KHUSELA TB EPIDEMIC CONTROL PROJECT

Khusela
WORKING TOGETHER TO OVERCOME TB

MAY - DECEMBER 2023

AQUITY INNOVATIONS

CONTENTS

1. BACKGROUND

AQUITY Innovations, in collaboration with Janssen Pharmaceutica, initiated a pilot campaign named KHUSELA in the Nelson Mandela Bay Metro (Eastern Cape). The KHUSELA project, a TB Epidemic Control Project, focuses on active TB case finding within the community.

1.2 AIM AND OBJECTIVES

The project aims to identify 'missing' TB cases in the community and utilize this data to predict TB risk and transmission patterns in the district using Artificial Intelligence (AI). Specific objectives include:

1. Diagnose and link to care 20% of the 2018 notification rate (n = 2300) through targeted case-finding activities and supportive GP networks in addition to standard care.
2. Estimate the TB positivity rate in the 15 to 24 years age group in South Africa.
3. Understand TB knowledge among 15 to 24-year-olds in high burden communities in NMBM.
4. Explore health-seeking behavior in the 15 to 24-year-old age group.
5. Investigate barriers to TB treatment initiation in adults and children
6. Evaluate the utility of involving private sector General Practitioners (GPs) to support standard TB care.
7. Compare TB case yields from two screening tools (TB symptom screening and digital chest x-ray (DCXR)) based on AI model recommendations and DCXR.
8. Use the AI-based predictive model to estimate population-level TB infection risk disaggregated by age and sex and map high-risk locations.

1.3 PERFORMANCE UPDATES

As of the current date, the Khusela TB Project has screened a total of 17,994 individuals in subdistricts A and C. Among those screened, 8% were presumptive for TB infection, aligning with expectations for a high TB burden area. Of the 1,628 individuals who received a DCXR, 340 (21%) exhibited x-ray findings suggestive of TB, indicating a higher presumptive rate than symptom screening alone.

The efficacy of combining TB symptom screening and DCXR is evident in Figure 1, with a Number Needed to Screen (NNS) of 20 for DCXR and 282 for TB symptom screening alone. Combining both methods resulted in an NNS of 116, underscoring the advantage of this dual approach in community-based TB screening.

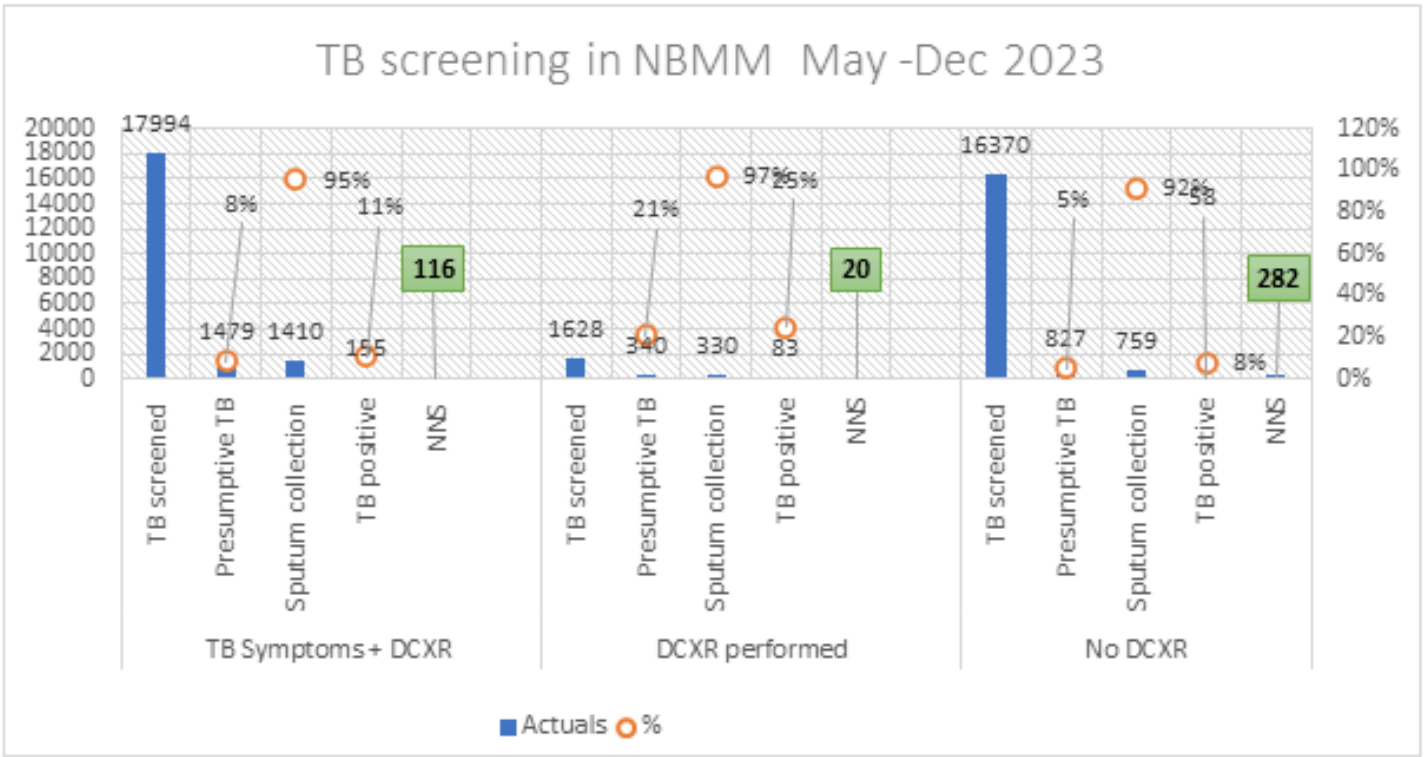
Additionally, 1,410 sputum samples were collected and tested, with 155 (11%) testing positive for Drug-Susceptible TB (DS-TB). Out of these, 141 (91%) clients were successfully initiated on treatment.

Performance indicators for the period from May 2023 to December 2023 are summarized in Table 1. The team operated in Missionvale and Chatty areas during this period, both located in subdistrict C. Missionvale represents an informal settlement, whereas Chatty predominantly consists of formal housing.

TABLE 1: KEY PERFORMANCE INDICATORS: MAY - DEC 2023

	Indicator	April-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Total
1	Number of people screened		550	2446	1830	2986	2546	2923	3347	1366	17994
2	Number of people with presumptive TB		153	143	116	285	272	193	242	75	1479
3	Number of patients screened using DCXR		35	120	145	390	486	219	233	0	1628
4	Number of clients with suggestive DCXR		6	31	27	81	85	62	48	0	340
5	Number of sputa collected		101	129	114	285	272	193	242	74	1410
6	Number of confirmed DS-TB		9	14	6	34	30	30	27	5	155
7	Number initiated on DS-TB treatment		9	13	6	28	28	28	24	5	141
8	Number of initial lost to follow up		0	1	0	6	2	2	3	0	14
9	Number of less than 5 clients initiated on TPT		0	0	6	1	6	2	2	1	18
10	Number of Self-reported PLHIV initiated on TPT		0	0	0	0	0	0	0	0	0

FIGURE 1: TUBERCULOSIS SCREENING IN NELSON MANDELA BAY MUNICIPALITY: MAY TO DECEMBER 2023



1.4 DATA MANAGEMENT

The project employs a combination of paper-based screening and a digital data collection platform known as mHealth. To uphold data quality standards, the Monitoring and Evaluation (M&E) team conducts weekly desktop data validation of mHealth data and monthly systematic sampling for paper screening and mHealth data verification. A specialised data verification tool has been developed to assess data completeness and consistency. Furthermore, a dedicated database has been established to ensure that all reported data undergoes thorough cleaning and is prepared for reporting purposes.
Key data quality challenges identified are summarised in Table 2 below.

TABLE 2. DATA QUALITY CHALLENGES

Data quality issues:	Description
Duplicate data	Data duplication identified in 466 (2.5%) records due to human error as well as clients being tested twice by different healthcare workers
DCXR data incomplete on mHealth	Incomplete capturing of DCXR results on mHealth for 176 (11%) records due to clients presenting at the DCXR up to one month after household symptom screening
Invalid Results	30 (2%) invalid results due to poor quality of sputum produced by clients
Incorrect Age captured	33 (0.1%) of the captured records were incongruous in terms of age captured, date of birth and ID number

1.4. 1 INTERVENTIONS

- Duplicate records and entries with identified discrepancies were systematically removed from the datasets, ensuring data integrity across all reporting periods.
- The Health Care Facility (HCF) Long-Term Evolution (LTE) Report is regularly shared with the Monitoring and Evaluation (M&E) team to guarantee comprehensive capture of all clients who underwent a DCXR, both in the mHealth system and the paper-based screening tool.
- Healthcare workers received specialised training on techniques to assist clients in producing high-quality sputum samples.
- Monthly data assessments are conducted alongside periodic retraining sessions for team members. These efforts are aimed at ensuring the accurate and complete collection and entry of data throughout the project duration.

1.4.2 FACTORS ENSURING DATA QUALITY

- The Monitoring and Evaluation (M&E) team generates a daily mHealth report to promptly identify any data quality issues such as capturing errors, data completeness, consistency, and validity.
- Queries related to data discrepancies are promptly submitted to the field team for correction and resolution.
- Monthly data support and verification visits are conducted by the head office Technical and M&E teams to provide oversight and ensure data accuracy and integrity.

1.5 CHALLENGES

- Daily load-shedding significantly impacts the number of x-rays that can be conducted per day and leads to increased waiting times for x-ray procedures.
- Poor weather conditions discourage clients from waiting for Digital Chest X-rays (DCXRs) to be performed, resulting in a reduction in the number of completed DCXRs.
- Technical challenges associated with the DCXR equipment have led to machine unavailability, resulting in a decrease in the number of completed DCXRs.
- Clients sometimes provide inaccurate or dishonest information about their physical addresses, posing difficulties in tracing and follow-up procedures.
- Unsafe areas within communities, characterised by high crime rates and gangsterism, deter the population residing in these areas from participating in screening programs, thus impacting the overall screening coverage.

1.6 KEY LESSONS

- **Safety Measures:** To address safety concerns, the entire team adopts a systematic approach by focusing on one street at a time, ensuring that no team works in isolation. Each team member is equipped with a personal alarm for emergencies, enhancing overall safety protocols.
- **Community Engagement:** The strategy of being present in the community and providing door-to-door services has proven effective in identifying individuals who may have otherwise been unable to access clinic services. This approach strengthens community ties and improves program reach and inclusivity.

1.7 PLANNED ACTIVITIES FOR NEXT QUARTER

- **CHW Training and Surveys:** Two Community Health Workers (CHWs) will undergo training to conduct a TB knowledge survey targeting individuals aged 15 to 24 years, aiming to complete 300 surveys. The data collection tool will undergo a pilot phase to assess feasibility and usability in the field, with necessary adjustments made for optimal data collection practices.

- **Qualitative Research and Analysis:** An experienced qualitative researcher will oversee the implementation of interviews focusing on health-seeking behavior and initial loss to follow-up cases. This researcher will also be responsible for analyzing the gathered qualitative data, providing valuable insights into client experiences and program effectiveness.

- **Client Advocacy for DCXR Access:** Active advocacy efforts will be undertaken to encourage clients to access Digital Chest X-Rays (DCXRs), aiming to increase the number of completed DCXRs. By emphasizing the importance of diagnostic tools in TB detection and treatment, clients will be more motivated to undergo necessary screenings, contributing to improved case identification and management.

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