



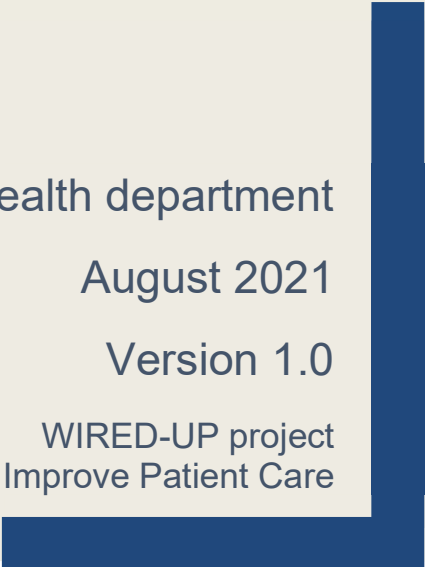
# DATA ACCESS, FLOW, AND USE IN CITY HEALTH PRIMARY HEALTHCARE SITUATION ANALYSIS

City of Cape Town Health department

August 2021

Version 1.0

WIRED-UP project  
Scaling the Use of Data to Improve Patient Care



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## Abbreviations and acronyms

| ACRONYM  | Detail                                                  |
|----------|---------------------------------------------------------|
| ART      | Antiretroviral Therapy                                  |
| CHIT     | City Health Implementation Team                         |
| CHW      | Community Health Worker                                 |
| COVID-19 | SARS Coronavirus 2 2019                                 |
| ENA/EN   | Enrolled Nursing Assistant/ Enrolled Nurse              |
| FGD      | Focus Group Discussion                                  |
| FM       | Clinic Manager                                          |
| HAST     | HIV/AIDS, STI, TB                                       |
| HAST Co  | HAST Co-ordinator                                       |
| HCW      | Healthcare Worker                                       |
| HIO      | Health Information Officer                              |
| HIV      | Human Immunodeficiency Virus                            |
| HMT      | Health Management Team                                  |
| HTS      | HIV Testing Services                                    |
| IT       | Information technology                                  |
| LTFU     | Loss to follow up                                       |
| MHS      | Metro Health Services                                   |
| NDOH     | National Department of Health                           |
| NGO      | Non-governmental organisation                           |
| NHLS     | National Health Laboratory Services                     |
| PBPA     | Post Basic Pharmacist's Assistant                       |
| PDR      | Plan-Do-Review                                          |
| PHC      | Primary Health Care                                     |
| PHDC     | Provincial Health Data Centre                           |
| PMTCT    | Prevention of Mother to Child Transmission              |
| PPHC     | Personal Primary Health Care                            |
| PREHMIS  | Patient Record and Health Management Information System |
| QI       | Quality Improvement                                     |
| QIP      | Quality Improvement Plan                                |

|          |                                                                                                 |
|----------|-------------------------------------------------------------------------------------------------|
| RMR      | Routine Monthly Report                                                                          |
| SD       | Sub-district                                                                                    |
| SMO      | Senior Medical Officer                                                                          |
| SOP      | Standard Operating Procedure                                                                    |
| SPV      | Single Patient Viewer                                                                           |
| TB       | Tuberculosis                                                                                    |
| VL       | Viral Load                                                                                      |
| WIRED UP | Western Cape Information Systems Rollout for Effective Data Utilisation to Improve Patient Care |
| WCGH     | Western Cape Government Health                                                                  |

## Executive Summary

The overall aim of the Situation Analysis was to understand the context of City Health, within which the “Scaling Data Use to Improve patient care” project (with the acronym WIRED-UP – =WesternCape Information systems Rollout for Effective Data Utilisation to improve Patient care) will be implemented over three years from 2021 to 2023.

### Single Patient Viewer (SPV) Access and Use

- Value of SPV is recognised by users, and uptake is good barring access issues, the biggest of which are technical inability of City users to access the Western Cape Government Health (WCGH) hosted platform.
- Training was not widespread for existing SPV users based on the limited rollout to date, with the process for on-boarding of new users needing to be clarified.
- Interaction between City Health and the Provincial Health Data Centre (PHDC) needs strengthening.
- Additional clinical data requirements such as radiology, pharmacy and discharge note data were identified.
- The governance structure (new development requests and revisions of tools) is not clearly defined.

### Routine Health Information Systems

- Technical barriers (hardware and infrastructure) are a major impediment to effective data systems.
- Behavioural barriers identified were – Data capture (errors, omissions, delays); Up to date knowledge of process/policy/stationery changes; Human resources (Turnover, shortage, dynamics).
- Organisational barriers identified were- Data skills and knowledge were regarded as inadequate despite many staff members having a training role in their job descriptions.
- Positive attitudes towards data validation process are well entrenched.
- Motivation around data use for performance management varied considerably (facility, sub-district, Plan-Do-Review (PDR) indicators).
- City Health was perceived as motivated by achieving targets (individual, sub-district and facility levels).
- The perceived best practices included:
  - weekly or biweekly drawing and actioning of exception reports,
  - having clinic managers who were skilled in use of the City Health PREHMIS system
- Clear roles around data flow and processes were evident at facility level.
- Data verification/validation process:
  - the Clinic manager or the 2nd in charge took ultimate responsibility for the validation process. The facility teams (clerks, portfolio heads, clinicians) contributed to the data validation and cleaning processes

### **ART Treatment Cascade**

- Initiation - The use of the HTS report is consistent across all facilities, drawn by a variety of staff members (clinic manager/data clerk/adherence counsellor); either daily, weekly or monthly, to monitor ART initiation-consistent findings that ART initiation is same day or rarely deferred and is therefore not likely an area of intervention. HTS report ART linkage data supports this assertion.
- Viral Load (VL) monitoring - VL monitoring practices are inconsistent- TRAKCARE/hardcopies are being used to lookup VL results. Evidence is lacking that VL lookups are done prior to appointment date. Actioning of high VL (recall of patients before appointment date) mostly done for pregnant and breastfeeding clients. Evidence that clients are pro-actively recalled based on VL results, is weak (This practice was found in facilities with projects e.g. Risk of Treatment Failure - ROTF).
- Loss to follow up (LTFU) - Difficulties in tracing patient (telephonic or home visits) based on transitional housing; change of numbers; stigma; resources at facility (handsets and airtime; space for telephone call; time and effort allocated for this activity); overlap in and gaps between roles and responsibilities of City Health and various NGO staff. Supervision and accountability of the tracing process is lacking/inconsistent. Smaller facilities were better able to manage the tracing processes as compared to larger burden facilities.

### **TB Treatment Cascade**

- Screening – TB symptom screening is now combined with COVID19 screening, in most cases, outside the facility. However, there are gaps in capturing this information.
- Initiation – TB initiation delayed under few circumstances and few losses of patients seen here; PREHMIS TB exception reports and TRAKCARE routinely used to flag positive results. TB treatment initiation in TB positive presumptive patients is consistent and a well performing area of the program.
- LTFU - Weakness was the (relatively inefficient) use of folder review to identify missed appointments; PREHMIS appointment system was widely used to book TB visits, however there is no report generated by the system which identifies patients who miss their appointments. Clinicians and NGO staff (CHWs, TBHIV Care ENs and ENAs) were involved in recall of TB patients. Difficulties in tracing patient (telephonic or home visits) based on: transitional housing; change of numbers; stigma; resources at facility (handsets and airtime; space for telephone call; time and effort allocated for this activity); overlap in and gaps between roles and responsibilities of City Health and various NGO staff. Supervision and accountability of the tracing process is lacking/inconsistent. Smaller facilities were better able to manage the tracing processes as compared to larger burden facilities.

### **Quality Improvement for systems change to improve data utilisation**

- Aspects of quality improvement (QI) have been “mainstreamed” into routine management activities
- Audit and reflective practice through 3 major processes: Plan- Do- Review process, Integrated City audits (formerly HAST Audits), and Ideal Clinic processes are well entrenched and a key lever for change in the organisation

- There is no current overarching QI Guideline/SOP document for City Health staff
- Need to define and distinguish between Quality Improvement, Quality Assurance and Quality of care
- Exposure to QI methods, tools and approaches is not consistent at SD and facility
- There is a willingness to apply QI methods/ principles to existing projects
- Platforms exist in which QI can be discussed in context of data
- There is Leadership interest and buy in – Area Management teams, HAST unit, Health Management Team (HMT), CHIT
- Supportive supervision is being used as an intervention to improve processes
- Although there is no dedicated QI resource, there are existing portfolios which include some aspects of QI such as Change champions, Ideal clinic Portfolio holders, Program support staff and a single Quality Assurance Manager for the organization. Quality improvement is included as a key performance area in the job descriptions of clinicians and managers

## Chapter 1: Preamble

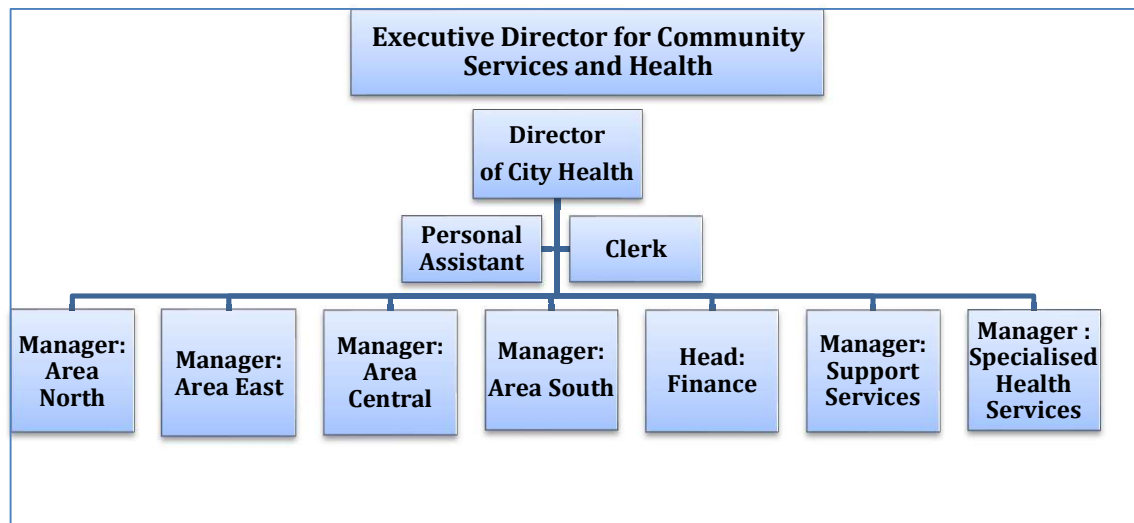
### Background

In partnership with Provincial Government, the City of Cape Town's Health Department delivers Personal Primary Health care (PPHC) and Municipal Health (also referred to as "environmental health services") (*City Health Final Business Plan 2020-2021*). PPHC services are delivered via an extensive infrastructure of 69 clinics, 14 Community Day centres, 15 satellite clinics, 4 mobile clinics and 4 Specialised clinics. Services include promotive and preventative health care to women men and children (reproductive health immunization and well-baby clinics), treatment of sick children, HIV/AIDS, STI and TB programs, and limited adult curative and chronic care. Approximately 85% of PPHC services are accessed by the poor and most vulnerable members of society, and approximately 80% of City Health staff are employed to provide these PPHC services.

City Health is one of the four departments of the Community Services and Health Directorate, which is led by the Executive Director. The department is headed by the Director City health to whom these Managers report (see Figure 1 below):

- Four Area Managers (Area North, East, South and Central)
- Manager Specialised Services
- Finance Head
- Manager: Departmental Support Services

Figure 1: City Health organogram



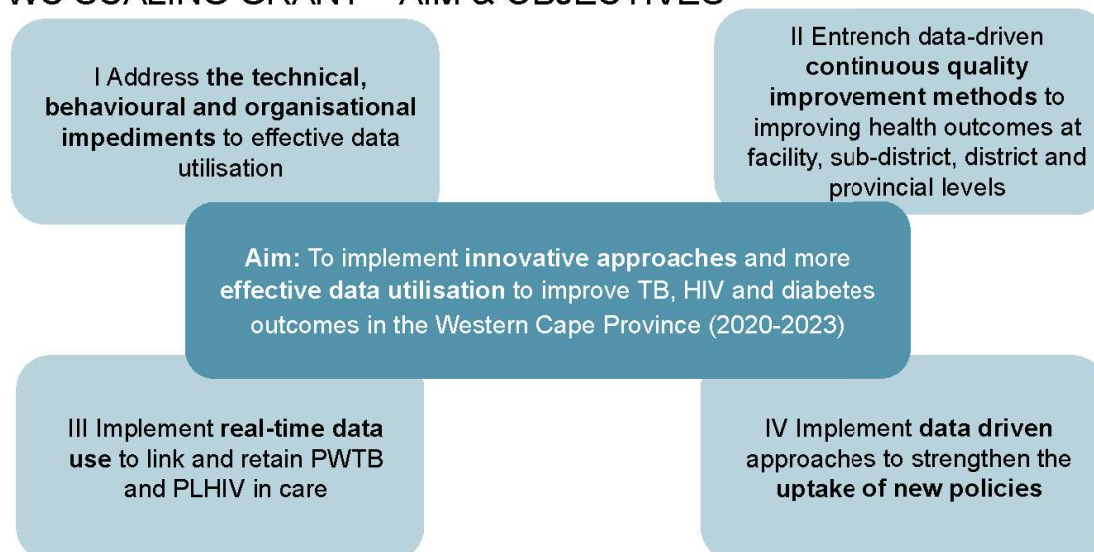
The situation analysis presented in this document forms an essential first step in the "Scaling Date Use to Improve Patient Care" or "WIRED-UP" initiative funded by the Bill and Melinda Gates Foundation for the period 2020 to 2023. The grant was conceptualised and co-created with input from stakeholder groups from the:

- Cape Town City Health department
- Metro Health Services (MHS) (Western Cape Government Health department)
- Provincial Health Data Centre (PHDC) within the Health Impact Assessment Unit (Western Cape Government Health department)

The project has an overall aim to use innovative approaches to optimise the use of data for clinical patient-level, and systems, decision making, to improve the outcomes of the HIV, TB and Diabetes programs as well as Primary Healthcare (PHC) in general in the Western Cape Metro District. The aim and objectives of the project are depicted in Figure 2, below.

Figure 2: Overview of the aims and objectives of the WIRED-UP initiative

## WC SCALING GRANT – AIM & OBJECTIVES



As part of the formative work to inform the grant objectives, a situation analysis was conducted within MHS to identify the technical, behavioural, and organisational impediments to effective data use (*PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems, 2009*), the results of which are summarised in Table 1. To achieve the objectives of the Grant, it was agreed that a similar situation analysis should be conducted within both City Health and MHS. Separate to this situation analysis report, an IT infrastructure audit will also be conducted as part of the WIRED-UP grant activities, as adequate access to IT hardware, software, and network connectivity is a backbone to effective data use.

Table 1: Summary results of the MHS formative situation analysis

| Technical                                                                                                                                                                                                                | Behavioural                                                                                                                                                                                                                                              | Organisational                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• <b>Poor quality</b> paper-based systems (tick sheets)</li> <li>• <b>Onerous burden</b> on data collectors (duplicate recording)</li> <li>• Poor <b>data accuracy</b></li> </ul> | <ul style="list-style-type: none"> <li>• Poor <b>understanding of indicators/tools</b></li> <li>• <b>Clinicians</b> do not value role as data producers</li> <li>• <b>Compliance ethos</b> - focus on reporting upwards instead of using data</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Data capturers</b> have key role but are not dedicated resources (other clerical tasks)</li> <li>• Facility <b>manager's capacity</b> to manipulate data</li> <li>• Poor access to <b>real-time data</b></li> </ul> |

## Broad objectives of situation analysis

The objectives of the situation analysis were as follows:

1. To map out the current data flow processes from data creation to data use for health systems planning, patient management, and patient tracing to identify the technical and organisational barriers, and facilitators, of effective data use.
2. To understand attitudes towards creation and capture of data, use of data enterprise software, and use of data reports by all Healthcare workers (HCWs).
3. To understand the current data literacy and competency of HCWs across the entire data cascade, including the content of training, to identify the facilitators and barriers to utilisation of data by HCWs.
4. To review and interrogate existing and previous research or programmes implemented to strengthen data, and its use, to derive lessons learned to inform future activities.

In order to satisfy these objectives above, five content areas were identified to be included in the situation analysis:

1. Single Patient Viewer (SPV) access and use
2. Barriers and enablers of routine monthly reporting and health information systems
3. Data use to strengthen the TB treatment cascade
4. Data use to Strengthen the ART treatment cascade
5. Quality Improvement for systems change to improve data utilisation

## General methodology

### Scope and Data Collection Tools

The scope of the situation analysis, and the data collection tools, were designed through broad stakeholder engagement. A “Situation Analysis Huddle” was established for each of the content areas and members of the City Health Implementation Team (CHIT) were invited to participate in these huddles. Additionally, members of the Health Management Team were invited to participate, as well as all Area staff at an initial “meet and greet” engagement held with all Area Offices to introduce the grant, its objectives, and the situation analysis. The composition of each huddle is outlined in Table 2, although ad-hoc attendance from any of the above stakeholders also occurred.

Table 2: Composition of Huddles informing situation analysis scope and data collection tools

| Content Stream                     | Huddle Members                                                                                                                                                                                                                                                                                                                 |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPV                                | WIRED UP Trainer (Leigh Snyman), Head: City Training (Florence Groener), Epidemiologist: City Health (Natacha Berkowitz), Clinical Medical Officer: City Health (Caroline Neumuller), WIRED UP Business Analyst (Asma Garda), Health Information Officer (Grant October), Head: Health Information and Technology (Kevin Lee)  |
| Routine health information systems | WIRED UP Trainer (Leigh Snyman), WIRED Up Project manager (Damian Hacking), Epidemiologist: City Health (Natacha Berkowitz), Clinical Medical Officer: City Health (Caroline Neumuller), Head: Health Information and Technology (Kevin Lee), Health Information Officer (Brigitte Sacco), HAST Coordinator (Nontle Plaatjies) |
| TB treatment cascade               | WIRED UP Project manager (Damian Hacking), WIRED UP Public Health Specialist (Puni Mamdoo), WIRED UP Business Analyst (Asma Garda), TB Project manager (Judy Taylor), HAST Coordinator (Edith Mackriel)                                                                                                                        |
| ART treatment cascade              | WIRED UP Public Health Specialist (Puni Mamdoo), WIRED UP Business Analyst (Asma Garda), Clinical Medical Officer: City Health (Beth Harley), Epidemiologist: City Health (Natacha Berkowitz), HAST Coordinator (Edith Mackriel)                                                                                               |
| Quality improvement                | Senior Professional Officer: City Health (Phillida Bailey), HAST Coordinator: NGO Support (Christalien Crowe), Senior Professional Nurse: City Health (Subeida Jacobs), Epidemiologist: City Health (Natacha Berkowitz), Area Manager; City Health (Vera Scott), WIRED UP Public Health Specialist (Puni Mamdoo)               |

Table 3 summarises the data collection methods and tools used in the process of conducting the situation analysis, full details and the final tools used can be found in Appendix 1: Situation analysis data collection tools, and are described in more detail in each content area chapter.

## Sampling

Purposive sampling was used where each of the 8 Sub-districts was requested, through an assigned sub-district liaison, to provide 2 clinics of their choice which they felt would provide an adequate representation of facilities in their Sub-district.

Representatives from each Area office, as well as the Specialised Health Services branch, were also included in the sample to participate in focus group discussions, or as content experts to contextualise the findings of the clinic evaluations. This includes Area managers, Senior Medical Officers, HAST Coordinators, Health Information Officers, PPHC Heads, and Program Managers.

## Review of guidelines and literature

In order to inform and contextualise the results of the situation analysis, existing guidelines, circulars, SOPs, policies, and published literature were identified through the Huddle members and key stakeholder engagement. The HAST Unit SharePoint site was also searched for relevant documents.

In addition, the City Health Research Portal was reviewed for relevant research conducted in any of these content areas using the following keywords:

*Data, tracing, linkage, quality, QI, routine, PREHMIS, cascade, information, info, audit, situational*

Principal investigators for all relevant research studies were contacted and requested to provide results of their studies for incorporation into the report.

The relevant components of these documents are summarised and incorporated into each content area chapter.

## Phases and timelines

- **Phase 1:** Conceptualisation and Draft (May-July 2021)  
Defined the scope and set up the Objectives and Principles for the conduct of the Situation Analysis
- **Phase 2:** Consultation and Co-creation (June 2021)  
The draft protocol for the situation analysis was circulated for comment and workshopped with stakeholders in City Health through the members of the CHIT and their designated representatives in the respective Huddles. These platforms were used to revise the tools, develop sampling strategies, facilitate access and guide other phases of the process.
- **Phase 3:** Methods and Tools development (July 2021)  
The tools and methods were piloted at two facilities to allow revision and improvement through iterative processes.
- **Phase 4:** Consensus and approvals (August 2021)  
Consensus on the approach, process and methods was reached and approval was sought from the CHIT and the HMT.
- **Phase 5:** Data collection (August- October 2021)  
This phase was conducted using standard approaches to data collection methods. The team was appropriately resourced to ensure that the highest integrity and quality in the data collection and reporting processes.
- **Phase 6:** Data analysis (October-December 2021)  
Quantitative data was summarised and described, qualitative data was transcribed by external providers in the case of focus group discussions (FGDs), but otherwise

analysed by the WIRED-UP seconded team using Emergent Themes methodologies. The provisional report was circulated to the CHIT for input prior to finalisation

### **Limitations**

While the results presented in this report are an accurate reflection of the data collected, it is important to note limitations in the process. Due to these limitations the results do not completely align with the initial intended scope of the situation analysis and may not completely accurately reflect the true nature of the processes evaluated.

### **Access**

In some clinics, different cadres of staff were interviewed than initially planned due to availability of staff, or the specific roles of the staff within that facility. In many instances the clinic manager was extremely busy, but very happy to have other staff members interviewed. The smaller clinics offered greater access to documents, facilities, and staff while bigger clinics had a larger workload and were less able to accommodate the situation analysis process. The COVID-19 vaccination roll-out and ongoing taxi-violence strikes also impacted the ability to access all the facilities and the staff desired

### **Tools**

Some questions needed to be reframed to be answerable by participants, despite the tools being piloted at two facilities prior to the site visits. Some participants may have responded, but only given partial answers or may have been misinformed of the processes they were describing. Results are presented as described by the participants. The assumption that there would be documentation that would be “auditable”/inspectable” proved false in many cases, and often did not exist e.g. “How many patients did you try to call?”. In such a case, alternate means of verification or estimation were attempted, either via cross-referencing PREHMIS reports or asking the participants to share their opinion or impressions.

### **Capacity**

Some of the initial data intended to be collected ended up being very resource intensive to acquire or was not able to be provided by participants upon request. As such, some data elements were deprioritised due to the capacity of the situational analysis team to collect all the data stipulated.

Table 3: Summary situation analysis methodology used for each content stream

| <b>STREAM</b>                             | <b>Methods</b>                                                             | <b>Participants</b>                                                                                                                                                                                                                   | <b>Data Type</b>                                  | <b>Analysis</b>                                             |
|-------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|
| <b>SPV access and use</b>                 | Self-administered surveys; process mapping                                 | Active medical officer users of SPV since April 2021. PHDC key informants                                                                                                                                                             | Quantitative data, Qualitative data, process maps | Descriptive summary, thematic analysis                      |
| <b>Routine health Information systems</b> | Semi-structured Interviews, Key Informant Interviews and field observation | Clinic: Clerks, Clinicians, Lay Counsellors, Post Basic Pharmacists' Assistants, Clinic managers<br>Area Office: HIOs, Heads PPHC, SMOs, HAST Cos<br>Specialised Health: HAST Unit, Health Information and Technology, Epidemiologist | Quantitative data, Qualitative data               | Descriptive summary, narrative synthesis                    |
| <b>TB treatment cascade</b>               | Key informant Interviews; semi-structured interviews; process mapping      | Clinics: TB Clinicians and Clerks<br>Area Office: HIOs<br>Specialised Health: HAST Unit                                                                                                                                               | Quantitative data, Qualitative data, process maps | Descriptive summary, Narrative synthesis; Thematic analysis |
| <b>ART treatment cascade</b>              | Key informant Interviews; semi-structured interviews process mapping       | Clinics: ART Clinicians and Clerks<br>Area Office: HIOs<br>Specialised Health: HAST Unit                                                                                                                                              | Quantitative data, Qualitative data, process maps | Descriptive summary, Narrative synthesis; Thematic analysis |
| <b>Quality Improvement utilisation</b>    | Focus group discussions                                                    | HIOs, HAST Cos, Area Managers, Clinic managers                                                                                                                                                                                        | Quantitative data, Qualitative data               | Thematic analysis and narrative summary                     |

## Chapter 2: SPV access and use

### Objectives

The objectives of the SPV survey were to understand the following:

1. **Access:** Of those within City Health who currently have access to SPV, what is the user experience, enablers and barriers to use, and user literacy in using the platform?
2. **Support:** What support mechanisms, in terms of training resources and peers, currently exist?
3. **Benefit:** Is there evidence to suggest that access to patient level data through SPV has improved the patient- provider consultation? If so, what are the gains (time, satisfaction, information, adherence to treatment regimes, compliance to clinical protocols etc.)?

### Summary of guidelines and literature

#### Access

For City Health staff, application for SPV access is either submitted individually or through a bulk process. In both cases, the application goes to the PHDC who creates an SPV account, but then also liaises within the Western Cape Government Health (WCGH) for third party access to the WCGH server. Facility-level data access has to be approved by the Clinic manager and also by the Director of Health Information at WCGH, whereas District/Sub district data access has to be granted by the Sub structure Director and also by the Chief Director of MHS. There were bottlenecks to the process of obtaining access to SPV as of June 2021, with the main bottleneck identified as approval for SPV access needing to be granted by very senior staff members, which caused a delay in turnaround. The process diagram shown in Appendix 2: Updated process for SPV approval, details the revised process as of 31 June 2021, whereby a delegated authority from the PHDC is now able to provide approval. It is important to note that streamlining of the access process is an ongoing activity.

#### Support

Currently no guidelines exist to inform the usage of SPV for clinical consult, however the SPV platform does include several training resources. An “Introduction to SPV” pdf is included with the registration email sent to all users, the SPV platform contains a Help section which includes a comprehensive “SPV User Guide” pdf and short video. In addition, the SPV platform includes tooltips in some areas. The PHDC has also been providing ad-hoc online and in-person training sessions to some City Health staff, although there is no formal process for training as staff are enrolled on the platform.

#### Data collection

The self-administered survey was pretested with one active user face-to-face for validity, and subsequently emailed to the remaining 11 active City Health users, of which 9 responded, although not all respondents answered every question.

Process mapping of the access and support pathways for users was also undertaken through engagements with the PHDC grant staff.

## Key Findings

### Access

- Seventy-one percent (5/7) of respondents used a clinic computer to access SPV, and 29% (2/7) used a personal device.
- Accessing SPV was identified as a challenge  
*'Temporary pin is annoying, Always have to get a temporary pin to access which is an annoying delay. Always have to read and accept the same terms over and over which is an annoying delay.'*  
*'Login takes a while'*

### Support

- Seventy-one percent (5/7) of participants reported receiving training for SPV, all online.
- When asked if the training was sufficient, 0% (0/6) strongly agreed, 36% (2/6) agreed, 50% (3/6) disagreed, and 17% (1/6) strongly disagreed.
- The suggestions on improvement for training included access to a dummy version of the platform, and more interactive training sessions  
*'It would be helpful if we had access to a dummy version so we could do the [action]... at the same time as the teacher.'*  
*'Interactive training session may be better: with the roll-out of the electronic appointment system, users were invited to a session at Media City with a trainer'*  
*'More training regarding the using the reports category example – TB patient list report'*

### Benefit

- Access to patient clinical history/information improved treatment, referral, and follow-up decisions.  
*'Initially used to track COVID-19 and case follow-up but now more frequently used to follow-up patients – especially with previous ART exposure who have disengaged but now return to care-to establish previous treatment regimens.'*  
*'Patients who have never been to our facility, but are on treatment and for patients who have been admitted to hospital but have no discharge letter'*  
*'Patient that had no idea of her diagnosis or treatment, found the information on SPV'*  
*'Got additional contact number, medical history and medication prescribed using SPV for a patient'*  
*'A known mental health client came for medication, folder missing, patient says she's on lithium but doesn't know dosage or have proof. With patient's permission MH nurse came to me and we looked up her folder and found a prescription from district hospital end 2020 which we were able to use to continue patient's medication.'*
- Some SPV features existed on the front-end, however the backend functionality was not activated or completed, and transparency and communication around such was poor  
*'Radiology has a section but there's never any reports on there for the patients I checked so it looks like it could be helpful but then usually isn't.'*

*‘...but don’t understand the reasons why medication issued from City Health pharmacies does not reflect (i.e. such as anti- hypertensive/ DM / psych treatment.’*

- The data available on SPV was limited or incomplete  
*‘Sometimes patients are seen at EC/OPD and there’s a note that they attended but no summary of any kind to provide more information. ‘*  
*‘Relevant info or diagnosis are not updated or loaded on to SPV’*

## Discussion

**Access:** SPV was well received but only 12 active users were found out of 122 clinicians with accounts created during the COVID-19 intervention period. Access appeared to be a major barrier to SPV use, with the main challenge being technical issues preventing users accessing the platform. Eleven of the 12 active users reported using SPV for clinical consults, despite primarily being granted access to SPV for COVID-19 reports and receiving no training on using SPV for patient-level data. The one user who did not use SPV for clinical consults reported not having the appropriate permissions to access patient-level data. This suggests that the active users were doing so on their own initiative as early-adopters, and this finding is reinforced by the fact that 5 participants agreed to be capacitated as “peer-support” champions for SPV.

**Support:** While the majority of clinicians did report receiving some level of training, most felt that it was not sufficient or appropriate to their needs. The online training that was provided was seen as too didactical, and not interactive enough.

**Benefit:** Of the few clinicians who were accessing SPV, all reported a perceived value in improving patient care, although this was not quantified as part of the survey. Frustrations were expressed at the incompleteness of some of the data on SPV, especially where features were added on to the SPV platform, with currently no data to populate them. No clear lines of communication was also identified as an issue, with clinicians not feeling adequately informed of SPV features and developments, and also unsure of how to raise concerns and suggestions to the SPV developers. This was also apparent in the process mapping engagements with PHDC.

## Recommendations

Based on the results of the survey, we suggest the following:

1. Resolve the technical issues surrounding SPV access for City Health users as a first priority.
2. Undertake a catchup enrolment to ensure all City Health staff have access to SPV, and entrench a standardised enrolment process.
3. Revise the training materials and resources to more appropriately cater to the end-users’ training needs. This should include revision of the reference materials and training sessions, but should also include the tooltips and the user-interface incorporating principles of user-centred design.
4. Provide training to all City Health users, including post-training support to ensure active use.
5. Entrench a standardised training process for new SPV users within City Health.
6. Establish clear pathways for day-to-day user support, and escalation of support requests, as well as communication of feature requests and development of new features, including the use of “peer-support” champions.

## Chapter 3: Routine health information systems

### Objectives

In terms of understanding the routine health information systems in City Health, the following objectives were identified:

1. To what extent are the current routine health information system guidelines being implemented, how does the implementation of the process differ to set guidelines, and why?
2. In the cases where the guidelines are followed, what are the biggest barriers/impediments to efficiency?
3. What are the primary causes of the data discrepancies in the Consolidated Monthly Reports?
4. What is the level of understanding, knowledge, skills, and buy-in for all cadres of staff involved in the routine health information system process?

### Summary of guidelines and processes

#### Facility-level:

In City Health, routine health information data is recorded using the RMR barcoded input sheet by clinicians at point of care (*PREHMIS RMR input sheet definitions v1.0*). The RMR input sheets, as well as data from HIV testing forms and integrated chronic stationery, are then captured by clerical staff into the PREHMIS electronic database (*PREHMIS RMR input sheet definitions v1.0*). Clerical staff also capture patient data from various clinical registers. On a monthly basis the clinic manager draws the following reports from the PREHMIS system for data validation prior to submission to the substructure office (*City Health Data Flow Policy 2020 v1.0*):

- Consolidated Routine Monthly Report (RMR)
- HIV Testing Services (HTS)
- Tuberculosis (TB) – submitted quarterly
- Presumptive TB register
- PMTCT (Prevention of Mother-to-Child Transmission)
- ART data

Note, the policy also stipulates a Malnutrition, Diflucan and Tracer-meds data reports, but these are no longer required for reporting.

In-facility, this process is typically delegated to various Portfolio Heads, typically clinicians, who validate the data, and resolve any discrepancies identified, although no SOPs exist instructing how this process should be done. The clinic manager then signs off the reports and submits them to the HIO at the sub-district office.

#### Sub-district-level:

The sub-district HIO receives all data from the facilities, and consolidates it into a final report for sign off by the Area manager; they also specifically send the ART and TB data to the HAST Co for sign-off. Traditionally, this data was then sent from the sub-district HIOs to the Head: Health Information and Technology, and the ART and TB data to the HAST programme manager for sign off, however in practice the use of the digital PREHMIS system has enabled the data to be directly exported at district level, interrogated and manipulated, and fed back to the SD HIOs, typically as a pivot table. The Area managers, the programme managers, and the Head: Health Information and Technology are tasked with ensuring the

data is verified and validated, although no SOPs exist stipulating the process, they should follow to ensure this. This data flow is outlined in Annexure C of the *City Health Data Flow Policy 2020 v1.0*.

### Data collection

Interviews were conducted with clinic managers, clerks, clinicians, post basic pharmacy assistants (PBPA), and lay counsellors, which included both quantitative and qualitative questions, at all 16 facilities. In addition, field observation and process mapping were undertaken at these sites. The data were contextualised via engagements with key stakeholders, such as Health Information Officers, and the Head: Health Information and Technology. The situation analysis was conducted using the PRISM framework, with results focused on technical, behavioural, and organisational impediments and enablers, as well as discerning between knowledge, attitude, and practice components.

### Key Findings

The key quantitative data is summarised in Table 4 and Table 5 (note: not all staff were able to be interviewed in every clinic, hence the denominator varies for some staff cadres). Participants further described enablers and barriers to the routine data flow process, and this was triangulated and corroborated with the quantitative data into key emergent themes. Table 6 details these themes, with enablers (green text) and barriers (red text) that influence the processes of data use (orange text considered both an enabler and impediment). These responses were categorised as knowledge, attitude, or practice-related, and were separated into four component areas: Recording - the recording of data into primary sources, such as the RMR barcoded input sheet; Capturing - the capturing of paper-based data records into digital databases; Validation - the process of validating captured data for accuracy; Interrogation and use - such as reports and dashboards.

Table 4: Responses to interview by staff cadre at clinic-level

| Data Element                                                                                  |           | Result         |            |            |                   |            |
|-----------------------------------------------------------------------------------------------|-----------|----------------|------------|------------|-------------------|------------|
|                                                                                               |           | Strongly Agree | Agree      | Disagree   | Strongly Disagree | Unsure     |
| I feel competent using electronic systems (e.g. PREHMIS) to access the data I need            | Clerk     | 79% (11/14)    | 21% (3/14) | -          | -                 | -          |
|                                                                                               | Clinician | 80% (12/15)    | 20% (3/15) | -          | -                 | -          |
|                                                                                               | PBPA      | 31% (4/13)     | 46% (6/13) | 15% (2/13) | 8% (1/13)         | -          |
| I understand why the monthly data reports (e.g. HTS, Consolidated Patient Data) are important | Clerk     | 79% (11/14)    | 21% (3/14) | -          | -                 | -          |
|                                                                                               | Clinician | 80% (12/15)    | 13% (2/15) | -          | -                 | 7% (1/15)  |
|                                                                                               | PBPA      | 54% (7/13)     | 38% (5/13) | -          | 8% (1/13)         | -          |
| The reports are an accurate reflection of all the work the clinic does                        | Clerk     | 50% (7/14)     | 21% (3/14) | 14% (2/14) | -                 | 14% (2/14) |
|                                                                                               | Clinician | 36% (5/14)     | 14% (2/14) | 29% (4/14) | -                 | 21% (3/14) |
|                                                                                               | PBPA      | 25% (3/12)     | 25% (3/12) | 8% (1/12)  | -                 | 42% (5/12) |
| I am adequately trained when there are changes to PREHMIS/the RMR input sheet                 | Clerk     | 29% (4/14)     | 21% (3/14) | 14% (2/14) | 14% (2/14)        | 21% (3/14) |
|                                                                                               | Clinician | 29% (4/14)     | 29% (4/14) | 7% (1/14)  | 7% (1/14)         | 29% (4/14) |
|                                                                                               | PBPA      | 25% (3/12)     | 25% (3/12) | 8% (1/12)  | 8% (1/12)         | 34% (4/12) |

Table 5: Responses to interview by clinic managers

| Data Element                                                                                                 | Result         |            |           |                   |           |
|--------------------------------------------------------------------------------------------------------------|----------------|------------|-----------|-------------------|-----------|
|                                                                                                              | Strongly Agree | Agree      | Disagree  | Strongly Disagree | Unsure    |
| I feel confident using electronic systems such PREHMIS and other data tools to access the information I need | 69% (11/16)    | 25% (4/16) | -         | 6% (1/16)         | -         |
| I can check data quality at my facility at the end of the month                                              | 63% (10/16)    | 25% (4/16) | 6% (1/16) | 6% (1/16)         | -         |
| I feel confident in using the monthly data to analyse and interpret the performance of the clinic programs   | 63% (10/16)    | 31% (5/16) | -         | 6% (1/16)         | -         |
| I can use data for identifying service performance gaps and setting performance targets                      | 63% (10/16)    | 31% (5/16) | -         | -                 | 6% (1/16) |
| I can use data for making operational/management decisions                                                   | 63% (10/16)    | 25% (4/16) | -         | 6% (1/16)         | -         |

Table 6: Barriers and enablers of the routine health information system

| KAP              | Recording                                                                                                                                                                                                                             | Capturing                                                                                                                                                                                                                                       | Validation                                                                                                                                                                                                                                    | Interrogation and Use                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Knowledge</b> | <ul style="list-style-type: none"> <li>RMR input sheet SOPs well understood amongst clerks, portfolio holders and clinic managers.</li> <li>RMR input sheet – incomplete or errors due to limited knowledge of clinicians.</li> </ul> | <ul style="list-style-type: none"> <li>The when, where and by who were clearly described.</li> <li>Participants could describe what data was captured, how, and why.</li> </ul>                                                                 | <ul style="list-style-type: none"> <li>process well noted by clerks/nurses and clinic managers.</li> <li>medical officers were less familiar with these processes.</li> </ul>                                                                 | <ul style="list-style-type: none"> <li>Staff listed data FOR Headcount, management of HR/Budget, disease profiles.</li> <li>No adequate training.</li> </ul>                        |
| <b>Attitude</b>  | <ul style="list-style-type: none"> <li>Errors are mediated through direct communication between clerk and clinician.</li> </ul>                                                                                                       | <ul style="list-style-type: none"> <li>Clinicians want to capture data themselves to allow data interrogation.</li> <li>Clerks overwhelmed with other duties.</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>HAST Co's involved, clinic manager driven.</li> <li>Some portfolio holders/clerks involved.</li> </ul>                                                                                                 | <ul style="list-style-type: none"> <li>Requesting training, Reflective on limitations.</li> <li>Distrust that data is reflective of what really happening in facilities.</li> </ul> |
| <b>Practice</b>  | <ul style="list-style-type: none"> <li>Clinicians kept own record(book) for data validation.</li> <li>Clinicians owned that omissions and errors happen.</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>Clerks look at clinical notes to help identify where errors and omissions happen, and it saves time.</li> <li>Capturing delays due to workload, RMR input sheet errors and duplicate folders.</li> </ul> | <ul style="list-style-type: none"> <li>Clinic managers, HAST Co's and clerks draw reports and validate data weekly, bi-monthly or monthly.</li> <li>Numerous meetings but the minority focused on data use and data interrogation.</li> </ul> | <ul style="list-style-type: none"> <li>Target driven approach- focus strongly on monthly data validation and submission process.</li> </ul>                                         |

In addition, participants' responses regarding barriers to effective data use were summarized according to the Performance of Routine Information System Management (PRISM) framework (technical, organisational, and behavioural impediments) in Table 7.

Table 7: Barriers to effective data use according to the PRISM framework

| Technical                                                                                                                                                                                                                                          | Behavioral                                                                                                                                                                                                                            | Organizational                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• RMR input sheet data elements not clear to all</li> <li>• Outdated/ Limited IT resources and connectivity</li> <li>• Limited pharmacy data systems</li> <li>• Format of data not user-friendly</li> </ul> | <ul style="list-style-type: none"> <li>• Clinicians not well versed with RMR input sheet SOP</li> <li>• HR issues like staff shortages, dynamics and turnover challenges</li> <li>• Data capturing delays/errors/omissions</li> </ul> | <ul style="list-style-type: none"> <li>• Data clerks overwhelmed</li> <li>• Staff perceive City as target orientated and respond in kind</li> <li>• Most staff need more training on data practices and platforms as they were self-taught</li> <li>• Internal distrust of data</li> <li>• Line management of data custodians unclear</li> </ul> |

## Discussion

Participants accounts of what they thought data within the health system was used for included headcount, HR management purposes, disease monitoring and program management.

There was an understanding that the data is not just used at a local level, but at provincial and a national level as well. Data capturing and data validation processes were well described by the majority involved in these processes, and most participants interviewed expressed a high familiarity with the guidelines informing routine data collection and validation, and a confidence in their ability to undertake their role in the process. Clinicians expressed some unfamiliarity with the RMR barcoded input sheet, especially when new elements were added or updated, however field observations of the monthly data validation process confirmed that implementation of the policies was well entrenched at both facility and substructure level, with some minor variation (e.g. the role of the HAST Co in data validation was not uniform).

The initial aim of identifying the primary discrepancies in the consolidated monthly reports did not prove feasible, as records of prior validation processes were not readily accessible for audit. Further work could explore the frequency with which these reports are drawn by facilities through PREHMIS data, as well as interrogation of the data discrepancies on these reports. The format of the monthly reports generated and used for data validation, as well as their ability to manipulate these data, was also identified as a key technical impediment to effective data use by stakeholders at all levels.

Data validation processes beyond clinic and sub-district level were less clear, however when data was received from the sub-district level, it was often given with the caveat that it was not accurate due to a variety of factors, most commonly backlogs in capturing. In addition, there was recognition that a lot of the existing data flow processes were antiquated or redundant, and streamlining of data collection and reporting was needed. Pharmacists also expressed frustration with no electronic pharmacy data system, with many relying on crude paper-based tallies to validate their dispensing records. The staff at facility and sub-district level echoed some of the technical, behavioural and organisational barriers to effective data use identified in the situation analysis conducted by MHS that informed the grant. The key enablers and barriers identified were:

### Knowledge

- The clinic managers were the main driver of data validation processes at all sites; however they expressed the least comfortability with the data systems used and

their ability to interpret data. At the majority of the sites the workload was shared by the clerks and portfolio heads, who were mainly nurses.

- Not all clinicians were comfortable using the RMR input sheet due to a lack of knowledge around the data elements. The majority reflected that they have limited skills and knowledge in the area of data interrogation.

#### **Attitude**

- The participants reflected that their roles in data creation and validation were important and therefore they created additional validation tools, such as the desktop patient-encounter diary, to support data validation processes.
- The clinic teams mentioned that reaching targets was an important goal and in meetings, targets not met were discussed and plans were made to rectify. But not all the health care workers considered striving for targets as a completely positive activity. They reflected that the City of Cape Town was too 'target driven'.
- Participants mentioned the clinic managers, HAST coordinators and HIOs were all visible and actively involved in driving, facilitating, training, and supporting data related processes.
- Clinicians expressed interest in engaging in data capturing and data interrogation practices themselves, as their participation is limited to data recording.
- Clerks expressed frustrations around duplicate folders and feeling overwhelmed with other clerical duties.

#### **Practice**

- Clinicians were candid that recording errors occur (58% admitted to making errors) and sometimes these errors were because they did not understand the data elements on the RMR input sheet fully, and they commented that training was not done. However, all facilities reported that when data capturing staff identified errors, they would confer with clinicians directly or address issues via the clinic managers, and both clinicians and clerks reported that this process was well-received.
- Clerks reflected that their data capturing tasks were impeded by the environment in which they work (physical space, disruptions from colleagues, clients, other delegated tasks which led to capturing delays and 'piles of waiting folders').
- The clinic managers' role in the current routine data flow process prioritises the validation and submission of data, with a high reliance on HAST Cos and HIOs to consolidate and turn the data into a format that can be easily interrogated. There is high reliance on individuals to convert data into interpretable formats. The current system does not allow facilities, or even higher management levels responsible for signing off on data, to easily engage with the data, as no user-friendly comprehensive data dashboards exist. Despite the data flow guidelines requiring senior managers to validate data before signing-off, this lack of data dashboards makes it difficult to do so.
- The role, and management, of the HIOs was also identified as complex, with line management lying with the Area Managers, yet their role in data validation and routine health information systems also driven by the Health Information Systems and Technology Unit. This duality presented both challenges and opportunities.

#### **Recommendations**

Based on these findings, the following recommendations to strengthen the routine health information system are proposed:

1. The City Health Data Flow and Validation SOP should be revised to more explicitly outline data validation processes, and review best practices thereof.
2. Data literacy training options should be offered to Clinic managers specifically, including data systems training such as PREHMIS training.
3. Incorporate data literacy elements into existing City Health Training department training courses (specifically PREHMIS for clerks, HIV and TB management) to strengthen data literacy systems-wide and embed with routine training.
4. Improved routine data dashboards at both facility and sub-district level should be developed to allow clinic managers to better engage with routine data, identify data errors, and track trends over time.
5. Strengthened training on RMR Barcoded Input Sheet elements for clinicians, including clarification on responsibility for training of clinicians.
6. Map the process for data capturing (with particular reference to the role of Admin /Clerks) to highlight barriers and address these through QI approaches
7. Broader communication, and fast-tracking, of the City Health electronic pharmacy data system should be prioritised.

## Chapter 4: ART treatment cascade

### Objectives

The situation analysis was undertaken to answer the following questions around the ART treatment cascade:

1. To what degree are the current HIV tracing SOPs implemented at facilities, and what barriers exist in implementation/actioning of the current SOPs?
2. What gaps exist in the current system, and what ad-hoc systems have been put in place to address these gaps? (facility and community)
3. Who conducts these activities (HCW cadre) and who provides supervision?
4. How capacitated are staff involved in the tracing processes?
5. What data is being collected in these processes? By whom? To whom is the data reported?

The situation analysis focused specifically on the following aspects of the ART treatment and care cascade:

- Treatment Initiation of positive patients
- Identification of high viral load patients in care
- Recall of patients disengaged from care

### Summary of guidelines and literature

A comprehensive list of ART data elements and data-flow guidelines is provided in Appendix 3: ART and TB data flow policies the relevant components of which are summarised for the three steps of the care cascade as follows.

#### **Treatment Initiation of positive patients**

At clinic level, HIV positivity is recorded on the HTS consent form, and ART initiation on the ART or Integrated clinical stationery. These services are noted on the RMR Input Sheet, but the actual data is captured from the source documents into the PREHMIS HTS and ART modules. According to provincial policy (*WC Consolidated guidelines for HIV treatment 2018*) all newly diagnosed HIV positive patients should be initiated on treatment within 7 days, ideally on the same day of diagnosis. Newly diagnosed patients can be checked via the HTS report, generated by PREHMIS, which identifies all patients who have been diagnosed with HIV but have not started ART. There are no guidelines or training manual to inform how this list is used, however it is expected that it is drawn as part of the monthly data validation process. The *National Consolidated Guidelines for the management of HIV in adults, children, and infants and PMTCT, 2020* does however stipulate that a record should be kept of all positive patients and their set appointment time for ART initiation, and those patients who do not initiate more than 5 days after said appointment date, should be telephonically contacted every week, or a home-visit, until initiation is achieved.

#### **Identification of High Viral Load patients in care**

According to *PACK guidelines 2021*, ART patients should have their viral load monitored annually to ensure appropriate adherence and efficacy of treatment regimen. There are no guidelines that require facilities to identify patients with a high viral load and recall them prior to their scheduled ART appointment date, however patients with an identified high

viral load should receive clinical intervention as soon as the result is detected as the *National Consolidated Guidelines for the management of HIV in adults, children, and infants and PMTCT, 2020* define a high viral load as a medical emergency. According to circular *CT 06/2014 Antiretroviral Treatment Programme*, clinicians are required to sign off on NHLS blood reports prior to them being filed in the patient folder, which suggests that the viral load results should be evaluated prior to the patient folder being pulled for their routine visit.

### **Recall of patients disengaged from care**

The recall of patients disengaged from care is facilitated via the PREHMIS Early and Late Missed Appointment lists and is outlined in the *CT06/2014 Antiretroviral Treatment Programme* circular. Briefly, the clerk is expected to draw the Early Missed Appointment list on a weekly basis, which identifies all patients that have not returned for their ART refill appointment in the last 7-28 days. The clerk is required to pull each patient folder to confirm the missed appointment, and for those confirmed, the clinic manager delegates an individual to telephonically trace the patient, and refer to a community health worker for home tracing if unsuccessful. The same process is repeated for the Late Missed Appointment list, patients who are 29-89 days late for their appointment, however this list is drawn only once a month.

Review of the City Health research portal revealed one relevant study conducted by Médecins Sans Frontières in 2017 *Implementation and evaluation of a phone tracing system for early missed appointment patients in Khayelitsha, Cape Town*, the results of which are presented in the discussion session. ANOVA also provided data on the recall of patients as part of their Phutuma initiative, also presented in the discussion.

### **Data collection**

Interviews were conducted with ART clinicians, clerks, and clinic managers. Field observation and process mapping was also conducted during site visits (see SharePoint: [https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis/Process%20Maps](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis/Process%20Maps)), as well as key informant interviews to inform qualitative findings. The PREHMIS system was also reviewed to identify and estimate drawing of relevant reports.

### **Key Findings**

#### **Treatment Initiation of positive patients**

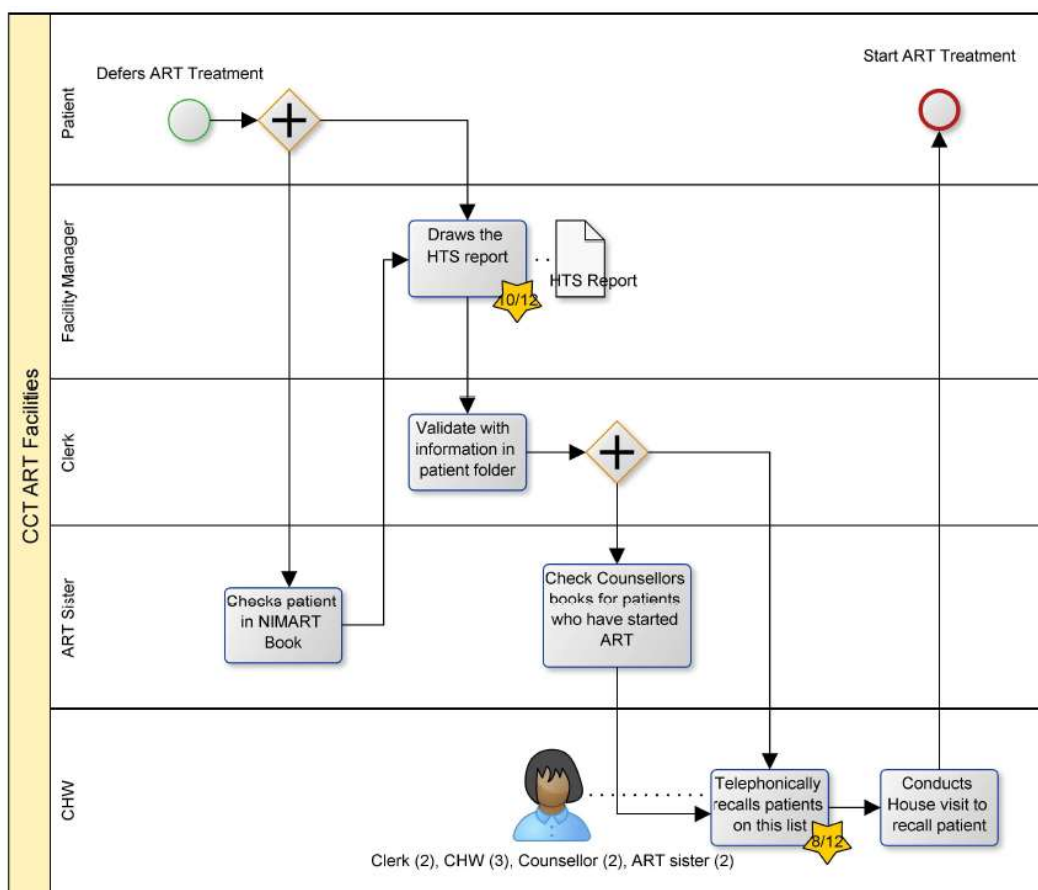
Overall, HTS Exception report usage was high and seemed to be entrenched in the facility processes:

- Ten out of 12 facilities mentioned that they draw the HTS report and subsequent PREHMIS investigation confirmed that all facilities regularly draw the HTS report.
- HTS reports were drawn daily at 5/12 facilities, monthly at 4/12 facilities, and 3/12 facilities drew the report weekly.
- At 9 facilities the Clinic managers drew the report, 2 facilities have their Clerks draw the report, and 1 facility had a mix of staff that drew the HTS report.
- There was variability in terms of which cadre of staff telephonically traced HIV positive patients to ensure they initiate treatment, with 2 facilities utilising a

clerk, 2 a counsellor, 2 the ART sister, and 3 directly to the community care worker.

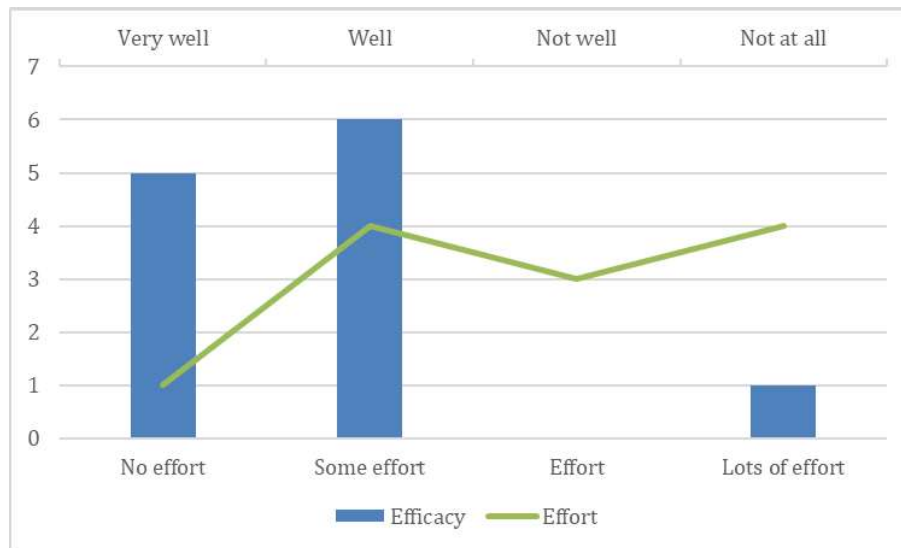
- Eight out of 12 facilities telephonically recall the patients, 7 of which kept a record of these tracing efforts, although this was not standardised and included personal diaries, recall registers, and annotated HTS reports.

Figure 3: Treatment initiation follow up of newly diagnosed HIV positive patients



Participants were asked to estimate how long it takes to ensure all HIV positive patients start ART, and responses ranged between 2 and 12 hours per week, with 6 of the 12 clinics unable to estimate the time taken. When asked about how well the systems in place worked at ensuring patients initiate ART, and how much effort it took to undertake these efforts, most facilities reported them working well and not taking too much effort, as detailed in Figure 4 (note: data points are not paired due to small sample size, i.e. participants who indicated that it worked very well didn't necessarily also indicate that it took no effort).

Figure 4: Effort and efficacy of systems implemented to ensure HIV positive patients start ART



In some clinics, additional systems were in place, such as a book kept by a NIMART nurse, or the ANOVA staff used their own M&E registers as a data source to verify ART initiation.

#### Identification of High Viral Load patients in care

Nine out of 13 facilities reported getting their results physically delivered to them from National Health Laboratory Services (NHLS) in addition to online checks, whereas 2 facilities only check their results on Trakcare. For 5 of these facilities, a system was in place to identify high viral loads prior to the return appointment of the patient: 2 were supported by ANOVA staff, 1 by the medical officer, 1 by the CCW, and 1 by the clerk.

Two facilities reported previously receiving physical reports, and flagging high viral loads, but the respondents for these facilities reported that this system had fallen away once physical reports were no longer delivered. Instead, one of these facilities reported undertaking blood draws and clinical visits on the same day for club patients, and then flagging and expediting appointment visits for those with a high viral load. The other facility reported receiving a list of high VLs from ANOVA.

Five facilities reported expediting appointment dates for all high viral load patients, and all facilities reported expedited appointments for pregnant and breastfeeding women, who are called back as priority patients to intervene. All facilities estimated the process took less than an hour per day.

#### Recall of patients disengaged from care

Patients who had missed appointments were identified via two methods:

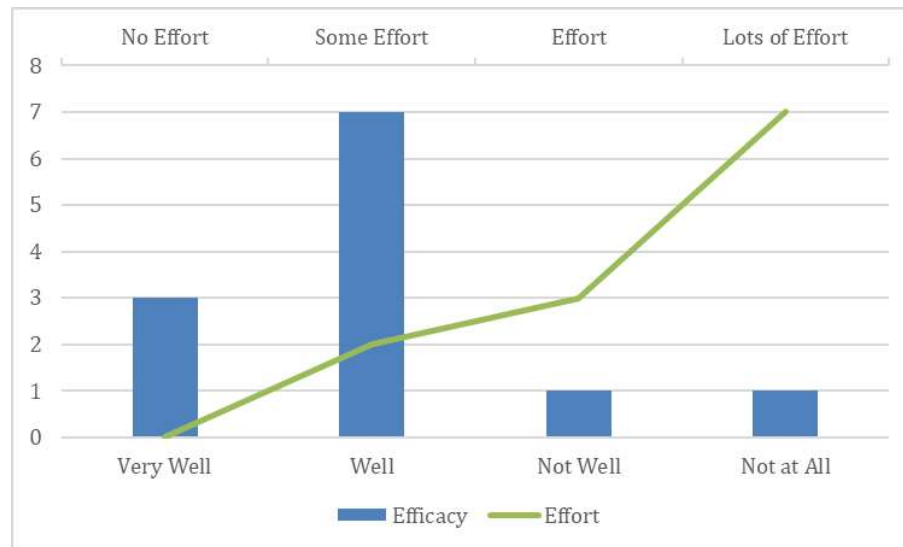
- In preparation for daily appointment, 3 out of 12 facilities drew their patients' folders and kept them at hand. Folders pre-drawn and not returned for data collection were flagged as having missed their appointment.
- The PREHMIS Missed appointment reports (either early, late, or both) were drawn by all 12 facilities, 3 drew the reports daily, 5 weekly, and 4 monthly. Half of the facilities indicated that the reports were signed off by the clinic manager.

In terms of patients in adherence clubs, 1 facility reported checking club registers independently of the PREHMIS missed appointment reports, 4 specifically mentioned cross-

checking the club registers and the PREHMIS reports, and 1 clinic reported capturing club register the day after the club visit, while still within the 5-day grace period, in order to minimise data discrepancies between the two.

Participants were asked to reflect on how many hours the tracing of patients who had missed appointments took per week, and similar to the tracing of patients who had not initiated ART, answers varied considerably. Participants also indicated that the process mostly works well but took a lot of effort (Figure 5).

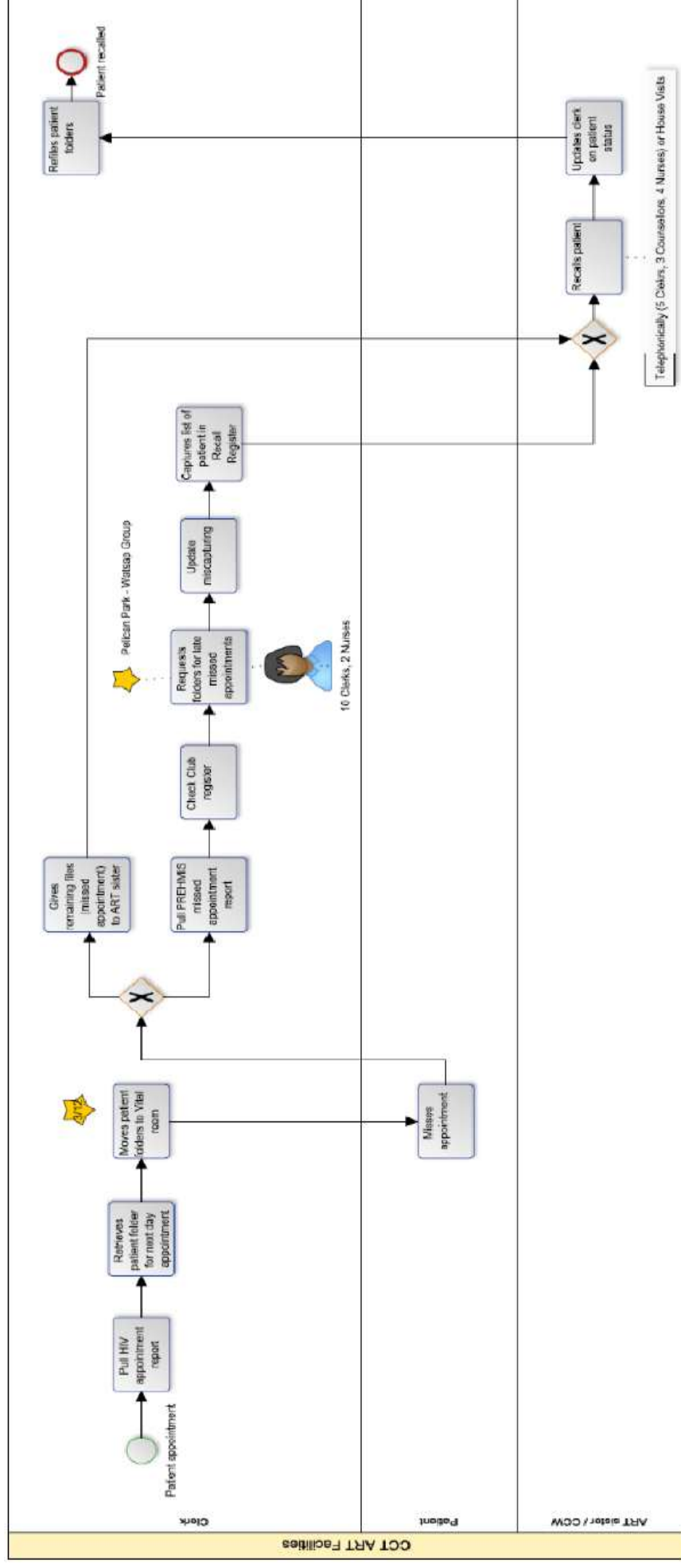
*Figure 5: Effort and efficacy of systems implemented to recall HIV patients who miss appointments*



In terms of tracing patients identified, for the clinics pre-drawing folders for ART appointments, the remaining folders were given to an assigned staff member, which varied by clinic (Figure 6). In the clinics utilising the PREHMIS missed appointment lists, folders were drawn for confirmation, typically by a clerk (10/12 facilities). In both cases, all facilities telephonically recall the patients, and if unsuccessful only 4/12 facilities reported referring these patients to the CHW for home tracing via the recall register. In part, this was attributed to the disruption of in CHW services due to COVID-19.

For club patients, one facility reported the club patients being more successfully traced than that ART patients in clinic care, and clinic observations revealed that some club counsellors would trace patients who missed their appointments within the 5-day grace period, and viewed this as a worthwhile activity.

Figure 6: Process for identifying and recalling ART patients who miss appointments



Detailed, high-resolution maps can be accessed via the WIRED-UP SharePoint: [https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis)

## Discussion

### **Treatment initiation of positive patients**

Use of the PREHMIS HTS Exception report was firmly entrenched in all facilities, however there was poor record keeping of these tracing procedures, and hence we were not able to review tracing procedures to get an idea of how many appeared on the lists, how many had a phone number, and how many were successfully contacted. Further work could look at extracting historical report data from PREHMIS to get a clearer idea of how well this process is working, and if this directly related to *better* retention of patients or just routine reporting activities required by the facilities. When asked to estimate, the majority of participants felt the systems in place worked well or very well, with no clear consensus on the effort taken to action the HTS reports. Same day ART initiation was mentioned by all facilities as a strong contributor to ensuring all HIV positive patients initiate on ART, and the follow up of patients who had deferred treatment was seen as a minor contributor, and of less value. There was also recognition that the quality of counselling, particularly from the clinician, may enhance the likelihood of patients returning for ART initiation. Although there were minor deviations, the overall process at facilities for ART initiation was similar.

### **Identification of high viral load patients in care**

Despite no clear guidelines, most clinics had a system in place to flag high viral load results, particularly in specific patient populations such as pregnant and breastfeeding women, and ART club patients. The delivery and use of paper-based reports was still widespread, however those facilities actioning high viral loads also reported using NHLS RFA lists provided by ANOVA, or else following up on specific patient cohorts using Trakcare.

### **Recall of ART patients disengaged from care**

Tracing activities were predominantly conducted by ANOVA staff in the facilities visited, and most participants did not refer to guidelines or training manuals to inform how missed appointment lists were used. This presented problems as many ANOVA staff were observed drawing the lists with far greater frequency than is outlined in the guidelines, e.g. drawing and actioning of the Unconfirmed LTFU list on a daily basis.

There was little evidence of supervision in place over these activities from City Health (either HAST Co, FM, Clinician or Portfolio Heads). ANOVA staff were supervised by ANOVA M&E officers and managers; however their data collection process and reporting requirements are stringent, and the impression was that this was time and effort intensive. NGO staff on-site were unable to provide outcomes from their tracing efforts, this data is however collected by ANOVA as part of their tracing support, and their data as of August 2021 reflects that of the 10739 patients eligible for tracing, 1899 (18%) did not have a phone number listed, 3324 (31%) were not reachable at the number listed, and 5 516 (51%) were reached (of which 625 (6%) indicated they were still in care, and 124 (1%) reported silently transferring). Most distressingly, of the 5223 referred for CHW tracing, only 24 were found or identified as having transferred to a different facility. This data is supported by a study conducted by Médecins Sans Frontières prior to the implementation of Phuthuma by ANOVA, which suggested the majority of patients appearing on early missed appointment lists are due to miscapturing or backlogs (66% of cohort). Furthermore, of those attempted to be traced, the majority (75%, 596/792) were unsuccessful due to inaccurate contact details, a sentiment expressed by many participants in the situation analysis.

Additional challenges identified by participants included:

- Availability of patient to respond to a call of this nature in the household or at work.
- CHW referral system disrupted since COVID-19, but also not an efficient mechanism historically due to stigma of home visits and poor communication between facilities and CHWs. One facility reported using a WhatsApp group to facilitate communication of patient tracing between CHWs and facilities, highlighting the need for secure, yet innovative, solutions.
- In certain areas, clients were identified as “foreigners” and known to be highly mobile, frequently missing appointments and being difficult to trace.
- The resources available for recalling patients are not ideal with limited access to a telephone for predominantly cell phone calls (physical access and airtime).

### Recommendations

The findings of this situation analysis suggest the following recommendations to improve the ART treatment cascade:

1. The missed appointment lists are difficult to action due to inaccurate data and lack of resources for tracing. Implementation of the SPV ART Action List platform could improve contact detail accuracy, and allows users to SMS or phone directly from the platform.
2. Improved dashboards and data literacy for clinic managers would allow better oversight of NGO supported activities in their facilities.
3. Strengthened systems for communication between clinics and CHWs.
4. Undertake an analysis of PREHMIS report drawing and usage at facilities to ensure activities align with guidelines.

## Chapter 5: TB treatment cascade

### Objectives

The situation analysis was undertaken to answer the following questions around the TB treatment cascade

1. To what degree are the current TB tracing SOPs implemented at facilities, and what barriers exist in implementation/actioning of the current SOPs?
2. What gaps exist in the current system, and what ad-hoc systems have been put in place to address these gaps? (facility and community)
3. Who conducts these activities (HCW cadre) and who provides supervision?
4. How capacitated are staff involved in the tracing processes?
5. What data is being collected in these processes? By whom? To whom is the data reported?
6. What are the outcomes of the current mechanisms with respect to linkage to care?

The situation analysis focused specifically on:

- Identification of presumptive patients who are positive
- Treatment initiation of positive patients
- Recall of patients disengaged from care

### Summary of Guidelines and literature

The TB treatment cascade pathway, and the data pathway surrounding it, is outlined below, with further details around the data elements captured and data pathways available in Appendix 3: ART and TB data flow policies.

#### **Presumptive Patients**

- A presumptive TB patient gives a sputum sample, and is required to return within 2 days to receive results (*SOP CityTB Data Flow December 2020 v2.0*).
- This event is captured in the patient folder, and the PREHMIS Presumptive TB module (*SOP CityTB Data Flow December 2020 v2.0*). If positive, the patient is required to start treatment, and both the result of the sputum test, and treatment start are also captured in the patient folder, TB Treatment Register, and PREHMIS Presumptive TB module.

#### **Treatment Initiation**

- Facilities are expected to identify positive patients that have not initiated treatment and trace them weekly (*SOP CityTB Data Flow December 2020 v2.0*).
- The TB Exception Report is provided by PREHMIS to assist in identifying these patients, however facilities may employ other methodologies. Positive patients started on treatment are also captured in a paper-based TB Register, which is transcribed into the digital ETR.net or EDR.web platforms depending on drug resistance type.
- The Sub-district office also sends a weekly list of all positive sputum patients (NHLS GeneXpert list) to the clinic and requests confirmation that all patients on the list have initiated on treatment, although this additional verification process is not stipulated in any guidelines.

## Retention in care

- The *Implementation of TB HIV integration policy CT 1207* circular stipulates the measures City Health implements to ensure adherence to treatment, including facility-based daily observed therapy for the first two weeks of treatment, TB treatment literacy sessions, identification of a treatment support partner, and a home assessment by a community healthcare worker within the first two weeks to identify risk factors for treatment interruption, as well as follow-up home visits during the treatment journey to ensure adherence. No City-specific guidelines exist specifically to inform the identification and tracing procedure when a patient interrupts treatment, and the *National Adherence Guidelines for HIV, TB, and NCDS 2016* only mention that TB patients, identified through a facility database or treatment register, who have missed their scheduled appointment by 3 days must be traced.
- TB treatment-related visits are captured in the patient folder, and PREHMIS, as a “DOTS Visit – Facility” (for the initial 2 weeks of treatment) or “TB Visit – Excluding DOTS and TB Presumptive” (for subsequent engagement) event. Drug resistant (DR) TB patients have monthly visits captured in the DR-TB register, whereas only sputum visits (at month 2 and 5) are captured in the Drug sensitive (DS) TB Registers. TB-specific appointment dates can also be scheduled in the patient folder or on PREHMIS, which allows the user to specify the nature of the appointment, and draw a list of all appointments for that day, which can be used to track attendance.

The guidelines were translated into a patient process map with input from key stakeholders (Ms Judy Taylor, Dr Kay Joseph, and Sr Ziyanda Damse) to supplement the guidelines and provide context (see the completed process maps at

[https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis/Process%20Maps](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis/Process%20Maps)).

## Data collection

Interviews were conducted with TB Clinicians, TB Clerks, and Clinic managers, which included both quantitative and qualitative data. Field observations and process mapping was also undertaken during site visits. Fifteen facilities were interviewed, however upon analysis not all facilities spoke about every step in the pathway, either because no system was in place, or through unintentional omission. Hence, the denominators vary for the results presented. For full details, see the completed process maps at

[https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis/Process%20Maps](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis/Process%20Maps).

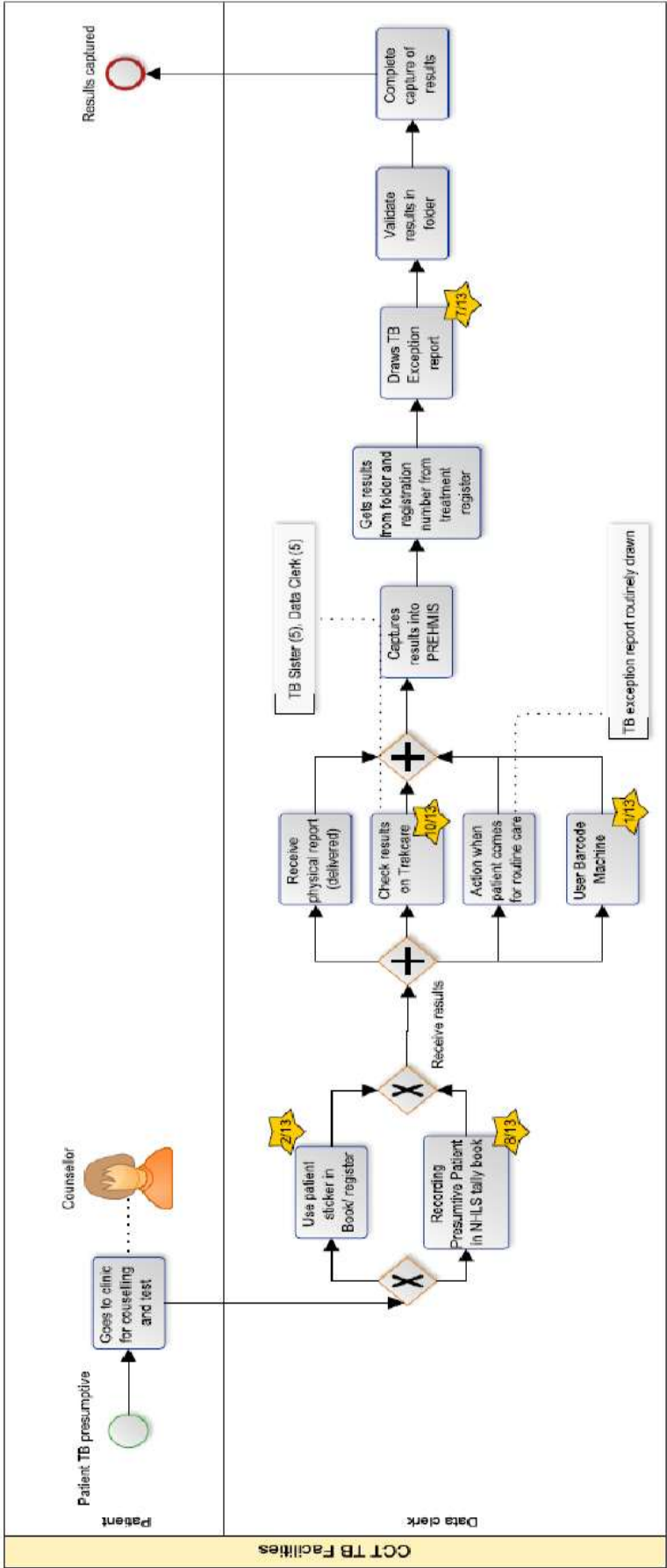
## Key Findings

### Presumptive patients

Various methods were employed to identify presumptive patients who had tested positive, 2/13 facilities put the patient sticker in a book or register to track results, 4/13 facilities retained the folders in the TB room and routinely checked to see if results were available, and 9/13 facilities used the NHLS tally book as a reference list of presumptive patients. Thirteen out of 15 facilities also had evidence of regular drawing of the PREHMIS TB Exception report (9 weekly, 3 daily, 1 monthly), 7 of which indicated documenting the

outcome of these tracing attempts, predominantly in the patient folder. Fourteen of 15 facilities also had a system in place to identify and action invalid results.

Figure 7: Systems to ensure positive presumptive TB patients are identified and started on treatment



Detailed, high-resolution maps can be accessed via the WIRED-UP SharePoint: [https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis)

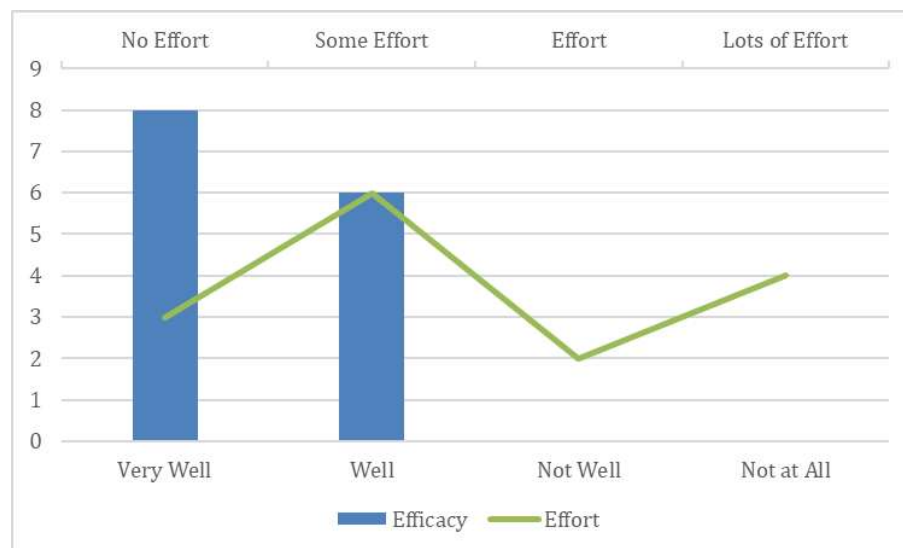
### Treatment initiation

Identifying positive patients who had not initiated treatment was also achieved via various means:

- Ten out of 13 facilities also used the NHLS tally book and Trakcare lookups to identify positive patients, which they would then check the folders of or the TB register to confirm treatment initiation.
- Seven out of 13 facilities reported using the PREHMIS TB exception report to identify patients who had not initiated treatment. Nine facilities reported receiving GeneXpert lists from their Sub district offices on a regular basis, all of which reported using the lists to confirm patients had started TB treatment.

When asked about the effort and efficacy of ensuring TB positive patients started treatment, participants reported the system working well and not requiring much effort, as depicted in Figure 8 (note: responses are not linked, i.e. those reporting no effort did not necessarily also report that the system worked very well).

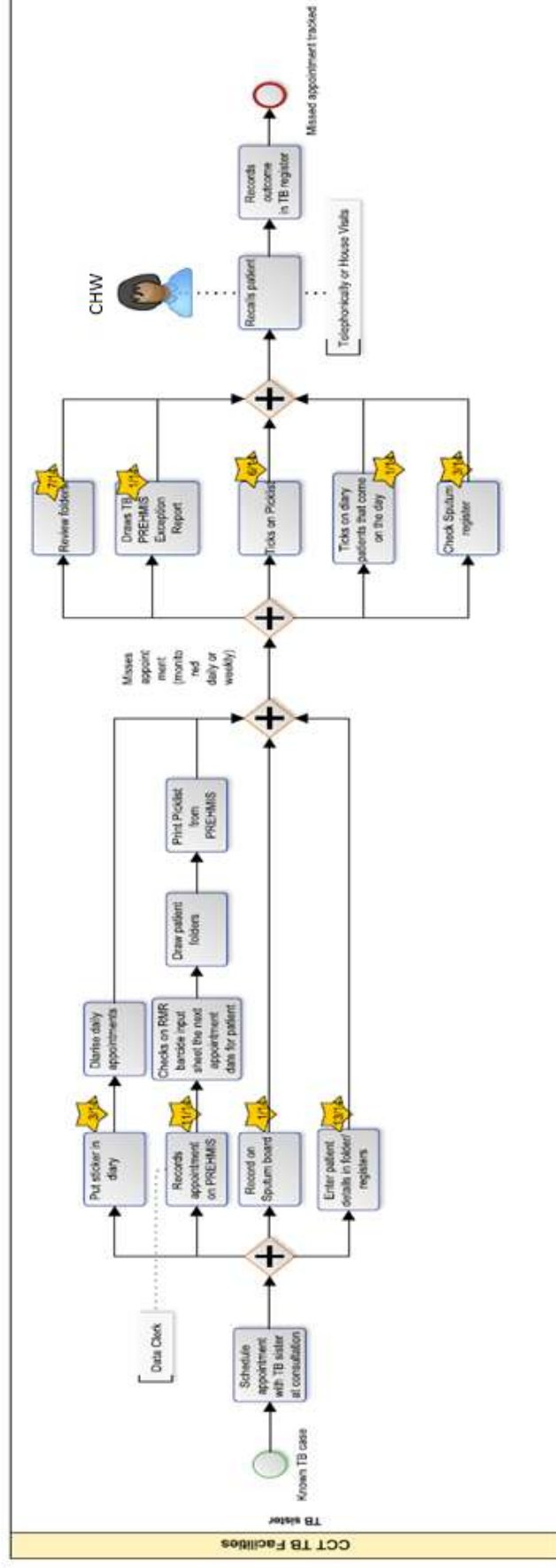
Figure 8: Effort and efficacy of systems implemented to ensure TB positive patients start treatment



### Retention in care

Various, and often multiple, systems were employed to identify patients who had missed TB appointments: Eleven of the 14 facilities used the PREHMIS appointment system in some form (either through a printed list of expected patients, or through pre-drawing the folders and seeing those which remained at the end of the day), 3/14 used a personal diary or notebook, and 13/14 facilities reported undertaking weekly, bimonthly, or monthly folder reviews to identify missed appointments. One facility made use of the sputum board to track patient attendance for sputum visits only.

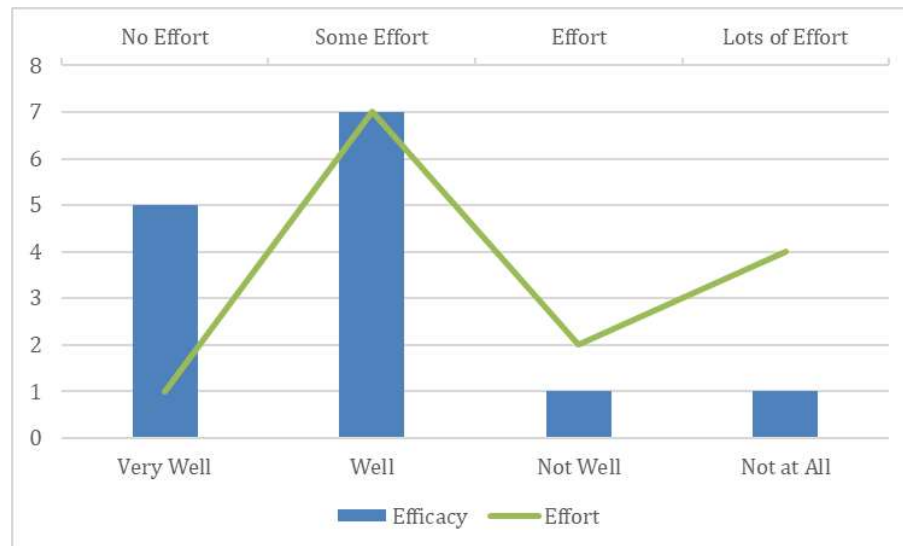
Figure 9: Systems to ensure treatment initiation and retention in care for TB patients



Detailed, high-resolution maps can be accessed via the WIRED-UP SharePoint: [https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis)

When asked about the effort and efficacy of tracing patients who had missed appointments, participants indicated that it took more effort, and worked less well, as compared to tracing patients for TB treatment initiation (Figure 10).

Figure 10: Effort and efficacy of systems implemented to trace TB patients who miss an appointment



Participants expressed that identifying patients was not an issue, with many reporting an intimate knowledge of their patient cohort, and the main barriers to effective tracing of patients instead being:

- Internet issues impacting the ability to do TRAKCARE lookups
- Backlog in capture of data from folders
- Challenges of telephonic recall and home visits, similar to the ART program, such as incorrect addresses or non-functional phone numbers.

## Discussion

Most facilities had mechanisms in place to ensure positive patients were identified and started treatment. The biggest gap identified was in tracking whether or not patients were retained in care. Many facilities still relied on folder review, which is time consuming, however the introduction of the PREHMIS appointment system was cited by many participants as a good way to track missed appointments.

Almost all facilities reported utilising the PREHMIS TB Exception report to identify positive presumptive patients, however additional methods were also employed by a variety of clinics, and these varied from clinic to clinic. Most clinics had more than 1 way to identify positive presumptive patients, including the GeneXpert lists disseminated by the HAST Cos. Similar challenges were expressed as were expressed with the ART treatment cascade, such as inaccurate contact details, social factors such as drug use and migration impacting adherence, and incorrect data for patients.

## Recommendations

The findings of this situation analysis suggest the following recommendations to improve the TB treatment cascade:

1. There are no digital missed appointment lists for TB participants and having such available would improve patient retention in care. Implementation of the SPV TB Action List platform could provide such functionality
2. Training and standardisation of patient tracing activities, such as the use of digital reports, as well as sharing of best practice between facilities.

## Chapter 6: Quality Improvement for systems change to improve data utilisation

### Objectives

The quality improvement (QI) component of the situation analysis sought to answer two questions:

1. Where have QI activities and approaches worked well, and been sustained, in City Health over the past 5 years?
2. Where have QI activities and approaches not worked well in City Health over the past 5 years?

### Summary of Guidelines and Literature

There are no City Health-level policies or guidelines informing the adoption and use of QI in general, however there are several policies that incorporate QI as an approach to health systems strengthening:

- 2000 - PHC Package Norms and standards Part 1 and 2
- 2007 - A policy on quality in health care for South Africa
- 2011 - National Core standards of health establishments
- 2011 - Ideal clinic Policy
- 2012 - National Development plan
- 2015 - Health facility norms and standards
- 2017 - Adverse events
- 2017 - Waiting times

Between 2009 and 2014, the following actions were taken by NDoH:

- strengthening the existing Batho Pele program.
- development and operationalization of the National Policy on Quality.
- Introducing mechanisms to advance patients' rights and protection.
- Improving clinical practice and strengthen governance structures to facilitate community and user participation.

Other achievements in Quality of health were:

- Preparation of facilities for the implementation of National Health Insurance.
- Drafting an Information Communication and Technology strategy.
- Revision of the National Core Standards for health facilities.
- Initiating QI plans in public sector facilities focusing on improving key areas (patient safety; infection prevention and control; availability of medicines; waiting times and positive and caring attitudes).
- Waiting times survey in health facilities.
- Conducting patient satisfaction surveys at public hospitals.

Following this, service delivery was augmented in 18 priority districts and a National Quality Management and Accreditation Body (Office of Health Standards and Compliance) was established. The Ideal clinic policy is now fully implemented.

There have also been more focused efforts at Provincial level to improve both the quality of clinical care and of services delivered, and there have been efforts to entrench QI methodologies, despite there being no prescribed SOPs on their specific use.

A summary of QI interventions from the literature is also included in Appendix 4: List of QI Literature.

### Data Collection

Focus Group Discussions (FGDs) were the preferred method to obtain feedback on QI perspectives, with the following participant groups selected:

- Clinic managers
- Sub-district Health Information Officers (HIOs)
- HAST Coordinators
- Area Management Teams
- Specialised Health

COVID-19 imposed social distancing and other requirements which favoured mainly virtual meetings (no video) for the FGDs. Although effective, the ability to observe the participants' reactions and interactions was compromised. There were also many interruptions in recording due to technological failures. The key features of the FGDs were:

- Comprised of homogenous groups of staff (cadre-specific) except in the case of the Area Management team and Specialised Health
- Facilitated by two WIRED-UP team members
- Consent was obtained for participation
- Audio recordings and transcripts were done
- 1.5 hours average duration
- The objectives, design, and content of the FGD and the facilitator guide were derived by the QI huddle of the City Health implementation team

### Key Findings

The detailed findings for each FGD are included as Appendix 5: QI Focus Group Discussion Findings, summarised in Table 8: Summary of key findings for each FGD. The main themes in terms of enablers and challenges with implementation of QI initiatives identified by participants are also summarised in Table 9.

Table 8: Summary of key findings for each FGD

| Clinic managers                                                                                                                                                                                                                                                      | Area Management teams                                                                                                                                                                                                                                                                                                                                                                                                | HIO                                                                                                                                                                                                                                                                                                                                                                                                                                    | HAST Coordinators                                                                                                                                                                                                                                                                                                                                                  | Specialised Health                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Face many challenges</li> <li>• Inadequately resourced and capacitated</li> <li>• Not consulted but directed</li> <li>• Not recognized nor valued as context experts</li> <li>• Juggling vs balancing priorities</li> </ul> | <ul style="list-style-type: none"> <li>• High level engagement</li> <li>• Cohesive teams</li> <li>• Magnanimity, empathy- "ethical leadership"</li> <li>• Provides support; nurtures innovation</li> <li>• Emphasized training</li> <li>• Create space for debate/dissent</li> <li>• Emphasizes human side of change</li> <li>• Although driven by data/targets, "big picture"</li> <li>• Knowledge of QI</li> </ul> | <ul style="list-style-type: none"> <li>• Understand the City Health organogram</li> <li>• Activity/task centred</li> <li>• Driven by data and targets</li> <li>• Recognized value in structured Project/Change management</li> <li>• Eagerness to work with facility staff</li> <li>• Frustrated with performance</li> <li>• Roles in data processing are clear but can be revisited</li> <li>• Underutilized as a resource</li> </ul> | <ul style="list-style-type: none"> <li>• Take ownership for SD</li> <li>• Vocal about leadership and operational stakeholders</li> <li>• Variation of approaches cultivates best practice, benchmarking</li> <li>• Frustrated by targets - linked to individual performance</li> <li>• Perceived need for training (Data/Quality) and Management skills</li> </ul> | <ul style="list-style-type: none"> <li>• Technocratic – adopt QI based on exposure and experience</li> <li>• Favors pragmatic approaches to the complexity of systems change</li> <li>• Investment (methods, tools, training, feedback, follow through) in HAST audits - unique culture Support and advocacy role</li> </ul> |

Table 9: Key enablers and challenges with implementation of QI initiatives

| Main Enablers                               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Support                                     | Staff (all cadres) feel empowered to take initiative; to act freely; to take the work forward - Leaders/Managers play a role here<br>Leaders/Managers create the opportunity for staff members to discuss (at existing meetings) and lead QI projects at any level<br>Relevant stakeholders are invited to participate<br>Progress and results of QI projects are widely disseminated to relevant staff members<br>Communication is clear and consistent |
| Motivation                                  | There is a common purpose – unifying goals<br>A reason to achieve improvement<br>Linkage to higher purpose (socioeconomic upliftment, community interest, Universal Healthcare implementation, equity)<br>Essential to the QI effort from Management and Senior Leadership                                                                                                                                                                               |
| Intent                                      | Activities to be allocated to “identified” person (Champion for accountability)<br>Appears in the staff member’s Job description<br>Clarity of purpose as well and instructions<br>Targets are unambiguous                                                                                                                                                                                                                                               |
| Main Challenges                             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Communication                               | Participants perceived that some key strategic (e.g. new policies ) and operational communication (e.g. changes to service delivery) does not trickle down to the staff at the coalface quickly or consistently and is not optimized among stakeholders                                                                                                                                                                                                  |
| Capacity                                    | Issues were raised around the ‘agency’ of role-players (expressed through these questions: Do role players have capacity to act? Do they understand the aims, objectives, their roles? Are they empowered with skills, tools, resources?)<br>Capacity to do specific technical work- Must recognize if the ability to solve this problem lies outside the management team - May not be experts in all areas of management                                |
| Timelines                                   | Unrealistic; Constant (policies/projects/initiatives)                                                                                                                                                                                                                                                                                                                                                                                                    |
| The change process                          | So much QI is expected that the effort is diluted; Behaviour change needs to happen at different levels; Human element to change                                                                                                                                                                                                                                                                                                                         |
| Health systems are complex adaptive systems | Staff especially managers may be disempowered by what they think can be reasonably addressed in the list of problems they face (can be at any level-facility, SD or Area) and the feasibility of the solutions within their own resources or scope of work                                                                                                                                                                                               |
| Work organization                           | Competing priorities /conflicting priorities; Disruptors (Community violence ; COVID-19); lack a systematic (methodical) approach to projects/initiatives/innovations                                                                                                                                                                                                                                                                                    |

In addition, a wide variety of successful QI initiatives were identified by participants, as detailed below, with the three most common highlighted:

- **City Integrated audits (colloquially referred to as HAST or Integrated audits in the FGDs)**
- **Ideal clinic**
- **PDR process (including data validation and verification at facility and sub-district levels)**
- Immunization program
- Appointment system
- Health, safety and security Audit
- Adverse Events reports
- Performance management process (individuals)
- District innovation for Health system learning (DIAHLS)
- Pap smear program
- Service integration (HIV/TB)
- Back to basics TB program
- Service expansion (ART clubs/Differentiated Models of Care)
- Strategic planning process

There were fewer examples of QI initiatives that were not successful. These were:

- Basic Antenatal care Letter project (see Area Management FGD summary for detailed description)
- Data validation process

### **City Integrated Audits**

Participants had the following positive reflections around the Integrated audits:

- there has been sustained investment in the process with gradual success.
- It has taken a long time and concerted effort to embed a culture of audits among City Health staff to the point of acceptance and support. Although started in HAST, the audits now include other areas of PHC. There was no hint or suggestion of any negative connotations to the audit from any participant, and this was attributed to annual engagements with staff to ensure the audits are not framed as a punitive process.
- The City Integrated audit has contributed to the uptake and use of data in City Health by providing a tool to collect data, **and a process** that uses evidence to guide action on a regular basis, within a routine.
- One of the most important contributions of the audits, has been the change in clinical practice among clinicians.
- The main reason that City Integrated audits were seen as successes, was based on the process of feedback, data and results that were shared with stakeholders

City Integrated audits were viewed as a success by many groups; however responses were divided on the effectiveness of QI Plans (QIPs) and Action plans that were seen as the outcome of the audit process. Respondents referred to the establishment of multi-disciplinary teams to develop and implement QIPs, but this was not consistent across all sites. Participants also expressed that the process of identifying performance gaps needed to be an ongoing activity, throughout the year. This could be achieved through tracking changes on a monthly basis.

There were also reflections on some of the negative aspects of the audits:

- The decentralisation of the audit process (peer to peer facility review method) was perceived as a "loss in quality" and the introduction of deficiencies in audit methods.
- Some felt that actions following the audits were lacking:  
*"Things kick off very well but is not sustainable; everybody waits for a yearly audit"*
- There was significant frustration expressed around how QIPs are developed or translated into action, and many groups recognised that facility and sub-district teams have not yet developed the skills and expertise around the QIPs to ensure that audit recommendations are implemented, and that clinic managers are already overburdened with tasks.  
*"From an area level, we have great ideas but if you don't micromanage, these ideas don't stick"*
- Some changes were beyond the control of facility teams or Sub-district managers who support them:  
*"The determinants and factors that facilitate change/improvement may not be within the control of the facility level (e.g. equipment)"*

There was agreement that systems improvement requires soft skills and behaviour change. This was identified as a critical success factor for systems improvement, along with leadership and management skills.

*"We cannot discount that there is a human element involved in change/improvement process- this influences the outcome and impact of any change we try to implement."*

*"I think there is a resistance to change; with this huge and diverse staff complement; instead of being proactive they give me all the reasons they cannot do something"*

### **Ideal clinic audits**

The Ideal Clinic policy was identified by almost all groups as a QI initiative. While there was reference to the NDOH Ideal Clinic policy, the distinction between Quality assurance and Quality improvement was not emphasized. The Ideal Clinic policy is a national policy and implementation is mandatory. In its intent, it seeks to establish regulated standards to be consistent across health facilities. The Ideal Clinic policy also refers to Quality Improvement as an appropriate methodology to institute some of the changes needed to comply with Ideal Clinic standards. From all discussions held, three concepts were used interchangeably among participants, which will require further definition and discernment:

- Quality assurance
- Quality improvement
- Quality of care

The Ideal clinic policy was generally accepted as a "QI success", and some of the main reasons attributed to this success were:

- The motivation to implement Ideal Clinic was aspirational – it was linked to the achievement of a desired status (Platinum, Gold or Silver)
- The policy enjoyed support from Senior and Middle Management
- It was regarded as a Strategic priority, set at Executive level (Health Management Team)
- There was clarity of purpose and intention, with no ambiguity in the activities
- The responsibility for implementation support was very deliberately allocated to one person who was held accountable. Activities linked to this project were Key

Performance Areas in his/her role description and he/she was performance-managed against this

- There was ring-fenced budget to facilitate access to resources needed for Ideal Clinic policy implementation
- HCWs at management and operational levels were empowered to implement this policy. This empowerment was obtained through training, supportive supervision, monitoring, regular feedback and communication, and clear lines of accountability.
- The QI plan process, including monthly meeting feedback, was not explicitly mentioned by FGD participants as a reason for the success of the ideal clinic policy.

### **PDR processes**

City Health uses the Plan-Do-Review (PDR) management cycle as a framework to ensure that performance targets are decentralised and translated at the Area, sub-district and health facility level. Generally, this PDR process was perceived as success for the following reasons:

- It was a vehicle through which City Health's performance in key performance areas could be monitored and evaluated.
- The PDR process engaged stakeholders at facility, sub-district, Management and Executive level.
- The importance of the PDR indicators and performance against targets, was driven by senior leadership.

There was some frustration elicited around the PDR processes at the facility and sub-district levels:

- SD HIOs expressed concern that data quality issues surface regularly at facility level. There was slow progress towards achieving performance targets and failure to sustain some gains made.
- HIOs were unable to secure time at facility level with clinicians, Admin Officers and Clinic managers. HIOs did see their role as "supportive" and were respectful of the circumstances under which facility staff work; understanding that clinical duties to patients supersede any administrative work needing to be done, however this made it difficult for HIOs to engage with clinic staff on PDR processes
- Implementation of PDR is the responsibility of the FM who is usually oversubscribed.
- Sometimes FMs are less clear on precise actions to be taken to address data quality and data validation issues. In this regard, the HIOs expressed a keen interest in supporting facilities more closely.

## **Discussion**

### **Identifying QI initiatives**

Most responses to the issue of identifying QI initiatives centered around mechanisms through which gaps in performance could be measured. HAST/Integrated audits, Ideal Clinic audits and the PDR process have clearly defined processes, each of which produce an outcome. This outcome is a measure of actual performance against a standard or target. All three processes use QIPs as the mechanism to address the outcomes needing correction/improvement. Generally, participants described the process and conduct of HAST/Integrated audits, Ideal Clinic audits and PDRs with great ease suggestive of deep familiarity. These QI initiatives were spoken of in glowing terms with pride of achievement among all groups, without exception.

In contrast, there was little mention of how “fundamental changes” could be made through QIPs. In particular, the details of small changes required at the most operational levels were frequently omitted in conversation.

### **Conceptualising QI and Management in context**

When asked how QI is placed within the context of routine work, the responses were:

*“Quality improvement is what we do but then it gives us a perspective why are we not getting to the top, then we look as to where were the shortfalls”*

*“It is my normal work but then somebody audits, or something comes with all these items that we were missing”*

*“We'll try a change for a month; I want feedback. If it doesn't work, then it's ok but then everybody feels that they have had an equal input into the project; their voice was heard and given some value”*

*“We have to monitor our work and then we have to improve it and we have to give other people feedback. So it becomes the way we give feedback, and it becomes the way that we then hold ourselves responsible for action, because the other aspect of it for me that is helpful and look, we do not always do it well. We are not saying we do all of this well. It is kind of what we do so that it becomes documented.*

*“This is what happened, this is what contributed to it, and this is what we then are committing to do” and somebody can hold us accountable at the end of the day for what we have done or not done”*

### **Building a QI Culture**

The results of the FGDs strengthen the idea that City Health Managers have entrenched a culture of reflective practice, something which was also identified during the FGDs by senior managers themselves. There was a recurring theme of managers using data through either the PDR process or audits to identify gaps in performance against targets.

The psychology of change or improvement is often neglected in the process; however the leadership of City Health recognised this and prioritised the wellbeing of staff during any change process. Senior managers expressed empathy and concern for frontline HCWs and recognised their roles and responsibility in providing support and capacitation. The expectation of operational level HCWs was for leaders and managers to “give people permission to bring their knowledge”. This was a non-negotiable success factor in establishing a QI culture. Other success factors which were identified: leaders valued both formal and informal data sources to understand challenges at the frontline; leaders recognised that relationships between staff at various levels were key drivers of success as they facilitate cooperation and communication.

Some senior managers discounted their own knowledge and skills (clinical knowledge, program management skills and health systems expertise) as subordinate to IT and data analytic skills. Recognising that HCWs differ greatly in their level of comfort with both data and technology, messaging which suggests that data and IT skills are to be valued above other public health skills may adversely affect efforts to improve access and uptake of data and technology by HCWs.

### **Limitations**

In terms of limitations of the FGD results, the prompting list of QI initiatives limited the ability to explore how participants defined or viewed QI. As a result of this prompting, all groups identified similar activities as QI. Possibly the introduction to the FGD had defined QI projects too narrowly and thus biased the result.

Furthermore, an FGD of clinic-level staff other than facility managers was not conducted, and although managers do have a clinical background, the analysis does not cover the perspectives from clinicians. Finally, the FGDs only asked participants to reflect on what QI initiatives had, or had not, worked well in the past 5 years, and did not interrogate or evaluate what QI activities were currently entrenched within the system, and what the strengths or gaps in these processes are. This limited the scope to make specific recommendations for QI systems strengthening.

## Recommendations

Based on the engagements with City Health stakeholders, the following key recommendations are proposed:

- Further engage with City Health stakeholders at facility level
  - Engagement with facility level staff (Clinicians, Clerks, NGO partner staff and other cadres) is recommended to achieve the following objectives:
  - Understand the perception of staff around systems change
  - Understand the experiences of staff with QIPs (successes and challenges)
  - Explore the extent of exposure to structured approaches to systems change (generic rather than promoting a specific method)
- Development of an overarching policy which
  - Differentiates between the respective roles of quality assurance and quality improvement in health system strengthening
  - clearly recognises the value of quality assurance in attaining and complying with the standards set for delivering a quality health service
  - promotes a quality improvement approach which is embedded in the routines of management, driven by collaborative processes that involve all stakeholders (including the implementers) and that values the use of information, experience and learning
- Development of a strategy to align the spectrum of quality assurance and quality improvement activities within City Health with attention to resources (human and financial), reporting and governance for quality improvement, with the above proposed policy document
  - Map people resources for QI and identify “bridge builders” to strengthen QI efforts
  - Build on the culture of reflective learning and practice within QI as seen with audits
  - Apply QI methods and approaches to existing projects
  - Identify appropriate platforms for QI projects/initiatives to be reported and placed on the agenda
  - Mobilise leadership support at all levels across City Health for QI to create a groundswell of motivation and action

- Share the experience of change or improvement across the organization in “learning laboratories” which create the excitement and motivation needed for innovation to spread
- Develop a joint (City Health and MHS) strategy to align the spectrum of quality assurance and quality improvement activities between the two organisations, in the first instance to where this will bring benefit to joint programmes and platforms of work, such as the HAST fora.
- Capitalise on the advantage of a strong leadership team which value both data and QI, and create “learning laboratories” where the experience of change or improvement in projects, initiatives or innovations could be shared across the organization.

## Appendices

### Appendix 1: Situation analysis data collection tools

#### SPV Access and Use

| No  | Interview                                                                                                                                                      | Response                                                                                                    |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1.  | Were you trained to use SPV?                                                                                                                                   | Yes/No                                                                                                      |
| 2.  | What type of training session was it?                                                                                                                          | 1. Online<br>2. User Guide<br>3. Face to face with a trainer                                                |
| 3.  | The training was enough, and I did not require more support                                                                                                    | (1) Strongly disagree<br>(2) Disagree<br>(3) Neither agree nor disagree<br>(4) Agree<br>(5) Strongly agree. |
| 4.  | Identify areas in the training session that was not helpful                                                                                                    | Text                                                                                                        |
| 5.  | List recommendations for improvement of training                                                                                                               | Text                                                                                                        |
| 6.  | Which device did you use to access SPV                                                                                                                         | Clinic desktop computer<br>Personal device                                                                  |
| 7.  | Which types of cases did you use SPV for?                                                                                                                      | text                                                                                                        |
| 8.  | Describe one case as an example of added value                                                                                                                 | text                                                                                                        |
| 9.  | List use challenges [include device access, time to access patient Histories, assistance with technical queries/ availability of technical or clinical support | text                                                                                                        |
| 10. | What will you tell your colleagues if they are unsure of using SPV                                                                                             | text                                                                                                        |

Optional:

I would be interested in being an expert user – this means that my peers, who are new to using the SPV tool can contact me for assistance.

My name: \_\_\_\_\_

My contact details: \_\_\_\_\_

#### Routine Health Information Systems

**Clinic managers/Second-in-charge**

Assessment done by: ..... Date of assessment: ...../...../.....

| Questionnaire | Response |
|---------------|----------|
|---------------|----------|

| I feel confident using electronic systems such as PREHMIS and other data tools to access the information I need (dashboards, reports etc)<br>Knowledge and Practice                                                                       | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I can check data quality at my facility at the end of the month<br>Knowledge and Practice                                                                                                                                                 | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree  |
| I feel confident in using the monthly data to analyse and interpret the performance of the clinic programs<br>Knowledge                                                                                                                   | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| I can use data for identifying service performance <b>gaps</b> and setting performance targets<br>Knowledge                                                                                                                               | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| I can use data for making operational/management decisions (e.g., for service delivery, distribution of roles and responsibilities, staff assignment)<br>Knowledge and Practice                                                           | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| I am comfortable using data for making operational/management decisions (e.g., for service delivery, distribution of roles and responsibilities, staff assignment,) as this is an important part of my role as clinic manager<br>Attitude | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| Interview                                                                                                                                                                                                                                 | Response                                                                                                                                                                                                                 |
| 1. Why is data collected , captured and reported at the facility level? Knowledge                                                                                                                                                         |                                                                                                                                                                                                                          |
| 2. Please describe meetings/forums where the facility's data and program performance are discussed outside of the facility? Knowledge and Practice                                                                                        |                                                                                                                                                                                                                          |
| 3. Please describe meetings within the facility where the facility data and program performance are discussed with the rest of the staff.<br>Knowledge and Practice<br>- Do you think that the data review meetings add value ?           |                                                                                                                                                                                                                          |

|                                                                                                      |  |
|------------------------------------------------------------------------------------------------------|--|
| <ul style="list-style-type: none"> <li>- Can they be improved?</li> <li>- How ?</li> </ul>           |  |
| 4. What suggestions do you have to improve the use of data available to you ? (i.e. PREHMIS reports) |  |
| 5. Tell me about the last training you received about data interpretation?<br>Training needs         |  |

### Data Clerks

Assessment done by:..... Date of assessment: ...../...../.....

| Survey                                                                                                                                                                                                 | Response                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I feel confident using electronic systems such as PREHMIS and other data tools to access the information I need (dashboards, reports etc)<br>Knowledge and Practice                                    | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| I understand why the monthly PREHMIS data reports are so important (e.g. HTS Report, Consolidated PREHMIS Clinic Report)<br>Knowledge                                                                  | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| The reports are an accurate reflection of all the work the clinic does over a period of one month<br>Practice/Attitude                                                                                 | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| If disagree/strongly disagree, what work do you think is not reflected?                                                                                                                                |                                                                                                                                                                                                                          |
| Can you estimate how many incomplete RMR sheets/discrepancies you pick up on a daily basis                                                                                                             | #/day                                                                                                                                                                                                                    |
| When I find an issue with an RMR sheet or other clinical stationery or register that's not completed I can easily go to the doctor/nurse to tell them about it to fix the problem<br>Practice/Attitude | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| The doctors and nurses respond well when I point out an RMR sheet or other clinical stationery that is not correctly completed                                                                         | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;                                                                                |

|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Practice/Attitude                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree.                                                                                                                                              |
| When there are new changes to the electronic data capturing systems or the RMR sheets or registers, I am adequately trained<br>Practice                                                                                                                                                                                  | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| I think my activity as a Data Capturer contributes to the health and wellbeing of patients<br>Attitude                                                                                                                                                                                                                   | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| Interview                                                                                                                                                                                                                                                                                                                | Response                                                                                                                                                                                                                 |
| What are the main problems that you encounter in your data-related activities? Are there interruptions? Or are there environmental barriers? (prompt examples/definition environmental barriers: people coming to the window, cramped room, no access to computers, uncaptured folders, etc.)<br>Barriers in environment |                                                                                                                                                                                                                          |
| Enablers in environment<br>What suggestions do you have to address the problems you mentioned before or to improve the system?                                                                                                                                                                                           |                                                                                                                                                                                                                          |
| Tell me what you think all the data you capture day after day are used for?<br>Knowledge                                                                                                                                                                                                                                 |                                                                                                                                                                                                                          |
| Tell me how you manage data errors in the RMR, clinical stationery, or from the consolidated PREMHS reports.<br>Data verification, cleaning and capturing process                                                                                                                                                        |                                                                                                                                                                                                                          |
| Tell me about any meetings or forums that you are part of, where data reports are shown and discussed?<br>Knowledge                                                                                                                                                                                                      |                                                                                                                                                                                                                          |
| Tell me about the last training you received about data.<br>Training needs                                                                                                                                                                                                                                               |                                                                                                                                                                                                                          |
| What training would be useful for you to help with all the responsibilities of an Admin Clerk<br>Training needs                                                                                                                                                                                                          |                                                                                                                                                                                                                          |
| Explain how you check the quality of data (every week; every month?) – verification , cleaning                                                                                                                                                                                                                           |                                                                                                                                                                                                                          |

**Clinicians/Lay Counsellors/Pharmacists**

Assessment done by: ..... Date of assessment: ...../...../.....

| Survey                                                                                                                                                                                                                | Response                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I feel competent in using electronic systems such as such as PREHMIS, NHLS and other tools (e.g. SPV)<br>Practice                                                                                                     | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| I understand why the monthly data reports are so important<br>Knowledge                                                                                                                                               | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| The reports are an accurate reflection of all the work we do monthly<br>Practice/Attitude                                                                                                                             | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| When someone points out an error or omission or discrepancy in the RMR/clinical stationery/registers that requires me to correct something or verify, I am open to correcting the error/omission<br>Practice/Attitude | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| When there are new changes to the health information systems, I am adequately trained or given updates – E.g. changes to the RMR sheet<br>Practice                                                                    | <input type="checkbox"/> Strongly disagree;<br><input type="checkbox"/> Disagree;<br><input type="checkbox"/> Neither agree nor disagree;<br><input type="checkbox"/> Agree;<br><input type="checkbox"/> Strongly agree. |
| Interview                                                                                                                                                                                                             | Response                                                                                                                                                                                                                 |
| Are you recording the number of patients you see? If so, how?<br>Practice                                                                                                                                             |                                                                                                                                                                                                                          |
| Can you explain why you record (keep track of) #patients consulted per day?<br>Attitude/Knowledge                                                                                                                     |                                                                                                                                                                                                                          |

|                                                                                                                                                                  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Describe any meetings where program performance is discussed?<br>How do you participate/contribute to these meetings?<br><i>Practice/ Attitude</i>               |  |
| Describe how data are usually presented during these meetings.<br><i>Practice/Knowledge</i>                                                                      |  |
| Do you feel the monthly PREHMIS reports are an accurate reflection of all the work done at the facility? (quality of data)<br><i>Attitude</i>                    |  |
| Do you sometimes omit some data entries in the RMR sheet?<br>If so, why?                                                                                         |  |
| Can you estimate how many RMR sheets per day you think are incompletely or incorrectly filled?                                                                   |  |
| Do you check for discrepancies/omissions between clinical record and the RMR sheet? How do you do this?                                                          |  |
| Describe how data is captured onto PREHMIS?<br>What are the main challenges with this process?<br>How can they be addressed?<br><i>Knowledge/ Training needs</i> |  |

### **LTF (i): ART Initiation Tracing**

Interviewed (Cadre):

Date:

Clinic:

1. Please describe to me what system the clinic has in place to ensure all patients diagnosed with HIV have started on ART treatment (i.e. how do you make sure no patient is missed or falls through the cracks): – *(Ask clinic manager first, confirm with other staff, include who does these tasks)*

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2. How long would you estimate this process usually takes each week?

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3. In your opinion, how well do you think the system works at linking patients to start ART?

☐ Not at all ☐ poorly ☐ well ☐ very well

4. In your opinion, how much effort does this system take?

☐ very easy ☐ easy ☐ some effort ☐ a lot of effort

| Observation                                   | Outcome | Comments             |
|-----------------------------------------------|---------|----------------------|
| 1. Is there evidence of HTS Exception reports | Yes/No  | Daily/weekly/monthly |

|                                                                                                     |        |                                                                 |
|-----------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------|
| drawn for facility on a regular basis (check PREHMIS queue)?                                        |        |                                                                 |
| 2. If Q1=no, is there evidence of any other list or record kept of patients needing to be actioned? | Yes/No |                                                                 |
| 2.1 If Q2=yes, please describe                                                                      |        |                                                                 |
| 3. Is there any documentation indicating patients on these lists were attempted to be traced?       | Yes/No | Check folder                                                    |
| 3.1 If Q3=yes, please transcribe the following data for one list drawn:                             |        |                                                                 |
| # appearing on list not started ART                                                                 |        | Check time period of report to ensure consistency of comparison |
| -Of which, # with phone number and/or Address                                                       |        |                                                                 |
| -Of which, # successfully traced by phone                                                           |        |                                                                 |

#### LTF (ii) HIV Viral Load Tracing

Interviewed (Cadre) - Include PMTCT Portfolio Head:

Date: Clinic:

1. Please describe to me what system the clinic has in place to identify any high viral load results received, and what actions are taken: – (*Ask clinic manager first, confirm with other staff, include who does these tasks*)

---



---



---



---

2. How long would you estimate this process usually takes?

---

3. In your opinion, how well do you think the system works at getting patients with a high viral load to return to the clinic sooner than their scheduled appointment?

☐ Not at all ☐ poorly ☐ well ☐ very well

4. In your opinion, how much effort does this system take?

☐ very easy ☐ easy ☐ some effort ☐ a lot of effort

| Observation                           | Outcome | Comments |
|---------------------------------------|---------|----------|
| 1. Are NHLS reports delivered to this | Yes/No  |          |

|                                                                                        |        |  |
|----------------------------------------------------------------------------------------|--------|--|
| facility?                                                                              |        |  |
| 2. Are high viral load results flagged from these reports?                             | Yes/No |  |
| 2.1 If Q2=no, is another mechanism used to identify high viral load results (describe) | Yes/No |  |
| 3. If Q2=yes OR Q2.1=yes, are there any documented tracing attempts?                   | Yes/No |  |

### LTF (iii) ART Missed Appointment Tracing

Interviewed (Cadre):

Date:

Clinic:

1. Please describe to me how the clinic determines if an ART patient has missed an appointment, and what actions are taken: – *(Ask clinic manager first, confirm with other staff, include who does these tasks)*

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---

2. How long would you estimate this process usually takes?

---

3. In your opinion, how well do you think the system works at getting patients who have missed their ART appointments to return to the clinic?

☐ Not at all ☐ poorly ☐ well ☐ very well

4. In your opinion, how much effort does this system take?

☐ very easy ☐ easy ☐ some effort ☐ a lot of effort

| Observation                                                                                              | Outcome | Comments                  |
|----------------------------------------------------------------------------------------------------------|---------|---------------------------|
| 1. Report drawn/compiled (look on PREHMIS for evidence)                                                  | Yes/No  | Daily/weekly/monthly      |
| 2. Report cleaned by clerk (ask to see clerks most recently actioned report) e.g. multiple reports drawn | Yes/No  |                           |
| 3. Is there any evidence of outcomes recorded. If yes, describe                                          | Yes/No  | Use of tools (excel etc.) |
| 4. Report signed off by clinic manager                                                                   | Yes/No  |                           |
| 5. List of eligible patients delivered to tracer for tracing                                             | Yes/No  |                           |

|                                                              |        |  |
|--------------------------------------------------------------|--------|--|
| 6. Tracing outcomes (TFO, RIP) fed back to clerk for capture | Yes/No |  |
|--------------------------------------------------------------|--------|--|

#### **LTF (iv) TB Presumptive Register**

Interviewed (Cadre):

Date:

Clinic:

1. Please describe to me the processes the clinic uses to ensure all presumptive TB patients tested have a result recorded: – *(Ask clinic manager first, confirm with other staff, include who does these tasks)*

---



---

2. Please describe the process you follow to trace presumptive TB patients with a positive test result who have not returned to receive their results (i.e. ensuring none fall through the gaps):

---



---

3. Please describe to me how the clinic ensures that all the patients with a positive TB test result that have not started treatment are started

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---

4. How many hours would you estimate it takes every day to trace patients with a positive result to ensure they start treatment?

---



---

4. In your opinion, how well do you think the system works at your facility at getting these patients on treatment?

☐ Not at all ☐ poorly ☐ well ☐ very well

5. In your opinion, how much effort does this system take?

☐ very easy ☐ easy ☐ some effort ☐ a lot of effort

| Observation                                                                                                                         | Outcome | Comments             |
|-------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|
| 1. Is there evidence of Presumptive TB Exception reports drawn for facility (check PREHMIS queue)?                                  | Yes/No  | Daily/weekly/monthly |
| 2. If Q1=no, is there evidence of any other list or record kept of Presumptive TB patients needing to be actioned?                  | Yes/No  |                      |
| 2.1 If Q2=yes, please describe                                                                                                      |         |                      |
| 3. Is there any documentation indicating patients on the Presumptive TB Exception Report or other list were attempted to be traced? | Yes/No  |                      |

|                                                                                                           |        |                                                           |
|-----------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------|
| 3.1 If Q3=yes, please transcribe the following data for last list drawn:                                  |        |                                                           |
| -Number with no TB result captured                                                                        |        |                                                           |
| -Number with a positive TB result with no treatment start captured                                        |        | Start date AND Registration number                        |
| 3.2 Draw patient PHC folders for those patients with a positive result not started on treatment and check |        |                                                           |
| Is there a telephone number recorded in the folder                                                        |        | Check folder, recall register, system described by clinic |
| Is there evidence in the folder the patient was contacted telephonically?                                 |        |                                                           |
| 4. Is there a system in place to action Invalid results? (leaked, invalid)                                | Yes/No |                                                           |
| 5. Tracing outcomes (TFO, RIP, iLTF) fed back to clerk for capture                                        | Yes/No |                                                           |

1. Do you receive NHLS results list from your HAST Coordinator and/or DR-TB PN? (Xpert Rif S, Xpert Rif R and MDR Alert)

Yes/No

2. Do you use the lists you receive? Explain how you use these lists

3. Finally, do you have any other comments about managing presumptive TB patients you would like to add?

### **LTF (v) TB Patients on Treatment (both DS and DR) - Missed Appointment Tracing**

Interviewed (Cadre):

Date:

Clinic:

1. Please describe to me how the clinic makes, and tracks, appointments for TB patients on treatment: – *(Ask clinic manager first, confirm with other staff, include who does these tasks)*

2. Please describe to me how the clinic determines if a TB patient has missed an appointment:

3. What actions are taken if a TB patient misses an appointment?

---

4. How much time would you estimate the process of following up with TB patients who have missed an appointment usually takes each day?

---

4. In your opinion, how well do you think this system works at retaining TB patients in care?

☐Not at all ☐poorly ☐well ☐very well

5. In your opinion, how much effort does this system take?

☐very easy ☐easy ☐some effort ☐a lot of effort

| Observation                                                                                                                     | Outcome | Comments      |
|---------------------------------------------------------------------------------------------------------------------------------|---------|---------------|
| 1. Please state the source used to identify TB patients who have missed an appointment (Tick sheet, PREHMIS appointments, etc.) |         |               |
| 2. Number of patients identified as eligible for tracing in past week                                                           |         |               |
| 3. Draw patient PHC folders for those patients who have missed appointments                                                     |         |               |
| 3.1 Number with a telephone number recorded in the folder                                                                       |         | Folder review |
| 3.2 Of those with a telephone number, number with evidence in the folder the patient was contacted telephonically?              |         |               |
| 3.3 Of those who were contacted telephonically how many calls were unsuccessful (voicemail or wrong number)                     |         |               |

Finally, do you have any other comments about managing TB patients who miss appointments you would like to add?

**LTF (vi) KAP Survey – 2 clerks per facility, 2 counselors**

Thank you for taking the time to answer this quick survey:

|            |  |
|------------|--|
| Survey     |  |
| Job Title: |  |

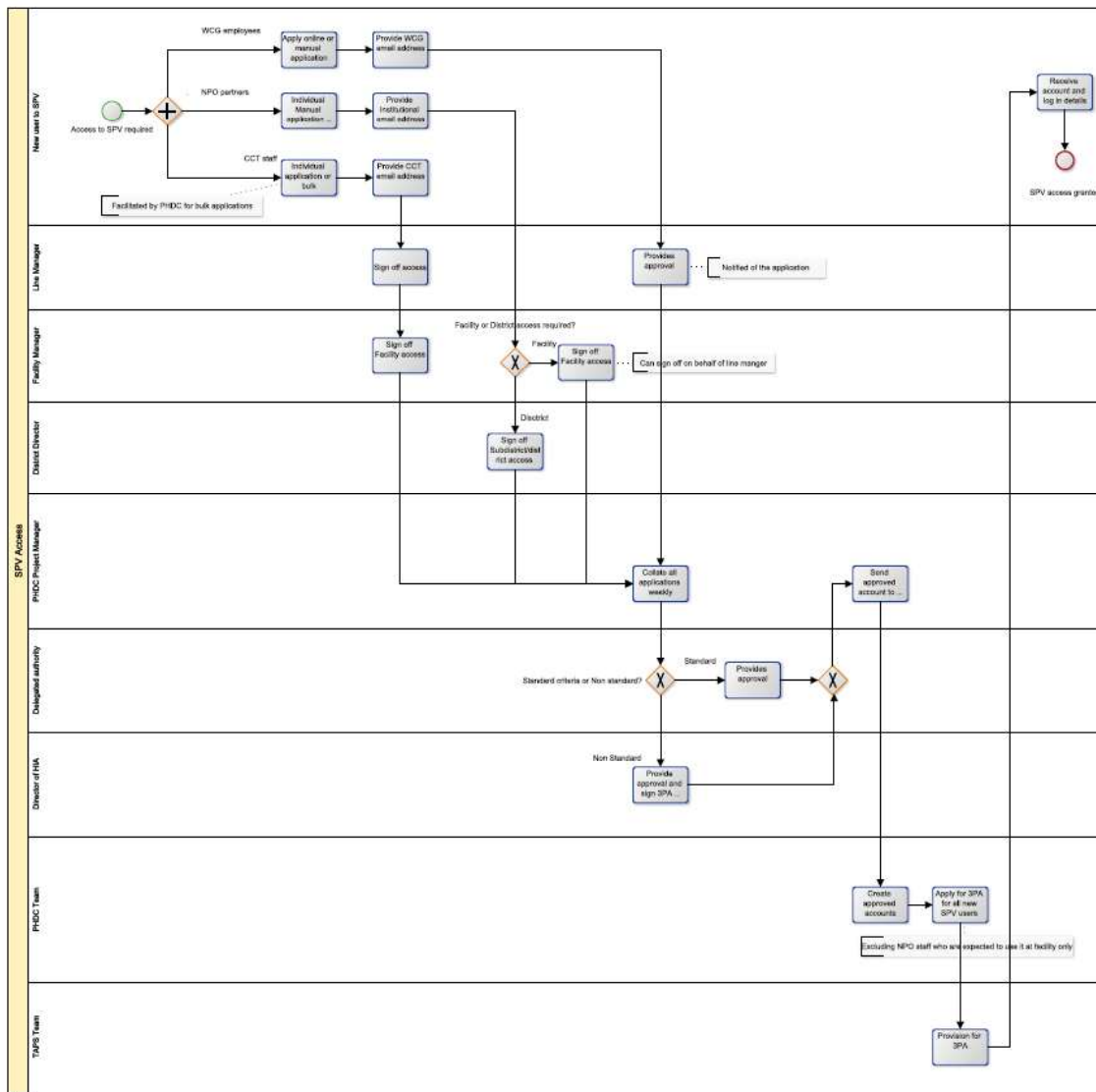
|                                                                                                                                                                                                                                                                                                                                                        |     |                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------|
| Do you feel confident in your ability to undertake patient tracing activities? If the answer is no, please specify where you feel you need more training or support                                                                                                                                                                                    | Yes | No: _____<br>_____<br>_____ |
| Do you feel supported in undertaking tracing activities, and you know who to go to for any queries? (Prompt: City or NGO support)                                                                                                                                                                                                                      | Yes | No                          |
| If yes, Please describe what support you receive:                                                                                                                                                                                                                                                                                                      |     |                             |
| <p>What do you feel are the biggest challenges you face in YOUR ROLE to successfully trace patients and link them to care? List as many as you like, but please try to list the biggest ones first:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> |     |                             |
| <p>What changes would you suggest, or do you think would have to happen, to improve the tracing system? (e.g. more oversight from clinic managers, more up to date patient phone numbers)</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>                        |     |                             |

**LTF (vii) KI Interview – HAST Coordinators, Beth Harley and Judy Taylor**

| Interview                                                                                                                          | Response |
|------------------------------------------------------------------------------------------------------------------------------------|----------|
| What, in your opinion, are the biggest challenges with the current systems to trace HIV/TB patients who have disengaged from care? |          |

|                                                                                                                                                                                                                                                   |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| What changes would you suggest, or do you think would have to happen, to improve the system? (e.g. more oversight from clinic managers, more up to date patient phone numbers)                                                                    |  |
| What is your opinion on the new PHDC tools, strengths weaknesses, how they should be piloted.                                                                                                                                                     |  |
| <p>What initiatives do you know of that have been undertaken to strengthen patient tracing?</p> <p>-For those that did not work, why do you think this was?</p> <p>-For those that did work, but did not scale up, why do you think this was?</p> |  |

## Appendix 2: Updated process for SPV approval



Detailed, high-resolution maps can be accessed via the WIRED UP Sharepoint:

[https://collaborate.capetown.gov.za/sites/hshealth/wired\\_up/Shared%20Documents/Situation%20Analysis](https://collaborate.capetown.gov.za/sites/hshealth/wired_up/Shared%20Documents/Situation%20Analysis)

### Appendix 3: ART and TB data flow policies

| Date     | Title                                                                                                         | Detail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Apr 2021 | CH : Data flow guideline<br>CT 12/2016                                                                        | <p>Next revision 2024</p> <p>ART program reporting</p> <ul style="list-style-type: none"> <li>-Facility responsibilities for monthly reporting</li> <li>Routine data cleaning</li> <li>ART monthly signoff report</li> </ul> <p>-Quarterly reporting process</p> <p>Facility, Sub-district and District responsibilities</p> <p>-Data feedback</p> <p>Monthly ART data</p> <p>Quarterly ART data</p> <p><b>-City health interim SOP for Drug sensitive TB data flow</b></p> <p>Purpose, Guiding principles and Target audience , General data flow, Data collection tools, Responsibilities</p> <ul style="list-style-type: none"> <li>-Recommended data checks at Sub-district level</li> <li>-Guidelines to use extra export to EXCEL</li> <li>-Routine TB submission dates</li> <li>Data flow algorithm</li> </ul> |
| Mar 2020 | NDOH : SOP minimum package of interventions<br>To support linkage to care,<br>Adherence and retention in care | <p>Adherence Guidelines for HIV, TB and NCDs</p> <p>Fast track initiation counselling (FTIC)</p> <p>Enhanced adherence counselling (EAC)</p> <p>Child and adolescent disclosure counselling (CADC)</p> <p>Repeat prescription collection strategies (RPCS)</p> <ul style="list-style-type: none"> <li>Facility pick-up point (FAC -PUP)</li> <li>Adherence club (AC)</li> <li>External pick-up point (EX-PUP)</li> </ul> <p>Drug switches for RPCS patients</p> <p>Tracing and recall</p> <p>Re-engagement in care</p>                                                                                                                                                                                                                                                                                                |

|          |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| May 2015 | WCGH : HIV M&E SOP<br>Circ 117/2015<br>Refer H51/2015 : ART Chronic clubs Guideline SOP | <p>Assessing the implementation of the SOP</p> <ul style="list-style-type: none"> <li>• Timeliness (Monthly report and monthly ART club report); Quarterly cohort report</li> <li>• Other reports (Waiting list for ART report; Transfer Out report; Two consecutive Unsuppressed VL report; Work load report; User access report</li> <li>• Completeness</li> <li>• Accuracy</li> <li>• Accountability</li> </ul> <p>-Responsibilities (Prov IM designate → Prov HAST Director → Prov HAST DD HIV Treatment → Prov HAST SAO and ASD → District HAST Mgr. (rural) → District Manager Designate → HAST MO/FP → SD/SS HAST Mgt Designate → SD/SS Staff Designate → Facility Manager → Admin Clerk and Facility Information Clerk</p> <p>-Procedure-Responsible-Supporting info (Table) :</p> <ul style="list-style-type: none"> <li>• Routine data capture</li> <li>• ART chronic clubs</li> <li>• Early and Late missed appointment and defaulter reports</li> <li>• Lost folders, meeting attendance, registry management</li> <li>• Monthly ART and Monthly club reports</li> <li>• Quarterly cohort report</li> <li>• Data flow diagram for ART program</li> <li>• Quarterly report submission dates</li> </ul> |
| Jun 2014 | CH : ART program M&E SOP<br>CT06/2014                                                   | <p>Policy review date : March 2017</p> <p>Assessing the implementation of the SOP</p> <p>Timeliness</p> <p>Quarterly cohort report</p> <p>Completeness</p> <p>Accuracy</p> <p>Accountability</p> <p>Procedures : Roles and responsibilities</p> <p>Routine capture of data</p> <p>Capturing of ART chronic clubs</p> <p>Early and late missed appointment and defaulter reports</p> <p>Monthly ART report</p> <p>Quarterly cohort report</p> <p>Data flow diagram for ART program</p> <p>Data flow in MHDS district (example A –MHS)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|      |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                                  | Data flow in MDHS district (example B –CCT)<br>Monthly report pathway<br>Quarterly report pathway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2012 | WCGH : Information Management : Data flow policy | <p>Section 1</p> <p>Data flow policy for Program 1(Admin) and Program 6 (Health Services Training)</p> <p>Data flow policy for Program 7 (Health care support services)</p> <p>Data flow policy for Program 8 (Facilities Mgt)</p> <p>Section 2</p> <p>Responsibility at facility level</p> <p>Responsibility at Sub-district, GSA and District</p> <p>Responsibility at District, General Specialist and Emergency services , Provincial EMS and FPS level</p> <p>Responsibility at provincial level</p> <p>Responsibility at budget program level</p> <p>Data flow timeframes and sequence by type of facility</p> <p>Annexures A-E (Data flow diagrams per program)</p> |

NB This list of policies is not exhaustive. Other important policies which directly or indirectly impact the ART or TB program can be included here in future iterations of the foundational document.

## ART program data and data-flow resources :

- ART clinical pathway – Tools and Data validation Reports

- ART data flow schematic diagram
- PREHMIS ART data elements
- ART Program reporting (City Health ART and TB SOP 2021 revision)
- ART data feedback (City Health ART and TB SOP 2021 revision)
- ART data quality checks (Monthly and Quarterly)

Table 10 : ART Clinical pathway (including recording tools and data validation reports) (Data source : KI interviews and policies in Table 3 above)

| Clinical process               | HTS                                         | ART initiation                                  | Viral load suppression                                                                                | Club care                                                         | LTFU tracing                                                              |                               |
|--------------------------------|---------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------|
| Role                           | Counsellor/<br>Clinician                    | Clinician (Nurse/<br>Doctor)                    | Counsellor/<br>Clinician                                                                              | Clinician/<br>Counsellor                                          | Counsellor/ Data<br>Clerk                                                 | Linkage Officer/Data<br>Clerk |
| Data recording<br>tools        | HTS form; ICT<br>register<br>RMR sheet      | ART Clinical<br>stationery<br>RMR sheet         | ART Clinical<br>stationery<br>“Lab specimen”<br>book                                                  | Club register                                                     | Recall register                                                           | Recall register               |
| Reports for data<br>validation | PREHMIS HTS<br>reports (General<br>and ANC) | PREHMIS HTS<br>reports<br>ART monthly<br>report | ART monthly and<br>quarterly reports<br>PREHMIS VL done<br>report<br>SPV ART Treatment<br>Action List | PREHMIS ART<br>Club report<br>SPV ART<br>Treatment Action<br>List | Early Missed Appt<br>report<br>Late Missed Appt<br>report<br>ULTFU report | None                          |

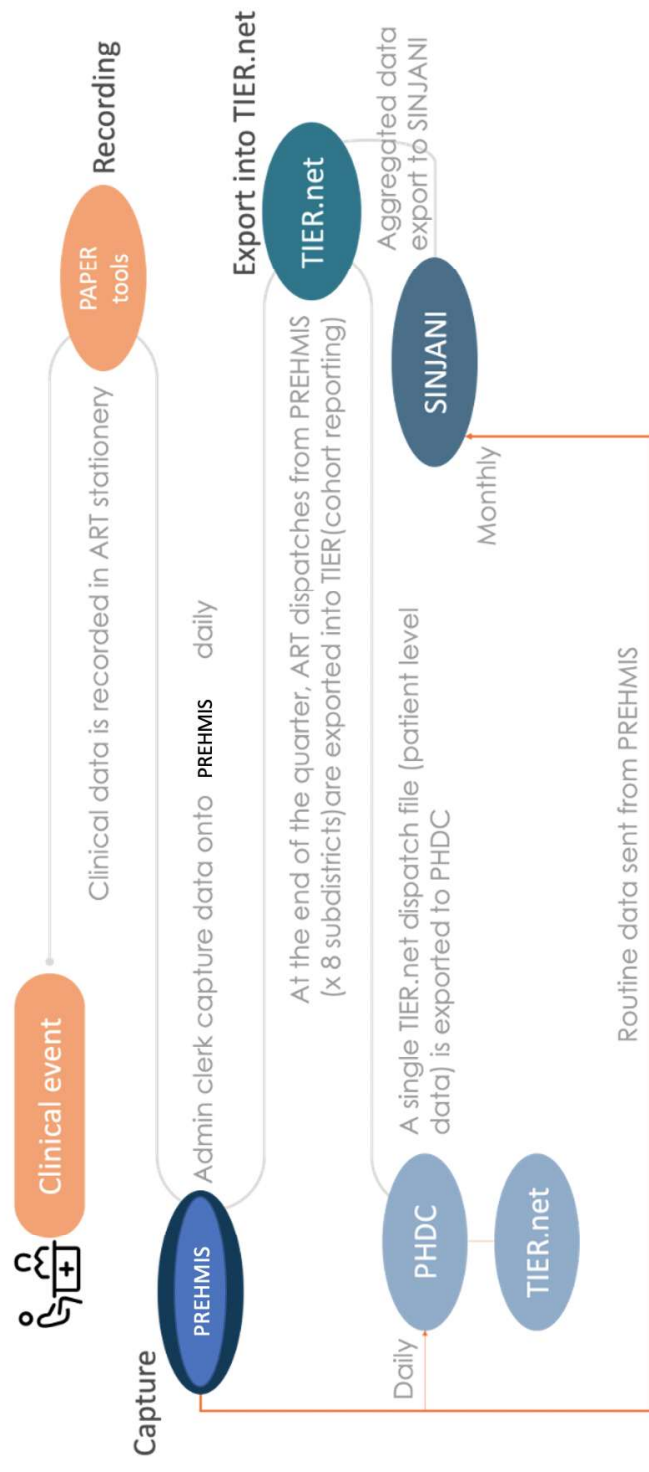


Figure 11 : Schematic diagram of ART data flow (Source: KI interviews and policies in Table 3 above)

Table 11 : ART program data elements in RMR (Source : Internal document; HIT Unit; Ref RM)

| RMR data element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Category       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Adult started on ART during this month – new</p> <p>Antenatal client INITIATED on ART</p> <p>Child under 15 years started on ART during this month - new</p> <p>Total clients started on ART during this month - new</p> <p>Adult remaining on ART at end of the month - total</p> <p>Child under 15 years remaining on ART at end of the month - total</p> <p>Total clients remaining on ART at end of the month</p> <p>Adult enrolled in ARV Chronic clubs this month - new</p> <p>Child under 15 years enrolled in ARV Chronic clubs this month - new</p> <p>Total Clients enrolled in ARV chronic club this month - new</p> <p>Adult remaining in chronic club care at the end of the month – total</p> <p>Child remaining in chronic club care at the end of the month - total</p> <p>Total Clients remaining in chronic club care at the end of the month - total</p> <p>Initiated on PrEP</p> <p>PrEP medication collected - no. months collected</p> <p>Number of clients collecting PrEP this month</p> | ART            |
| <p>HIV test child 19-59 months accept test</p> <p>HIV test child 5-14 years accept test</p> <p>HIV test client 15-24 years (excl ANC) accept test</p> <p>HIV test client 25-49 years (excl ANC) accept test</p> <p>HIV test client 50 years and older (excl ANC) accept test</p> <p>HIV test positive child 19-59 months</p> <p>HIV test positive child 5-14 years</p> <p>HIV test positive client 15-24 years (excl ANC)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | HTS<br>General |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <p>HIV positive 25-49 years (excl ANC)</p> <p>HIV positive 50 years and older</p> <p>Infant rapid HIV test negative around 18 months</p> <p>Infant rapid HIV test positive around 18 months</p> <p>Total female clients pre-test counselled (excl ANC)</p> <p>Total male clients pre-test counselled</p> <p>HIV positive client screened for TB - HCT</p> <p>HIV test child 0-18 months accept test</p> <p>HIV test positive child 0-18 months</p> <p>HIV new positive eligible client initiated on TPT - ANC (Jan 2021 - )</p> <p>HIV new positive eligible client initiated on TPT - HTS (Jan 2021 - )</p> <p>HIV new positive eligible for TPT - ANC (Jan 2021 - )</p> <p>HIV new positive eligible for TPT - HTS (Jan 2021 - )</p>                                                                                                                              |         |
| <p>Antenatal client counselled for HIV testing - under 15 years</p> <p>Antenatal client counselled for HIV testing 15 to 19 years</p> <p>Antenatal client counselled for HIV testing 20 to 24 years</p> <p>Antenatal client counselled for HIV testing - 25 years and older</p> <p>Known HIV positive antenatal client on ART</p> <p>Known HIV positive antenatal client not on ART</p> <p>Accept testing - PMTCT initial test</p> <p>Accept testing - PMTCT repeat test at 20 weeks</p> <p>Accept testing - PMTCT repeat test at 32 weeks</p> <p>HIV positive client category - PMTCT initial test</p> <p>HIV positive client category - PMTCT repeat test at 20 weeks</p> <p>HIV positive client category - PMTCT repeat test at 32 weeks</p> <p>HIV positive client CD4 results received (antenatal client)</p> <p>HIV positive client screened for TB - ANC</p> | HTS ANC |

|                                                                                                                                                                                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Infant initiated on CPT under 2 months</p> <p>Number of babies in cohort</p> <p>Infant 1st PCR test around 10 weeks Negative</p> <p>Infant 1st PCR test around 10 weeks Positive</p> | PMTCT |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|

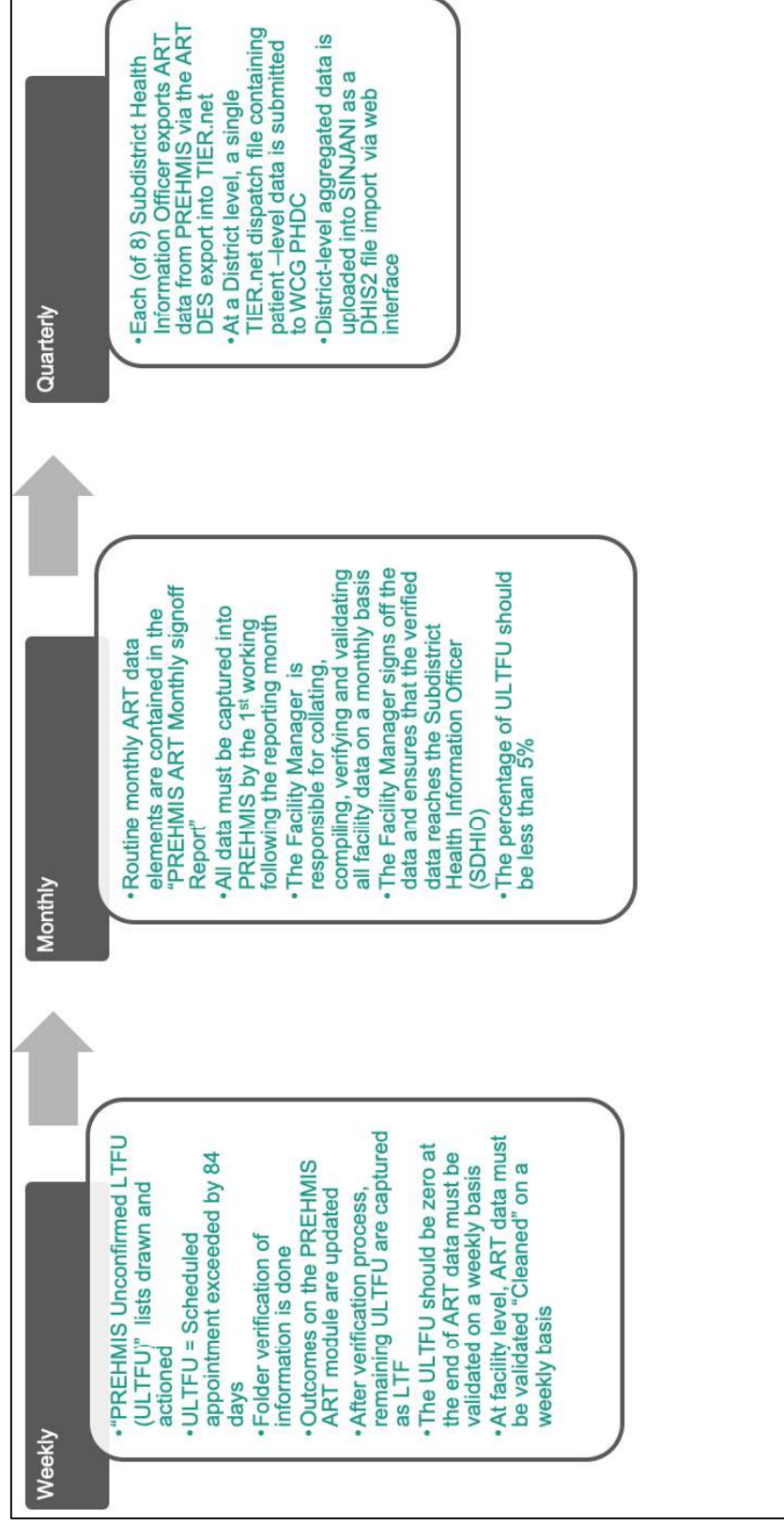


Figure 12 : Schematic diagram of ART data flow based on Policy CH : ART program M&E SOP (CT06/2014) ; CH : Data flow guideline (CT 12/2016) and WCGH : HIV M&E SOP (Circ 117/2015)

NB : Monthly: note that because of the grace period club attendance can only be captured 1 week after the club met; uncaptured clubs will count all club patients as in care during this period. EFFECT1: the few patients that have left club care will be counted as in club care (rather than just in facility care). EFFECT2: newly enrolled patients in uncaptured clubs will not be counted as in club care (but will be counted as in facility care). Generally the effect of this will be insignificant, but if there has been a massive enrolment drive this may approach significance. With prompt capturing the uncaptured clubs would represent 1/8 (12.5%) of all clubs.

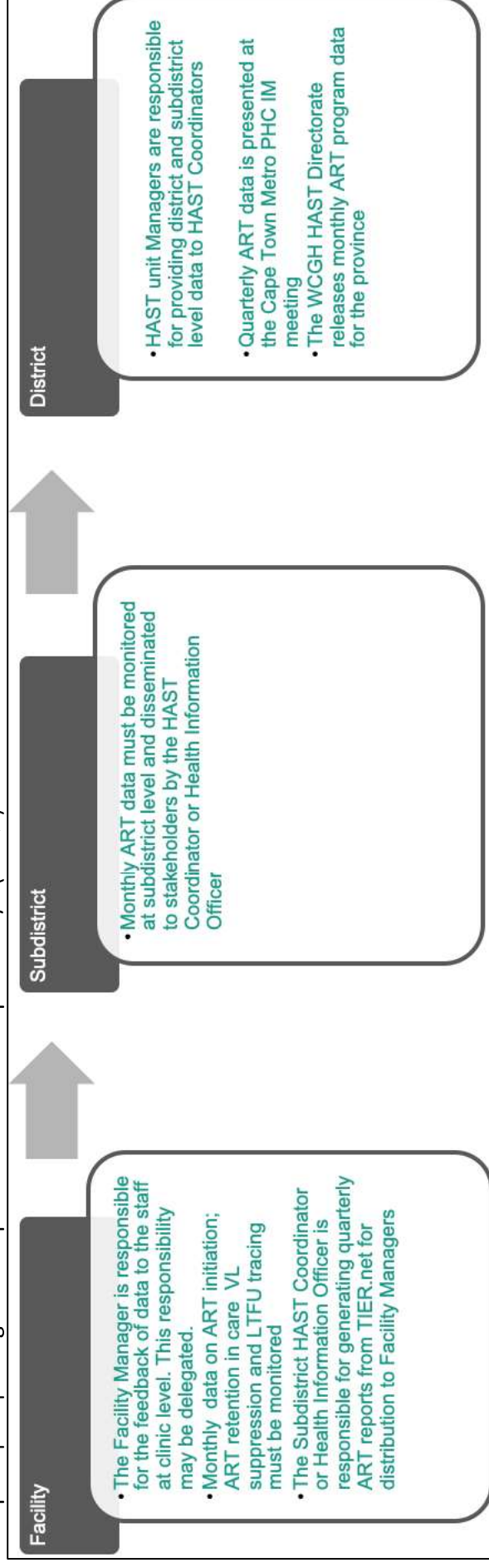


Figure 13 : Schematic diagram of ART data flow based on Policy CH : ART program M&E SOP (CT06/2014) ; CH : Data flow guideline (CT 12/2016 ) and WCGH : HIV M&E SOP (Circ 117/2015)

| Frequency | Data quality activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monthly   | <p>Monthly tallies of adult and children initiations must be similar to the 12 month average.</p> <p>Any outliers must be explained/motivated. Common reasons are :</p> <ul style="list-style-type: none"> <li>• Backlog in capture of folders</li> <li>• Decanting/TFO of patients</li> </ul> <p>(Remaining of ART = Patients initiated on ART at month end + TFI) – Attrition (TFO + LTFU + Died)</p> <p>Ensure club patients are captured before report is generated</p> <p>Number of patients on the “defaulters” list should be less than 5% of total patients</p>                                                                                                                                     |
| Quarterly | <p>Data quality checks to be done <b>before</b> and <b>after</b> submitting cohort data to SINJANI:</p> <p>Before</p> <ul style="list-style-type: none"> <li>• All defaulter lists should reflect zero</li> <li>• All blood results must be captured</li> <li>• Data cleaning exercise should be done</li> </ul> <p>After</p> <ul style="list-style-type: none"> <li>• All dispatch files to be sent to District/sub-district office</li> <li>• The ART cohort workbook can be used to ensure that all ART facilities have data entries reflecting.</li> <li>• No data (blank) will be interpreted as zero initiations in that reporting quarter (although reporting omission may have occurred)</li> </ul> |

Figure 14 : Data quality activities (based on KI interviews and policies in Table 3 above)

## TB program data and dataflow resources :

- TB clinical pathway – Data Recording Tools and Data validation Reports
- TB data flow schematic diagram
- PREHMIS TB data elements
- TB Program reporting (City Health ART and TB SOP 2021 revision)
- TB data validation (Daily, weekly, Monthly)

Table 12 : TB data flow ; recording and validation tools (source : KI interviews and policies contained in Table 3 above)

| Clinical pathway            | Case finding                                               | Screening at facility                 | Testing (TB, HIV, baseline)  | Treatment                                                | LTFU                                                                                | Outcomes                                                 |
|-----------------------------|------------------------------------------------------------|---------------------------------------|------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------|
| <b>Role</b>                 | <b>Community Health workers</b>                            | <b>Counsellor/ Clinician</b>          | <b>Clinician/ Counsellor</b> | <b>Clinician</b>                                         | <b>Counsellor/ Data Clerk/Clinicians</b>                                            | <b>Clinician</b>                                         |
| <b>Data recording tools</b> | Clinic referral slips<br>Recall register (Contact tracing) | TB/COVID screening sheet<br>RMR sheet | Lab forms<br>HTS forms       | TB Clinical stationery<br>TB paper register (DS/DR)      | Recall register                                                                     | TB paper register                                        |
| <b>Data validation</b>      | Not applicable                                             | Not applicable                        | Not applicable               | -ETR reports<br>-Planned PREHMIS report (in pilot phase) | -TB Exception reports<br>-ETR line listing reports<br>-SPV TB treatment Action List | - ETR reports<br>Planned PREHMIS report (in pilot phase) |

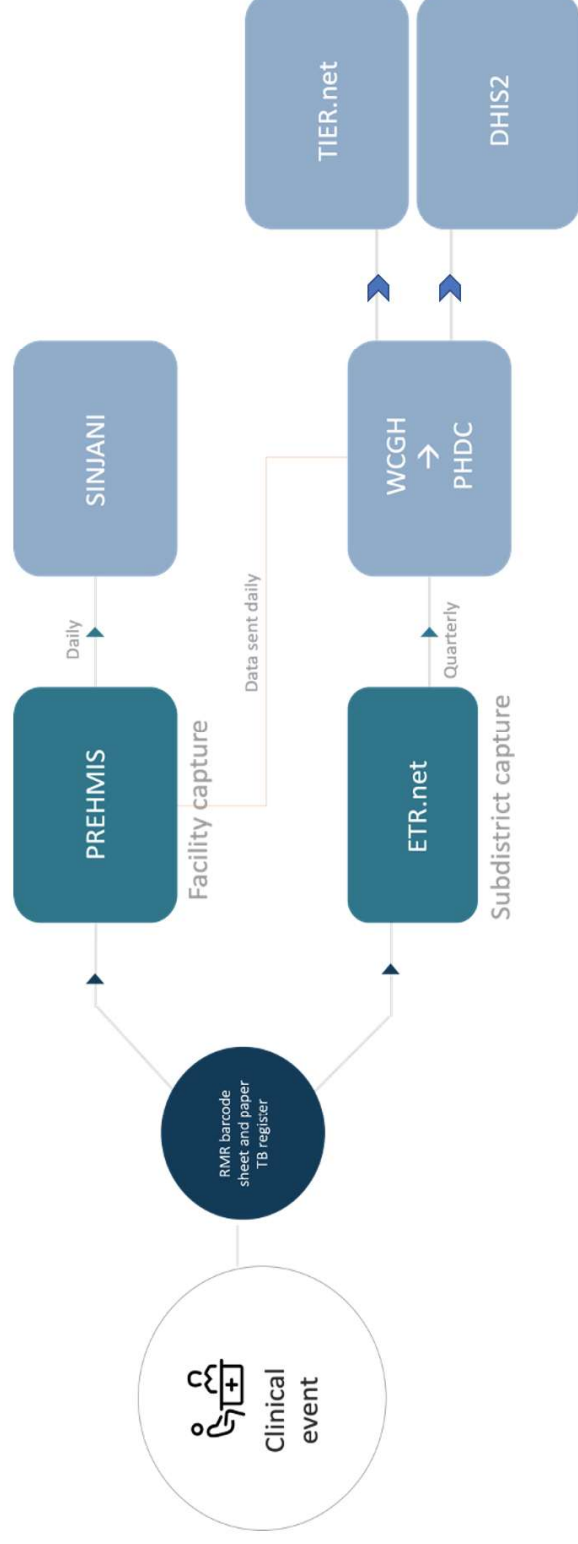


Figure 15 : Schematic diagram of TB data flow

- Following the clinical consult, some data (From RMR barcode sheet : TB screening test result, presumptive sputum test take,, TB visit ; From TB Treatment register : Sputum result ; patient outcome ) is captured onto PREHMIS at the facility .
- PREHMIS data is uploaded daily to PHDC
- At sub-district level, data from TB registers are captured on ETR.net . Data is sent quarterly to PHDC and Province which populates the provincial instance of TIER.net and DHIS2

Table 13 : TB data elements in PREHMIS

| PREHMIS TB Data elements |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | <ul style="list-style-type: none"> <li>● Screen for TB symptoms under 5 years</li> <li>● Patient screened positive for TB symptoms Age &lt; 5 years</li> <li>● TB investigation done under 5 years</li> <li>● DS-TB confirmed under 5 years</li> <li>● DS-TB treatment start under 5 years</li> <li>● Screen for TB symptoms 5 years and older</li> <li>● Patient screened positive for TB symptoms Age &gt;= 5 years</li> <li>● TB investigation done 5 years and older</li> <li>● DS-TB confirmed 5 years and older</li> <li>● DS-TB treatment start 5 years and older</li> <li>● DOTS visit - Facility</li> <li>● TB Visit - excluding DOTS and TB Presumptive</li> <li>● % TB screened under 5 years</li> <li>● % TB screened above 5 years</li> </ul> |

Table 14 : TB data flow (based on KI interviews and policies contained in Table 3 above)

| Flow         | Responsible                | Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Facility     | TB nurse                   | Checks data collection tools for accuracy and completeness<br>Use appointment system for patient recall<br>Assist clerk to capture TB data on PREHMIS TB module<br>Verify presumptive TB register weekly<br>Check TB exception reports for accuracy                                                                                                                                                                                                                                          |
|              | Clinic manager             | Supervise recording and reporting activities of clinicians and data capturing of clerks<br>Ensure data accuracy and completeness of Presumptive TB register before signoff<br>Sign off the Presumptive TB register from PREHMIS every month<br>Generate PREHMIS TB exception reports and validate TB data with HAST-Co support                                                                                                                                                               |
| Sub-district | Clerk                      | Captures data on ETR.net (Clinic manager or HAST Coordinator brings the paper register hardcopies at least twice a month)<br>On a quarterly basis, creates a dispatch file and sends data to Area and District level<br>Using data from ETR.net, populates the sub-district TB Sum report ("Quarterly template") and disseminates to Area Managers, HAST Cos, HIOs, Program Heads.<br>Generates a monthly TB export from ETR.net- HAST Cos- Clinic managers for data validation and cleaning |
|              | HAST Coordinator           | Checks the TB paper register hardcopies for data quality and reports errors to facility to review and correct<br>Works with Clinic manager to ensure that TB paper register hardcopies are submitted to sub-district office at least twice a month<br>Sends monthly TB data export from ETR.net to Clinic managers                                                                                                                                                                           |
|              | Health Information Officer | Ensures that data (facility and ETR.net) is quality checked for analysis<br>Provides support for sub-district Clerk (supervision), HAST Co and Clinic managers in TB data processes and regular feedback on data management<br>Works with HAST Co to check the quality of ETR.net dispatches<br>Disseminates information to HAST Cos and Clinic managers in the form of ETR.net monthly and quarterly data exports                                                                           |
|              | Sub-district Manager       | Analyses the data and provides relevant information to HIOs and other sub-district stakeholders                                                                                                                                                                                                                                                                                                                                                                                              |

|          |                              |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| District | District Information Officer | Imports sub-district TB data dispatch files<br>Sends copies of imported data to District TB Program Manager<br>Ensures data integrity for analysis<br>Creates dispatch files and send to the next level (MDHS and PHDC)<br>Export aggregate data from PREHMIS to DHIS2 and SINJANI                                                                                                                                   |
| District | District TB Program Manager  | Analyses TB program data and identifies areas of poor performance or data quality issues and refer to sub-district stakeholders<br>Supports HAST Cos to improve performance in TB program through the use of data Reviews , analyses and interprets the monthly ETR.net reports and District TB Sum (Quarterly Template)<br>Provides TB program technical support to Senior Management and sub-district stakeholders |

Table 15 : Legislative framework for Health Information systems

| Legislation                                                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The National Health Act (Act 61 of 2003)                          | Establishes the National Health Research Committee and the National Health Research Ethics Council that provide advice to the National Minister to ensure that research on human subjects, including the use of health related data, is of benefit to the population and meaningfully contributes to the improving of health outcomes. Provision is made for the disclosure of a patient's health records for study, teaching or research purposes with the consent of: a) an adult competent patient or the parent or care-giver of a patient who is a child; b) the head of the concerned health establishment; and c) the relevant Health Research Ethics Committee.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| The Protection of Personal Information Act (Act 4 of 2013)        | Provides for the protection of the constitutional right to privacy. It furthermore aims to align South African legislation with international data protection standards, the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, and seeks to balance the right to privacy against other rights such as access to information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| The Promotion of Access to Information Act (PAIA) (Act 2 of 2000) | Provides for access to (i) information held by the State; and (ii) any information that is held by another person and is required for the exercise or protection of any rights, of which health is one such right.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Children's Act (Act 38 of 2005)                                   | The HIV status of a child may only be disclosed with the consent of: a) The child if the child is 12 years of age or older; b) A child under the age of 12 years but sufficiently mature to understand the benefits, risks and social implications of such a disclosure; c) The parent or care-giver if the child is under the age of 12 years and not of sufficient maturity to understand the benefits, risks and social implications of such a disclosure; d) A designated child protection organisation arranging the placement of the child, if the child is under the age of 12 years and not of sufficient maturity to understand the benefits, risks and social implications of such a disclosure; e) The superintendent or person in charge of a hospital if the child is under the age of 12 years and is not of sufficient maturity to understand the benefits, risks and social implications of such disclosure and the child has no parent or caregiver and there is no designated child protection organisation arranging the placement of the child; or f) A children's court, if consent is either unreasonably withheld and the disclosure is in the best interests of the child or the child/parent or care-giver is incapable of giving consent. i The act is not yet fully operational and only a limited number of sections, mainly dealing with the Information Regulator is in operation. |
| Mental Health Care Act (Act 17 of 2002)                           | A person or health establishment may not disclose any information which a mental health care user is entitled to keep confidential in terms of any other law. However, the head, either of the national/provincial department of health or the concerned health establishment, may disclose such information if failure to do so would seriously prejudice the health of the mental health care user or of other people                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Choice on Termination of Pregnancy Act (Act 92 of 1996)           | The identity of a woman who has requested or obtained a termination of pregnancy shall remain confidential at all times unless she herself chooses to disclose that information. Information that a pregnancy has been terminated, without identifying the individual, must be recorded and reported to the relevant head of the provincial department of health.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Protection of Information Act (Act 84 of 1982)                    | Provides for the protection of certain state information from alteration, loss or destruction or unlawful disclosure and regulates the manner in which state information may be protected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Protection of State Information Bill (B6-2010)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Minimum Information Security Standards (MISS)                     | Provides, amongst other things, for the protection of sensitive information, and will therefore provide for justified exemption from disclosure of such information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Source [https://www.westerncape.gov.za/assets/departments/health/data\\_and\\_patient\\_information\\_access\\_guidelines\\_2015\\_final\\_copy.pdf](https://www.westerncape.gov.za/assets/departments/health/data_and_patient_information_access_guidelines_2015_final_copy.pdf)

#### Appendix 4: List of QI Literature

| Title                                                                                                                                                 | Publication                                                                                                                                                                         | Content covered                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expansion of the adherence club model for stable antiretroviral therapy patients in the Cape Metro, South Africa 2011-2015                            | Wilkinson L, Harley B, Sharp J, Solomon S, Jacobs S, Cragg C, Kriel E, Peton N, Jennings K, Grimsrud A. Tropical Medicine and International Health, Volume 21, Number 6, pp.743-749 | Details the roll out of the ART adherence club model in the Cape Metro using change management and quality improvement principles                                                                                                                                                                                                                                                |
| Improving a mother to child HIV transmission programme through health system redesign: quality improvement, protocol adjustment and resource addition | Youngleson M, Nkurunziza P, Jennings K, Arendse J, Mate K, Barker P. PLoS One. 2010 Nov 9;5(11):e13891                                                                              | A rapid scale up of PMTCT services in all primary care sites in the Cape Metro (City Health and MHS) using a quality improvement framework (Breakthrough Series Collaborative), that demonstrated accelerated and effective systems change.                                                                                                                                      |
| Appointment systems in City of Cape Town                                                                                                              | Walmisley U . Magister of Public Health, University of the Western Cape, 2018.                                                                                                      | A detailed description of the appointment system learning initiative (ASLI), exploring the roles and experiences of health managers participating in ASLI in City Health facilities in Cape Town.                                                                                                                                                                                |
| How To : Guide for quality improvement                                                                                                                | AURUM                                                                                                                                                                               | Step by Step guide to methods and approaches in QI                                                                                                                                                                                                                                                                                                                               |
| A nationwide quality improvement project to accelerate Ghana's progress towards MDG 4: design and implementation progress                             | Twum-Danso NAY et al. International Journal for Quality in Health Care 2012; Volume 24, Number 6: pp. 601–611                                                                       | A phased, rapid, national scale-up quality improvement (QI) intervention to reduce child mortality (under 5 ) in Ghana. The intervention promoted systems thinking, active participation of managers and frontline providers, generation and testing of local change ideas using iterative learning from transparent district and local data, local ownership and sustainability |
| Effect of data QI intervention on HMIS data accuracy : an interrupted time series analysis                                                            | Mulissa Z, Wendrad N, Bitewulign B, Biadgo A, Abate M, Alemu H, et al. (2020) PLoS ONE 15(8): e0237703.                                                                             | Experience of quality improvement collaboratives in 2016 aiming to accelerate reduction of maternal and neonatal mortality in Ethiopia                                                                                                                                                                                                                                           |
| Improving public health information : a data quality intervention in KZN south Africa                                                                 | Mphatswe W et al. Bull World Health Organ 2012;90:176–182                                                                                                                           | Evaluated the effect of an intervention to improve the quality of data used to monitor the prevention of mother-to-child transmission (PMTCT) of the human immunodeficiency virus in South Africa.                                                                                                                                                                               |
| HIV QUAL workbook : a guide for quality improvement in HIV                                                                                            | New York State Department of Health AIDS Institute 2006                                                                                                                             | Develop, Facilitate and Manage a Quality management program using the HQUAL model                                                                                                                                                                                                                                                                                                |

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|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strengthening data collection and use for QI in PHC : the case of Costa Rica                               | Pesec M et al . Health Policy and Planning , 00, 2021, 1-4  | Use of data for QI<br>Healthcare delivery performance index used by managers for QI activities<br>PHC system values data and invests in training<br>Digitalisation of health records eliminates redundancy and duplication of data collection |
| Improving demand for and use of data in Rwanda                                                             | USAID and Measure Evaluation                                | Improving data demand and use ; best practice from promoting data use ;institutionalising M&E for data use                                                                                                                                    |
| The Improvement Collaborative: An Approach to Rapidly Improve Health Care and Scale Up Quality Services    | USAID Health Care Improvement Project<br>2008               | Expounds the BTS QI collaborative model in successfully demonstrating improvement through tests of change and scaling up ; concurrently developing a “change package” of tested interventions                                                 |
| A practical guide for translating data into improvement : Measuring the Performance of Primary Health Care | Joint Learning Network for Universal Health Coverage, 2018. | Improving data quality ; Linking and managing disparate data systems Communicating data to key audiences ;Using data for decision making                                                                                                      |

Appendix 5: QI Focus Group Discussion Findings

### Clinic managers FGD Summary

They described the audit process (objectives, tools, training, conduct, results) and the RMR data verification process (procedure, dates and responsibilities) with great detail -yet did not expound the QIP that emanate from these activities.

The FMs freely discussed the many challenges they faced and emphasized their collective perception that they were inadequately resourced and capacitated to be effective in their work. There were no dissenting views on this issue. There was consensus that they were expected to manage the processing of data but lacked any formal data skills and competencies training as well as Quality training. This perceived shortcoming in their training in these fields, was much emphasised.

They expressed frustration that they were expected to implement policies contrary to and despite their expert context knowledge. They were expected to “**balance**” many priorities but usually were able only to “**juggle**” them instead. This leads to shifting focus and a poorer ability to sustain any good practice or improvement in the longer term.

Through their anecdotes, the FMs communicated their collective frustration, disempowerment and dissatisfaction.

FMs and Clinicians are faced with changing priorities. They are also often overwhelmed by the number of "priorities" that they are expected to account for. As a result, programs receive fleeting attention and endeavour.

FMs are expected to be accountable for all aspects of service delivery at facility level from provision of clinical services, routine management (HR/Procurement/Finance/other management functions) , Data validation and verification, program performance and improvement of quality (of both the service as well as the clinical care )

Other factors affecting the success of QI projects were :

- Time:

FMs and clinicians are often inundated with clinical work and do not have the opportunity to access information related to program performance

- Recognised platforms to discuss data and/QI :

Reference was made to facility level MDTs involved in planning or implementing QIPs , however this was not a consistent, rather a “best practice” where if occurred. Apart from these MDTs, there was only one other structure (QAPIC) identified as a platform in which QI would be discussed. Data was routinely discussed during the routine validation and verification process in an interaction between SD level HAST coordinator and HIO. While data was heavily emphasised and prioritised, FMs were clear that “information” (not data) did not return to them for discussion and interpretation.

- Training need :

FMs repeatedly commented on their perceived absence/lack of training/exposure to data analysis and interpretation and QI despite these skills appearing in their job descriptions as requirements. In particular, there was a demand for such training and exposure in Data analysis/interpretation and QI .

Many FMs referred to Excel tools which were used in the RMR / facility audit processes. These tools are specifically data entry or data validation tools

- System disruption

There was a huge challenge to re-establish and resume routine work during the COVID-19 pandemic although the group did not reflect on how the system could be made more resilient such that disruption could be managed to effectively reduce " down-time " .

- Staff turnover

The high staff turnover negatively impacts QI activities. On-boarding new staff is time-consuming and threatens continuity of projects. One way of dealing with this is to identify champions for various priority projects who would drive the agenda

- Support and Supervision for QI

Improvement is sustained whenever there is a high degree of support/supervision for the QI project

## Health Information Officer FGD Summary

### General impressions:

Although unencumbered by clinical work in their roles, the HIOs were very respectful of the complexity that HCWs at the coalface, must contend with. They recognised the importance of Monitoring and Evaluation (M&E) in the organisation but understood the challenges of producing, cleaning and managing data at the facility and sub-district level.

HIOs were able to identify the PDR process as the main QI initiative relevant to their work. The “IT Modernisation project” was considered a QI initiative as it was widely held that it would contribute to operational efficiency at facility level.

The concepts of performance improvement through repetitive cycles of changes was not new to this group. Reflecting on the experience of implementing a number of IT projects in the City Health, the group recognised that project management models, tools and could be useful when structuring activities of a team and to facilitate iterative cycles of production, stakeholder engagement and revision. Similarly, QI methods which provide some “structure” in the change/improvement process would also be useful.

HIOs are focussed on data but have an impressive understanding of the HAST program and the organogram which facilitates translation of the City-, Area-, sub-district- and facility-wide targets. Their work is shaped by performance targets in the key performance areas and this mandate is driven by Senior management.

HIOs were most dissatisfied with the implementation of QIPs. Health facilities usually set up QIPs to work through over about 6 months to 1 year and HIOs were not always included in the feedback, progress and outcomes (usually shared between Programme and Clinic managers). As a result there was a perceived “disjuncture” in the PDR process, with HIOs looking at data and performance quantitatively and other stakeholders with a broader “systems” perspective.

Despite these challenges, HIOs provided examples of some success (Khayelitsha specifically) in improving KPA performance in health facilities. Their observation was that patients from more “stable” communities, characterised by predominantly formal housing, were more likely to attend clinic appointment, be reached and retained in care and health facility KPA performance was generally better than in those health facilities serving informal settlements.

### Success factors in QI projects

- Strict control/management over daily activities and tasks
- Consistency of follow up - weekly at facility and monthly with FMs and Program Heads
- Regular scheduled feedback and communication of progress to stakeholders
- Target setting must be realistic and accurate
- Benchmarking of performance among facilities with the intention of “name and shame”
- Communication between HIOs and FMs
- Leadership support is important in projects; micro-management was perceived as a positive
- Strategic plans help stakeholders understand what targets people ‘need to chase’
- When HIOs support facilities, they employ different strategies to overcome some of the barriers at facility level for HCWs to engage with data
- Regular training for staff such that new recruits are exposed to the requisite skills
- Buy in and support from sub-district Managers (PPHC Heads, HAST Cos)
- Working as a multidisciplinary team
- Ensuring adequate resource to monitor and evaluate progress of the project

### Barriers/Challenges to implementation of QI projects

- Disruption to services such as COVID-19, taxi violence, safety concerns, protest action – performance targets not reached
- Poor communication between FMs and MOs (an example of this is workload stats which has been an ongoing problem)
- High turnover of staff - vacant posts delay projects; progress is slow and timeline is delayed; on-boarding of new staff is time-consuming and inadequate in many instances
- Where there is lack of training, learning is by experience. Only a few people amass enough experience to expert levels and their departure makes the project vulnerable
- Well defined mechanisms to share knowledge and translate into practice is usually inadequate
- Lack of access to self-help training materials especially in Health Information Systems
- HIOs need regular training and refresher courses
- Resource and capacity mismatch (need people to analyse data at facility level however these skills exist at the sub-district office)

## Area Management Teams (AMTs) FGD Summary

### Identification of QI projects:

Audits ; Ideal clinic ; Service integration (HAST); DMOC med ; Back to basics ; Appointment system ; Strategic planning process ; PDR /RMR ; BANC letter; HR Absenteeism;  
DIAHLS (District innovation for Health system learning) ; Health and safety audit ;  
Adverse events process; Individual performance review

### Key features of QI projects:

- Quality Improvement; Quality Assurance and Quality of care are distinguishable concepts and still need to be defined for City Health
- Planning for QI/QA/QOC occurs at a strategic level
- AMTs incorporate the principles of reflective practice (Plan- DO- Review /Plan-DO-Study-Act) in routine management activities

### Case study :

Weekly meetings are held with FMs to interpret performance data; twice per month supervisory visits are conducted as part of the Ideal clinic program; Mentorship and supportive supervision visits by AMT ensure that Managers retain a “bird’s eye view of the service”. An example of this is the cervical smear program where new annual targets are set → support for the targets is canvassed → targets are broken down and roles and responsibilities assigned → Monitoring occurs in monthly meetings and evaluation quarterly.

- Management teams regularly identify problems and are acutely reactive to the situation, in order to re-establish service delivery and return the system to stability. Sometimes, interventions are conceptualised, planned and pilot-tested. If these interventions gain traction with proven effectiveness, they can be scaled -up or become adopted as a standard practice (with SOP guides etc.).
- Management teams are strongly driven by data (measure performance against targets; support resource allocation and make management decisions). However, AMTs recognise and accept that sub-district and facility level capacity must be built to support this.

### Case study :

Project Lungisa was set up to improve quality of RMR data; involves the training of facility stakeholders (data clerks and FMs) to interpret data and monitor program performance. There is evidence of effectiveness already however, some momentum lost due to COVID-19 disruption. The key performance indicator “Immunization coverage” was used as the case study.

### Factors that influence QI projects

- Staff attitudes and behaviour may help/hinder projects. **“At leadership level we must make sure that people are part of the conversation because ultimately they make the decision to act and whether or not to deliver the service”**
- In projects interest and motivation wane over time **“Things kick off very well but is not sustainable; everybody waits for a yearly audit; but we can do this [make small changes] on an ongoing basis “**
- Monitoring and evaluation keep the momentum in a project **“ Tracking changes on a monthly basis . From an area level, we have great ideas but if you don’t have micromanagement these ideas don’t stick.”**
- Stakeholders need leadership **to create the “bigger picture” and keep the motivation ongoing**
- Acknowledging that every HCW own performance links to the organisational targets but this connection is not clear to some HCWs **“Clearly defined targets makes it clear what we are all working towards and is aimed at client we serve”**
- Recognition that the frontline is a difficult situation to navigate ; Sometimes projects are vulnerable to system failures but sometimes it is a failure of the people and their relationships
- Specific issues around the success of Ideal Clinic program have been discussed above and are relevant here
- There are mechanisms to identify gaps (audits, data reviews etc.) which occur periodically; however there is an ongoing need to do so in order to manage risk
- When the nature of the problem is beyond the scope of the management team or the health service, managers feel disempowered by what can be done about it. **“Some problems are not amenable to QI – it’s very clear on what needs to be done; but there’s no budget; the solution is beyond the scope of the management team and indeed the health service”**
- **“We have to recognise the limitations of our own expertise ; but have the accountability to bring in the expertise “** Leaders have the mandate to drive the change
- Considering the bureaucracy, workload and competing priorities, management must have realistic expectations of frontline staff **“How many QI interventions can you do in 1 day?”**

### Challenges with QI projects

- **The 'how' to change is the problem? Who is responsible and how does one action it? At which level does the accountability sit? Is it being followed up?**
- **We know what needs to be done but not enough time to do what we should be doing.**
- There are competing priorities - attention is divided, improvements are hard to sustain.

- There are “real world” problems to face when implementing changes; hard/“honest” conversations need to be held **“We cannot expect change without providing resources. There are two levels of accountability - accountability to achieve targets but there is also the accountability for Mgrs to provide resources**
- **“Managers have a background in the services and understand what needs to be done but the action needs to be taken locally so they are dependent on FMs. Where the problem is infrastructure and resources, they are not able to achieve their targets; sometimes they have to improvise”.** Does the system acknowledge that policy can be interpreted according to resources available locally?

#### Case study

“Watercoolers are a platinum standard (feels like a nice to have) and does not have a direct impact on QOC to patients. We want to comply but we use our discretion to deprioritise watercoolers in favour of signage . The Ideal Clinic budget is discretionary. We buy into the Ideal Clinic standards only as far as they make sense to improve QOC”

- The relationships between stakeholders and groups of stakeholders may also play a part in effecting change/improvement to the system. **“There is a real intention to work together but are we tripping each other up?”**
- It is difficult for an Area-level manager to facilitate an action plan and even more so at a facility level. **“When things go wrong we look at the system and try to ascertain if it [the elements of the system] are working together.”**
- **“How do we create this environment [as Managers] where we support positive team dynamics, soft skills and self-care?”**

## HAST Coordinator FGD Summary

### QI projects identified

Internal/External audits ; Back to basics ; Strategic planning process; HIV Testing services; ART rollout ; CHW program; IT infrastructure project ; RTQA

### Success factors in QI projects

- Frequent meetings, monthly or quarterly
- Help to increase the awareness of data Managers; appreciate visualisation of data in ways that make it easy to understand
- When HIOs and HAST Cos work well together, the benefits are great- the RMR/PDR process is more efficient
- "Hands on HIOs" are able to identify challenges and communicate with FMs and HAST Cos.
- Some targets are elusive (e.g. TB case finding) as the problems lie outside of the health system (drugs/violence/gangs) – understanding what can be changed and how to do so
- Coordination of NPOs can greatly contribute to achieving success as they bring resources
- HAST Cos are managers with experience of the frontline and are therefore better able to understand the demands placed on HCWs
- The relationships between HAST Cos and FMs can either help/hinder the work to be done in producing, analysing , interpreting data and making changes to improve performance

### Challenges in QI projects

- There are competing priorities - once the focus shifts to a newer issue, then the improvement is not sustained - e.g. if we set up one target for this year, then we move to another next year and lose the gains
- Smaller facilities are the problem - one person does everything
- Very little involvement from Management (senior) and yet it plays a huge role.
- New programs/projects - TB improvement plan in 2020- concerning that there is no follow up, no interrogation , no evaluation shared with HAST Cos
- PREHMIS reports are plenty but not used
- NIMART mentors are few- mostly ANOVA has mentors
- Need role clarification - too many programs to divide the attention
- Over-reliance on NPOs/temporary staff (EPWP interns) to “take over functions” for an period of time, makes the services vulnerable when they exit
- FMs are overwhelmed with various activities and cannot commit attention to complex projects
- HAST Cos have their own styles and approaches to Management, which are highly variable. ***“Some FMs may not be as responsive to HAST Cos or HIOs during the PDR/RMR process; Some FMs are intimidated by data and technology; they may not have the skills needed ; do not have many opportunities to really engage with and reflect on data ; may not be proficient in the use of technology; using graphs and visual tools usually work well”***
- FMs need more training - data literacy is a perceived need
- HAST Cos commit time to go through the RMR data; ***“but FMs don’t come to SD office with clean data”; “some FMs don’t access PREHMIS reports on a weekly basis”***
- Some HAST Cos are dissatisfied with the RMR interaction  
***“They have to come and defend what they did and did not do” ; “Has it been done or not”  
“Our role as HAST Cos is support, but when you get to facility, you have to start from scratch”***

## Specialised Health Focus group Discussion

### Identifying QI projects:

- PREHMIS appointment system
- Integrated HAST audits
- ART clubs
- PMTCT/ART rollout

### Main themes:

#### Experience with QI methods

- The experiences with QI shared by the group suggest that there were varying levels of exposure to formal training although all participants were familiar with the basic principles and methods used in QI projects.

#### PREHMIS appt system example

- Although there was no formal intention to frame the project as a QI intervention, the sponsors of the project had “exposure” to change/improvement approaches.
- It was intuitive to employ some structure (PDSAs) when introducing the change.
- The tools (synonymous with QI) were used during the various stages of the project.
- “It was an evolving process; it may not have been well defined at the start “
- The project enjoyed support from a diverse group of stakeholders ; there was academic interest and it was well supported by the leadership and this was a critical success factor.
- As a start, facility level engagement was key. The sponsors quickly realised that a “bottom up” collaborative approach would be ideal.
- Facilities were given a lot of support during the pilot and implementation phases.
- The adoption and behaviour change was slow – took a lot of time to encourage use of the new system.
- Started with a small # of facilities and scaled up
- measurement of progress was less accurate ; relied on anecdotal feedback
- in theory, the innovation (PREHMIS appt system) was an improvement of the manual process
- Communication and motivation was integral to sustaining interest in the project : used newsletters to spread changes ; Workshops to discuss the changes and as a result there was a lot of buy-in and eagerness to implement
- In retrospect the structure of QI methods was much appreciated

#### The key lessons learned from this project:

- Project started at the facility level but eventually the top down imperative for progress overtook the bottom -up approach
- The initial approach was well received
- Multidisciplinary teams were helpful in generating interest
- There was external support for the project which was welcomed

There was exposure to more formal methods of QI which were quite successful . The DIAHLS project was one such project.

#### Audits

- has been investment in the process since 2002.
- Took a long time to embed the culture; risk was seen as a punitive process- which may be a constant shadow overhanging it and each year is carefully addressed;
- has contributed to the culture of use of data in City Health.
- Started in HAST program but expanded into other areas of PHC
- Sub-district managers and Program manager support singled out
- Decentralisation of the audit process perceived as a "loss in quality" and deficiencies in audit technique
- Learned over the years how to overcome and improve technique issues
- the determinants and factors that facilitate change/improvement may not be within the control of the facility level (e.g. equipment)
- One of the most important contributions of the audits has been the change in clinical practice among clinicians
- Cannot discount that there is a human element involved in change/improvement process- this influences the outcome and impact of any change we try to implement

#### Challenges in QI

- Need to stop the vertical "silo" approach - how much can one FM divide her attention to support the multitude of priorities and approaches
- City Health has not asked -what is QI for us? What is our vision for QI? What methods should we be using?
- City Health identified this as a gap and would encourage the opportunity and space to reflect on this and develop such a document.
- Support partners have come in with their own methods, aims, motives, but concern is if much of this has been retained in the system and sustained?

- ownership of data and who's responsible for it ? Role and responsibilities of stakeholders are not always clear
- The span of control and accountability between managers/clinicians/HCWs is not always well understood