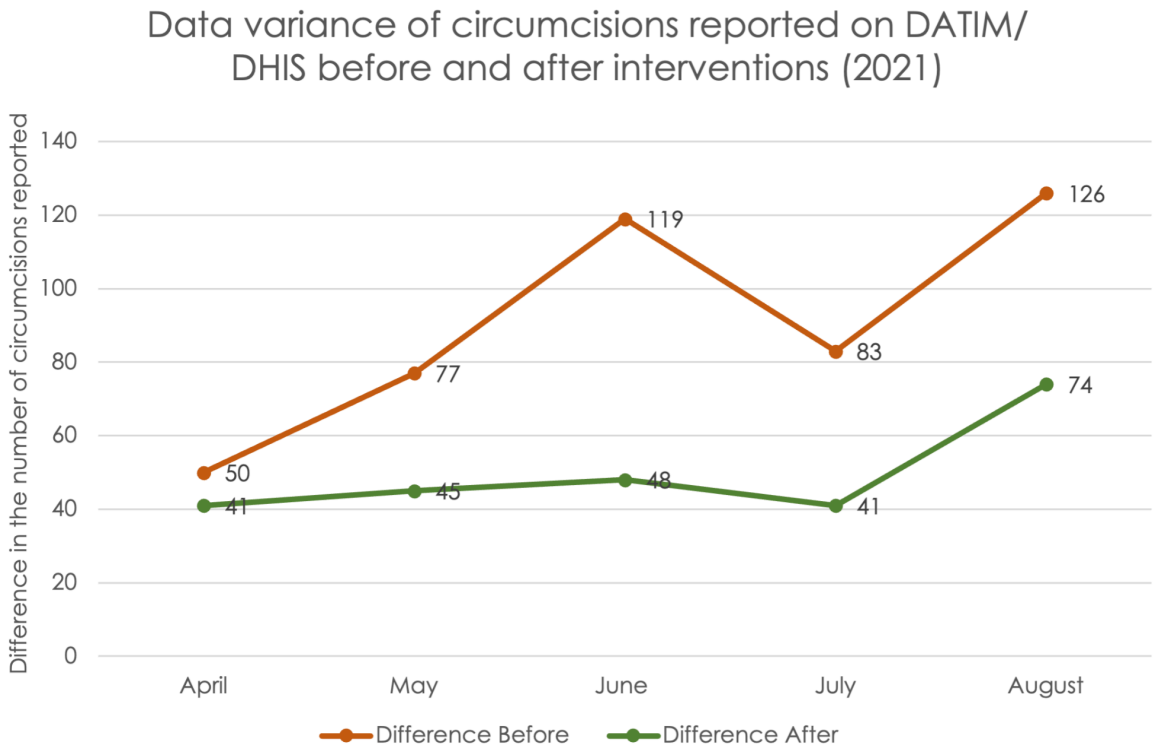


Figure 1: Shows the difference between the number of circumcisions reported on DATIM vs those reported on DHIS across PEPFAR-supported facilities in the uMgungundlovu district (2021)

Overall, SUSTAIN introducing and routinising verification meetings and DQAs post-2021 has markedly enhanced data quality oversight. Implementing multiple routine data quality checks, which the ZNB partners joined immediately upon their onboarding in 2022, is a significant achievement of the project. This advancement promises to elevate data quality across the district.

Data Quality Audit (DQA) Findings

The DQA findings offered possible explanations for the persistent data discrepancies despite data verification meetings and re-evaluations having taken place. They highlighted similar documentation issues across multiple facilities including:

- **Missing and incorrectly completed procedure documentation** such as client intake files and VMMC registers, which means there was incomplete evidence of VMMC services being conducted by implementing partners.
- **Monthly summary sheets and VMMC receipt forms were also missing**, which meant there was no record that the VMMC implementing partners submitted the data to dedicated DoH personnel such as the facility manager/ data capturer.
- **Adverse events registers were missing**, which are critical for noting any complications following VMMC procedures.
- **Missing referral/linkage register**, even though it is accessible online, the facilities were not printing it for use, making it difficult to track patients needing further medical care or referrals for additional health concerns.
- **Using outdated forms** despite being supplied with the most recent version of the VMMC register- facilities continued to use the outdated first edition.

Lessons learnt

1. **Integrate records** | To prevent the loss of VMMC records, the district should integrate health records into the existing filing systems at the facilities after all the patient follow-ups have been completed, and in so doing maintain order and accessibility.

2. **Consistent enhancement of skills** | Due to the workforce constantly changing (new hires, promotions, restructuring, resignations, etc.) it is important to host periodic VMMC data management training sessions, either to enhance skills in information management or to reinforce best practices within the district. Data Management is a process that requires all key role players (including Data Capturers, Clinicians, and Managers) in the VMMC data flow to play their role in ensuring data accuracy and quality. Thus, data management training is crucial in capacitating all responsible parties on effective data management processes.

3. **Draft an SOP** | The inconsistencies in the data underscore the necessity for a standard operating procedure (SOP) that clearly defines how data should be transferred from partners to the supported health facilities. This SOP is recommended to be co-created with SUSTAIN, implementing partners, and DoH - everyone involved in the value chain.

4. **Routinisation of data verification meetings** | The practice of monthly meetings for data quality monitoring should be upheld. The VMMC monthly data verification meetings and quarterly re-evaluations are an integral part of identifying data variances between the DoH and implementation partner information systems. They serve as an embedded accountability mechanism to review reported data and proactively address discrepancies.

5. **Collaborate & create a quality improvement plan** | After a DQA has taken place, all parties involved in data quality management including project staff (SUSTAIN), implementing partners, and the DoH should review the audit outcomes and develop a quality improvement plan. This plan should include ensuring all missing source documents are returned to the facilities, and all necessary updates to the health data in DHIS are made.

6. **Commitment to DQAs** | While regular data verification meetings and training are vital in managing data variances, DQAs are a critical intervention in addressing persistent data quality challenges. They provide a systematic and in-depth review mechanism that can pinpoint the underlying causes of data mismatches and lead to more accurate reporting and thus should be continued periodically.

Conclusion

There isn't a single intervention that can be completely effective in addressing data quality issues that arise within a system that has multiple stakeholders. Since VMMC services in uMgungundlovu are provided by the government and domestic and international partners, ensuring accountability and ownership in data management by either of these stakeholders is difficult. Resolving data quality issues requires concerted efforts and cooperation from all the relevant stakeholders. There needs to be (1) an awareness of the detrimental effects of data mismanagement, (2) continuous orientation and training on how data should be collected and stored, and (3) multiple checks and audits along the continuum of VMMC service provision.

DQAs, complemented by supportive interventions like training and routine data verifications, constitute a comprehensive approach to overcoming data quality challenges in health programme management. This case study highlights the crucial role all these interventions have in the ongoing efforts to improve the accuracy and reliability of health data, which are foundational for effective health policy-making and programming.

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