

Consolidated Change Package: Embedding Targeted Universal TB-NAAT Testing (TUTT) into Routine Facility Workflows

This change package is a practical guide to increasing TB testing coverage for people living with HIV (PLHIV) in chronic care. It synthesises lessons from three Western Cape TB grant partners: City of Cape Town (CCT), Metro Health Services (MHS) and Rural Health Services (RHS), documenting shared and validated interventions, enablers, evidence of success, and recommendations for replication. Partner-specific notes show how these can be adapted to local context (see Appendix).

How This Was Developed

This change package synthesises implementation learning from three Western Cape partner sites, namely Inzame Zabantu CDC (MHS), Dalvale Clinic (RHS), and Dr Ivan Toms CDC (CCT).

The described intervention at all sites focuses on strengthening and optimising TB NAAT testing coverage for persons living with HIV (PLHIV) in chronic care (facility visit recorded in the last 12 months). It does not cover TUTT for newly diagnosed PLHIV or TUTT across other eligible groups.

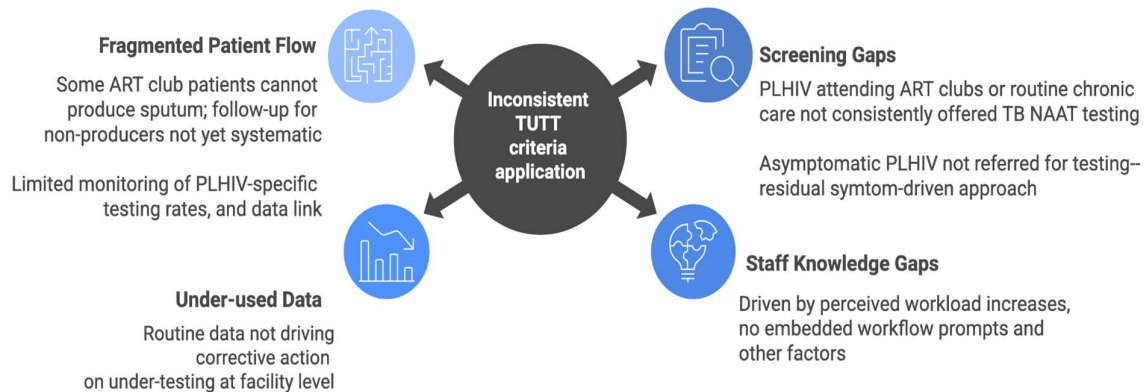
Partner experiences were collated through an established Quality Improvement (QI) transversal group using a standardised reporting template and routine programme data. Routine programme data include the use of SPV-generated NAAT reports and facility QI plans. Because implementation followed an iterative QI approach rather than a controlled study design, the findings should be interpreted as practice-based evidence demonstrating feasibility and early programme improvement to support provincial learning, adaptation and further service expansion and scale-up.

Care Pathway & Where Gaps Occur

The pathway below situates TB testing for PLHIV within the broader TB system.



Where delays and drop-offs occur



The Problem

Chronic HIV clients meeting criteria for routine NAAT testing were not being consistently identified for TB testing at facility service points. Despite the Universal TUTT policy guidelines being instituted by the Western Cape Department of Health and Wellness and City Health Department in 2023, testing, specifically for this high-risk group, remained largely symptom-driven in practice, contributing to increased TB transmission and poor client outcomes in the province.

Our Aim

To increase TB NAAT testing coverage among TB test-eligible PLHIV clients, from June 2024 to June 2026, by implementing the TUTT policy across facility services.

What We Did

The primary change idea across all three partner sites was the structured integration of TB NAAT testing into routine ART services. The partners integrated TB testing as a standard component of the annual visit processes rather than offering it as an ad hoc or symptom-driven service.

Implementation combined workflow redesign, staff capacitation and data use through a quality improvement approach.

How We Did It

Each partner site took a stepwise implementation approach at each facility.



Stage 1: Disseminate TUTT guideline and policies

- Engage staff across all PLHIV points of care.

- Showcase the TUTT poster at relevant service points, where feasible.

Stage 2: Frame TUTT as an updated approach

- Translate TUTT policy into operational language through SOPs and facility-level guidelines.
- Frame as an updated approach to finding TB in PLHIV rather than an additional burden.

Stage 3: Identify chronic PLHIV presenting to the facility

- Identify chronic clients eligible for NAAT testing.
- Screen all PLHIV TUTT-eligible clients with the updated TB screening tool or facility guideline.

Stage 4: Conduct investigation for eligible clients

- Conduct NAAT testing before clinician consultation and before issuing a script.

Stage 5: Use outcome and process data to monitor progress and drive improvement

- Use performance data to refine workflows.
- Provide ongoing training and mentorship.
- Document lessons learned and share them across teams.
- Identify best practices and incorporate them into routine workflows.

Why it Worked

Key Enablers

1. **System redesign, not isolated training:** This included physical prompts at point of care, including readily available forms. Sputum jars in the consultation rooms removed reliance on staff memory and eliminated the need to collect required administrative enablers and supplies during the client consultation. Clinicians retained prescriptions or medication required for issue until sputum collection was confirmed.
2. **Narrative alignment:** Translating TUTT policy into operational language reduced staff resistance and facilitated sustainable behaviour change at the point of care
3. **Embedded role clarity:** Each intervention worked reliably only where a named person at each service stream held a defined testing responsibility; integration without explicit role assignment remained inconsistent
4. **Routine data use:** SPV TB-NAAT dashboard and huddles made testing gaps visible, including by high-risk groups, enabling rapid identification. Aggregate monthly data alone could not drive corrective action.
5. **Continuous mentorship and coaching:** Ongoing support converted training into sustained practice change and surfaced barriers not visible at the planning stage. Adoption required patience and repetition.

Who Did What

Role	Specific Action
ART club/ chronic service nurse/ Enrolled nurse	Screen all PLHIV TUTT-eligible clients with the updated TB screening tool (includes prompts to test both symptomatic and TUTT-eligible clients regardless of symptoms, as well as children with atypical presentations) and send for TB-NAAT testing before consultation or dispensing medication.
TB nurse	Receive referred clients; support sputum collection; ensure NHLS form is correctly completed, and the specimen is labelled and submitted.
Health promoter/ promotion champion	Engage clients in waiting areas; explain TB testing process; support patient readiness and willingness to test.
Clinician	Apply TUTT criteria during PLHIV consultation; confirm sputum collection in patient notes; request NAAT test for PLHIV clients required – retain patient script until sputum collection is confirmed, then refer to pharmacy.
Data capture/ clinician	Enter TB testing data in source systems and registers.
OPS manager/facility manager	Confirm the weekly huddle takes place; review testing performance, support workflow adjustments; coordinate and facilitate QIPs.
Sub-district HAST & IM team	Monitor testing indicators across facilities using SPV dashboard; conduct mentorship visits; review QIPs; present TUTT data at data sign-off meetings; coordinate phased rollout.

The following training support, tools and resources supported the staff roles.

Training	Tools & Resources	Recommendations
• TUTT guidelines and facility SOP • Updated TB screening tool (RHS) Folder retention rule and folder movement protocol	• MHS & CCT TUTT SOP • PACK guideline (NIMART) • QIP templates • Weekly/monthly reporting templates	• Standardised national TUTT SOP for all PHC facilities (not yet universal — RHS)

- SPV TB-NAAT dashboard and data quality monitoring
- QI capacitation and QIP development
- Ongoing refresher training and mentorship — single training sessions are insufficient for workflow change

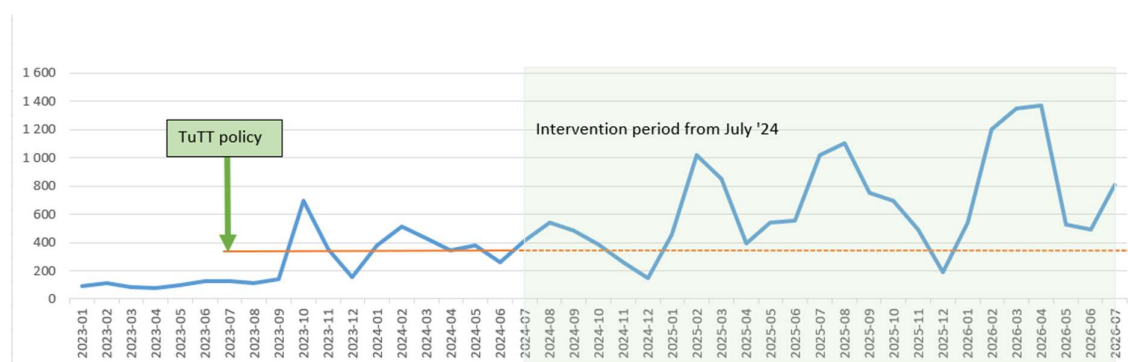
How We Know It Worked

This section presents the aggregated and partner-level outcomes measure data, covering both a baseline period before the intervention and the implementation period, which started in July 2024. The outcome measure is the number of PLHIV accessing TB-NAAT testing per month, an indicator on the SPV TB NAAT dashboard.

Because the Western Cape TUTT policy was released in July 2023, exactly a year before the structured QI intervention began, the 12-point (12-month) baseline median was calculated from July 2023 to June 2024.

1. Aggregate Performance

Figure 1: Monthly TB NAAT in PLHIV Across the Three Partner Sites



Red solid and dashed line: baseline median= 346 (12 points: July 2023 - June 2024)

Aggregated data across all three sites show a significant upward trend in the monthly number of PLHIV receiving TB NAAT testing after the intervention began in July 2024. For several months from late 2025 into 2026, this figure exceeded 1 000 tests — almost three times the baseline median. Although some data points cross the baseline median after the intervention began, this reflects how chronic care for PLHIV is structured, avoiding routine annual consultations in December and January.

In addition to improved testing volumes, the interventions have delivered system changes across all three sites:

1. Improved staff awareness and routine application of TUTT screening criteria
2. Functional, facility-based quality improvement teams: established and operational

3. Improved coordination between ART club/chronic care services and TB testing points
4. Increased facility ownership and accountability for TB NAAT testing rates among PLHIV
5. TUTT monitoring embedded into governance, management and operational structures

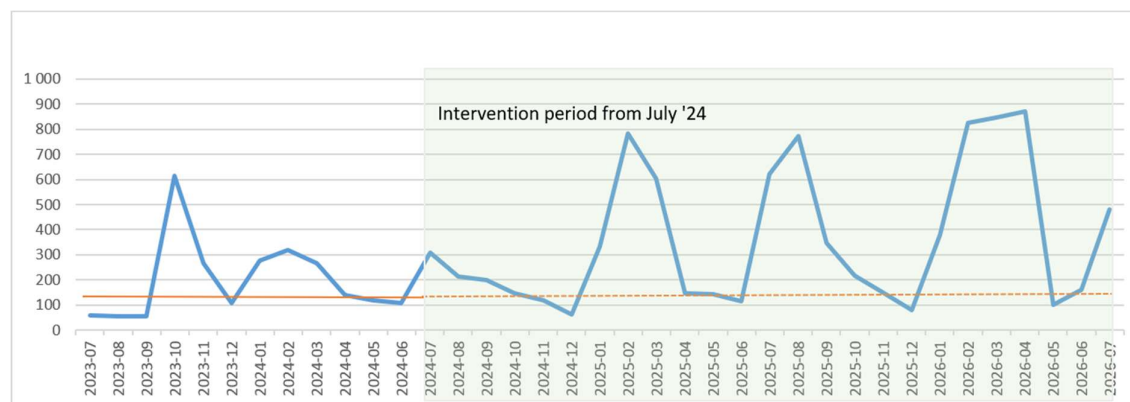
Partner Performance

Element	Dr Ivan Toms (CCT)	Inzame Zabantu (MHS)	Dalvale (RHS)
Baseline monthly # TB NAAT (median)	58	129	31
Highest achieved monthly # TB NAAT	400	850	90

The partner-level run charts below present site-specific performance trends from baseline to the structured intervention period starting in July 2024.

Metro Health Services: Inzame Zabantu CDC shows substantial improvement with recurring peaks from mid-2025, reaching roughly 800–850 by early-to-mid 2026 — over six times the baseline median. The interspersed sharp troughs are consistent with reduced scheduling of chronic care clients during holiday seasons rather than a genuine drop in testing performance.

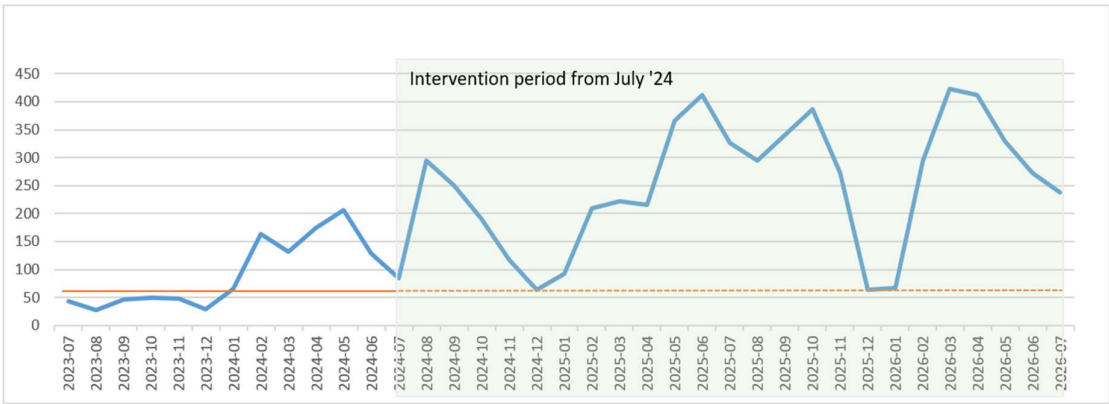
Figure 2: Monthly TB NAAT in PLHIV at Inzame Zabantu CDC



Red solid and dashed line: baseline median = 129 (12 points: July 2023 - June 2024)

CCT – Dr Ivan Toms CDC: The CDC shows a strong upward trend from early 2024 onward, with testing volumes climbing well above the baseline median and peaking near 400 in March 2026—more than six times the baseline level —with an expected dip around the December–January holiday season.

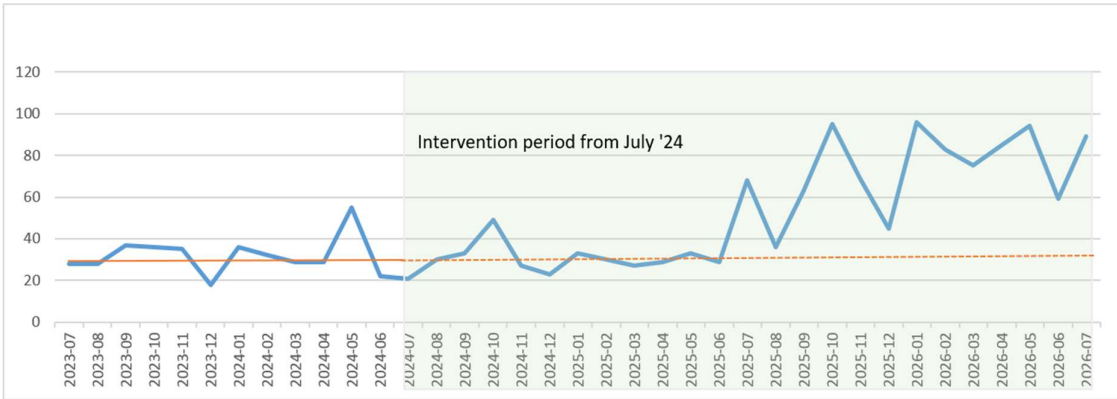
Figure 3: Monthly TB NAAT in PLHIV at Dr Ivan Toms CDC



Red solid and dashed line: baseline median = 58 (12 points: July 2023 - June 2024)

Drakenstein RHS – Dalvale Clinic: Dalvale shows a significant and sustained upward shift once the intervention had been established, with monthly counts peaking at five times that of the pre-intervention baseline

Figure 4: Monthly TB NAAT in PLHIV at Dalvale Clinic



Red solid and dashed line: baseline median = 31 (12 points: July 2023 - June 2024)

Implementation Challenges and Adaptations

The key transversal lesson was the time and adaptations required to achieve success from the planning stage. Other challenges and key adaptations made are highlighted below.

Challenge	Adaptation Made	Outstanding / Recommended
PLHIV often cannot produce sputum during visit	No systematic protocol was in place to address this challenge.	Disseminate and capacitate staff on the recently developed TB Think Tank training video, which demonstrates the cough-cough-spit method of sputum collection for these clients.
Queue integration — ART chronic patients joining general TB queues without fast-tracking; throughput pressure on busy clinic days	TB nurse and enrolled nurse supported management of both queues on club days; increased physical proximity of ART and TB rooms reduced transit drop-off.	

Increasing TB testing coverage for PLHIV produced the following combined learnings from the partners:

1. Integrating TUTT into routine HIV care is more feasible than relying on a separate TB workflow.
2. Reducing additional patient movement and queues helps address missed testing.
3. Data monitoring is required to identify gaps and sustain implementation.
4. Clear responsibility for documenting, reviewing and acting on results is essential.

Conclusion

Across these Western Cape sites, consistent, policy-aligned Universal TUTT implementation for PLHIV in chronic care proved feasible, impactful, and scalable.

Success came from a combination of workflow redesign, operational ownership, behaviour change, data-informed monitoring, and embedding TUTT into provincial structures. Crucially, it was achieved with existing staff and systems.

Appendix

The following highlights context-specific interventions or adaptations adopted by individual partners that are not universal across all sites but may be relevant for settings with similar operational contexts. Each note includes specific role, action, frequency, and location detail to support direct replication.

PARTNER NOTE: MHS — Inzame Zabantu CDC

- ▶ **SITE CONTEXT:** 6,983 clients on ART; 7th largest TB service at primary care level in Metro; small staff complement (1 CNP, 1 enrolled nurse, 1 clerk, 2 CHWs).
- ▶ **WEEKLY CYCLE — WHO DOES WHAT:** Enrolled nurses screen all clients at facility entry and refer PLHIV for NAAT before the clinician consultation. On blood visit days: bloods → TB room → medication. ART club nurse refers all club patients for sputum after bloods.
- ▶ **FOLDER RETENTION:** TB room retains ART club patient folders until NHLS form complete and sputum submitted — prevents data capture loss when folders return to club room.
- ▶ **DATA SYSTEM:** Weekly team huddle — previous week's data reviewed; gaps actioned; TB contacts for tracing discussed. Monthly sub-district data review. Routine folder audits. IM team support for data quality — early detection of errors built in.

PARTNER NOTE: CCT — Dr Ivan Toms Clinic, Mfuleni (Urban, ART Club-Focused)

- ▶ **SITE CONTEXT:** Situated in a densely populated, low-income township, the monthly clinic headcount is 5200. A high-burden facility, it has 4800 patients on ART; 58% are in clubs. On average, the clinic sees 14 new DS TB cases per month. Staff complement is: 3 MOs, 4 CNPs, 8 PNs, 3 ENs, 2 ENAs, 6 clerks, 0 CHWs.
- ▶ **WEEKLY CYCLE — WHO DOES WHAT:** ART club blood visit is the primary testing entry point: bloods taken → referred to TB room for sputum → medication collected. On club days, enrolled nurse conducts TUTT alongside TB room nurse to manage volume (approximately 30 clients per blood visit day).
- ▶ **DEDICATED CLERK:** One City clerk assigned exclusively to TB folder capturing for ART club patients — ensures TB data is not lost in the handover between club room and TB room. Named as a best practice by peer sites.
- ▶ **BARCODE STICKER SYSTEM:** NHLS barcode sticker placed on patient card at specimen collection; ART club nurse affixes to ART register as evidence of TUTT completion and to enable culture result tracking at next routine club visit — without active follow-up by TB room nurse.
- ▶ **PHYSICAL ADJACENCY:** ART club room and TB room moved to be physically adjacent — structural change that reduced patient transit drop-off between rooms.

► **HEALTH PROMOTION:** CHW provides TB testing information to club patients while waiting for medication parcels. Enrolled nurse conducts health promotion in TB room.

► **OUTCOME DATA:** Positivity declined from 20% (2023) to approximately 5% (current) — a 15 percentage point reduction.

PARTNER NOTE: RHS — Dalvale Clinic, Drakenstein Sub-District (Rural)

► **SITE CONTEXT:** Rural sub-district; implementation commenced with PLHIV as the first priority group before expanding to other TUTT-eligible groups. Multi-component, phased implementation strategy.

► **WORKFLOW REDESIGN — WHO DOES WHAT:** Enrolled nurses use updated TB screening tool to identify PLHIV for testing before clinical consultation. Each consulting room is equipped with sputum jars, NHLS forms, and specimen bags. ART and TB rooms moved to be physically adjacent, or services integrated through the use of the NIMART nurse in the TB room, where possible. Clinicians retained patient files until sputum collection was completed before pharmacy referral.

► **PLHIV-FIRST PHASING:** Implementation began with PLHIV — specifically annual ART visit as the primary testing entry point — before expanding to TB contacts, children, and other eligible groups. This allowed workflows to be tested and refined before broader rollout.

► **STAKEHOLDER ENGAGEMENT:** Stakeholders engaged across PHC, NGO, and sub-district structures during planning and throughout implementation. Co-creation was explicitly named as a success factor. Ongoing mentorship, coaching, and troubleshooting were provided throughout.

► **DATA AND QI:** SPV and Sinjani data used to identify under-testing and monitor implementation gaps. TUTT monitoring embedded into bi-weekly data reviews and routine governance structures. TB testing QIPs presented at sub-district data sign-off meetings.

► **TRAINING:** All staff trained on TUTT SOP and TB guidelines. PHC nurses and clerks trained on data quality monitoring through monthly folder audits.

► **TOOLS:** TB Case Identification Register; monthly Sinjani reporting tools; NHLS reports for CIR completion; SPV TB-NAAT dashboard; national TUTT, ULAM, PACK, and data governance guidelines.

► **KEY LEARNING:** Adoption progressed more slowly than anticipated at some facilities due to varying operational readiness. Rapid rollout attempts were less effective than gradual adoption supported by ongoing mentorship. Policy endorsement (TUTT Guidelines 2022) did not guarantee adoption — operational support was the decisive factor.