

# COMMUNITY BASED COVID-19 TESTING – TOWARDS INCREASED DETECTION

FIND 



MAY - DECEMBER 2023

 **AQUITY**  
INNOVATIONS



Project Title	Community based COVID-19 testing – towards increased detection
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Project Start/End Date	1 September 2021 - 31st May 2022
Reporting Period	Project Close out report

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# 1. PROJECT EXECUTIVE SUMMARY

AQUITY Innovations, a leading public health organisation, specialises in developing innovative models to combat infectious diseases affecting vulnerable communities. The onset of the COVID-19 pandemic presented significant challenges worldwide, particularly in Lower Middle-Income Countries (LMICs) like South Africa, which already grapple with fragile public health systems. Since the pandemic's emergence in South Africa in March 2020, there has been a notable decline in patient access to essential health services. Additionally, COVID-19 testing, a critical component in pandemic management, faced strain as South Africa primarily relied on laborious polymerase chain reaction (PCR) testing, requiring substantial laboratory support. However, the approval of Antigen Rapid Diagnostic Testing (Ag RDT) in South Africa in December 2020 opened doors for more efficient mass testing approaches.

Our project capitalised on the approved Ag RDT to introduce community-based testing targeted at hotspots and enhance contact management strategies. Drawing insights from community-based TB management experiences and recommendations from the South African TB Think Tank, we proposed and implemented an integrated TB/COVID-19 screening and testing strategy. The objectives of our project included:

- Assessing the feasibility of community-based COVID-19 Ag RDT testing.
- Implementing integrated TB/COVID-19 strategies in the Nelson Mandela Metro.
- Mapping TB and COVID-19 hotspots to guide targeted interventions.

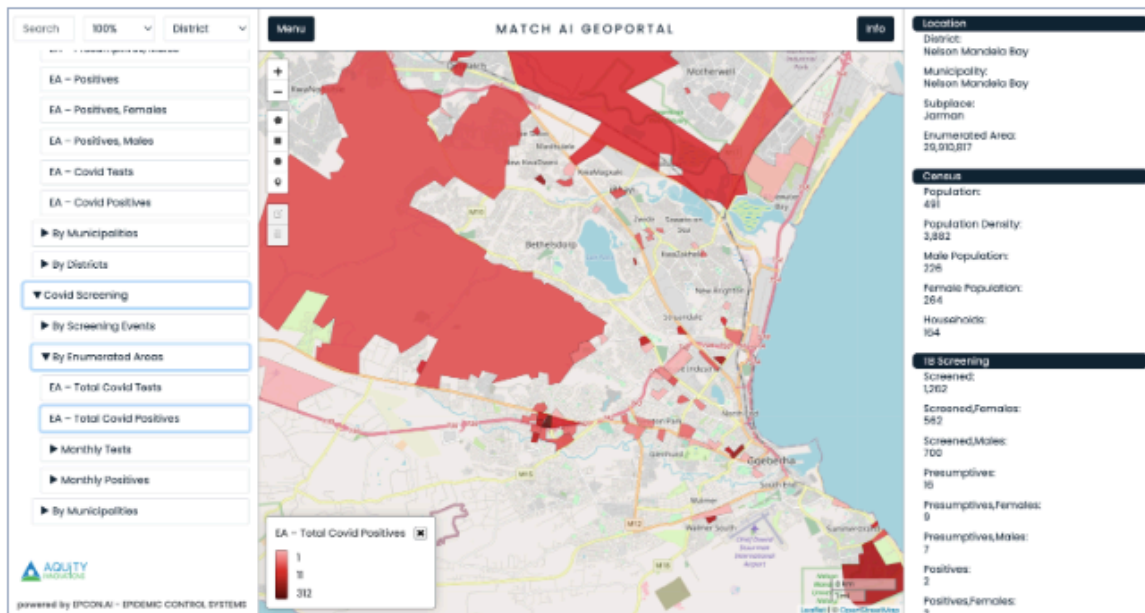
Through extensive stakeholder engagements with the private sector and district health management teams in the intervention district, our project successfully piloted community-based COVID-19 Ag RDT testing and integrated TB/COVID-19 approaches.

During the intervention period, we tested over 19,900 clients for COVID-19, including 2,334 in private General Practitioner facilities, resulting in 1,669 COVID-19 diagnoses. Additionally, we conducted joint screening for TB and COVID-19 for 25,347 clients, including 1,190 presumptive TB patients tested with Genexpert, leading to 122 TB diagnoses and indicating a TB prevalence rate of 481/100,000.

Our project demonstrated the feasibility and effectiveness of community-based testing and an integrated TB/COVID-19 approach. The hotspot mapping exercise significantly aided the district in identifying priority areas for targeted interventions.

The project's success demonstrated the feasibility of implementing community-based testing and an integrated TB/COVID-19 approach. Additionally, the mapping of hotspots provided valuable support to the district in identifying areas for prioritisation. This strategic mapping helped focus resources and interventions where they were most needed, optimising the impact of the project's efforts.

**Image 1. COVID-19 positivity by Enumeration Area**



## 2. BACKGROUND

Since the emergence of COVID-19 in Wuhan, China in 2019, the virus has rapidly spread worldwide, resulting in a cumulative case burden of 552,993,566 cases and 6,349,952 deaths globally as reported by the World Health Organization (WHO) in 2022. South Africa, in particular, bears a significant burden of COVID-19 within Africa, accounting for 34% of all COVID cases and 43% of all COVID-related deaths, as indicated by Karim QA and Baxter C in 2022. To date, South Africa has reported 4,000,884 cases and 102,017 deaths according to the National Institute for Communicable Diseases (NICD) in 2022. The South African Medical Research Council has also reported 324,989 excess deaths since the epidemic began in May 2020.

The COVID-19 pandemic has had a devastating impact on efforts to combat TB and HIV globally, with patients accessing TB treatment dropping by a significant 16%, as highlighted in a report by The Global Fund in 2021. This disruption to health services has resulted in an increase in tuberculosis deaths in Africa, marking the first such rise in more than a decade. Despite progress made in reducing TB cases by 19% in the African region between 2015 and 2020, the pandemic's disruptions have reversed some of these gains, particularly in countries with high TB burdens like South Africa.

In 2020, there were notable decreases in the reporting of new TB infections, including in South Africa, as resources and healthcare personnel were redirected to combat COVID-19. Additionally, COVID-19 lockdowns and regulations further limited access to key health services, including TB diagnosis and treatment.

Key strategies to contain the COVID-19 epidemic include testing, contact management, quarantine, and vaccination. South Africa initially relied on reverse transcriptase-polymerase chain reaction (RT-PCR) testing, with testing capacity reaching 36,000 tests per day. However, the demand for these tests surpassed the capacity of the National Health Laboratory Services (NHLS), leading to dependence on foreign companies for testing materials and kits. To address this challenge, South Africa issued guidelines for the use of antigen testing in December 2020, leading to increased testing accessibility.

## **INTERVENTION RATIONALE**

At the inception of the FIND grant, COVID-19 testing in South Africa primarily took place at the facility level, encompassing both private and public healthcare settings. Testing stations were established at designated locations by private laboratories and the National Health Laboratory Services (NHLS).

The project aimed to draw upon insights gleaned from community-based management of tuberculosis (TB). Similar to TB, the economically disadvantaged population appears to be more susceptible to COVID-19, with unequal spatial planning exacerbating their vulnerability. By offering integrated TB and COVID screening and testing, the project sought to address the treatment and care challenges intensified by the COVID-19 pandemic.

The Nelson Mandela Bay Municipality was chosen as the pilot area for integrated community TB/COVID-19 testing. It is among the districts in South Africa burdened by high TB and HIV rates, housing a population of 1.26 million across 368,518 households. The district also grapples with a substantial portion of economically inactive individuals and rampant unemployment. Access to healthcare, already a challenge, has been further strained by the COVID-19 pandemic. Given this context, the district is highly vulnerable to elevated COVID-19 transmission rates, and any testing gaps could result in underreporting and underestimation of the true pandemic burden.

## **3. THE PROJECT, OBJECTIVES, STRATEGIES, AND ACTIVITIES**

### **3.1 OBJECTIVES**

The Project sought to integrate testing for COVID-19 and TB simultaneously, as an approach to improve the detection of both diseases and optimise the use of testing resources in community settings. The Project objectives were:

1. Conduct rapid TB/COVID screening and testing to the communities of Nelson Mandela Bay Metropolitan (NMBM)
2. Improve early referral to hospitals/CHC's for clients who test TB and COVID positive and have severe symptoms.
3. Map COVID-19 and TB hotspots in Nelson Mandela Metro

### **3.2 STRATEGIES**

The major overarching strategies of the Project included:

- Supporting the district capacity to roll out an integrated COVID-19 and TB case-finding intervention including systems.
- Adopting community based strategies, leveraging on existing opportunities, structures as well as fostering collaborations.
- Using online data systems and ensure constant reporting to the district.
- Integrating equity and gender across all strategies
- Improving knowledge management.

## 3.3 ACTIVITIES

**TABLE 1: PROJECT ACTIVITIES PROVIDED**

<b>OBJECTIVE #</b>	<b>ACTIVITIES</b>
<p><b>Objective 1</b></p>	<p>Working collaboratively with District health teams, the National Health Laboratory team (NHLS), private practitioners, and various community structures, the Project team conducted community screening and testing guided by several key principles:</p> <ul style="list-style-type: none"> <li>• Prioritising areas with reported COVID cases to trace their contacts as needed.</li> <li>• Identifying and prioritising communities with higher levels of social vulnerability.</li> <li>• Engaging with patients seeking care at private practitioners' practices.</li> <li>• Adhering to guidance or requests from the District management team.</li> </ul> <p>Under the guidance of the District management team, screening and testing sites were strategically established at diverse locations, including universities, schools, shopping malls, churches, parking lots outside clinics, homes, sports grounds, and other public places identified as crucial hubs within the community.</p>
<p><b>Objective 2</b></p>	<ul style="list-style-type: none"> <li>• The Project team spearheaded initiatives to enhance linkage to care for further evaluation:</li> <li>• Patients who tested positive for TB received thorough follow-up via telephone calls and were promptly directed to the nearest clinic for further evaluation and treatment.</li> <li>• Similarly, individuals who tested positive for COVID-19 were provided with guidance on disease management and instructed on implementing infection control measures among their contacts.</li> <li>• Furthermore, all patients attended to by the project team received counsel on COVID-19 vaccination, including information regarding vaccination sites and how to access them.</li> </ul>
<p><b>Cross cutting – Data management and reporting</b></p>	<ul style="list-style-type: none"> <li>• In addition to the aforementioned activities, the Project Monitoring and Evaluation (M&amp;E) Team implemented measures to uphold good data management practices, utilisation, and reporting.</li> <li>• All TB/COVID-19 screening and testing outcomes were promptly recorded daily in both the AQUITY real-time database (utilising the mHealth platform via mobile phones) and the NHLS/NICD system using the NHLS Laboratory Information System (TrakCare systems) within 48 hours following the test administration.</li> <li>• Furthermore, the M&amp;E Team conducted weekly and monthly data analyses to gain insights into the progression of the epidemic, facilitating informed decision-making for enhanced planning and continuous improvement.</li> </ul>

# 4. PROJECT IMPLEMENTATION DETAILS

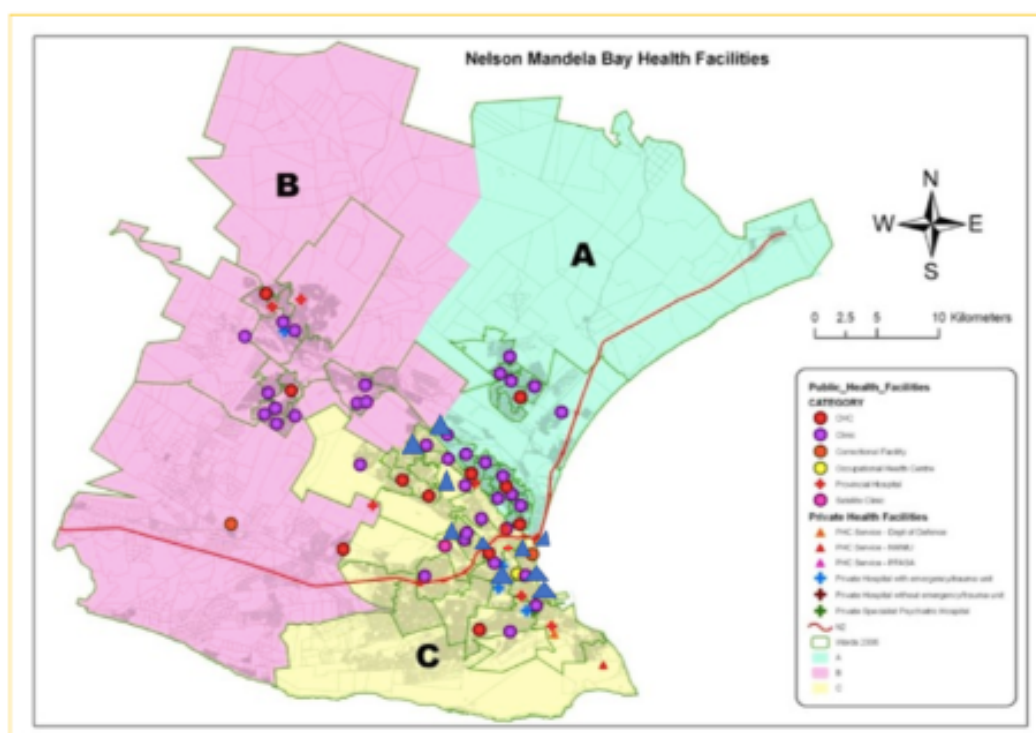
## 4.1 PROJECT TIMELINE

Following the contract signing in August 2021, the Project directed its efforts towards the design, preparation, and procurement phase throughout August to September 2021. From October 2021 to May 2022, the Project executed various phase activities, including screening, testing, Monitoring and Evaluation (M&E), supervision, and reporting. During April to May 2022, the Project's focus shifted towards institutionalisation and capacity building efforts aimed at ensuring district continuity. In May 2022, the Project concluded all its activities. Additionally, the Project actively sought opportunities to share its performance, identify gaps, and disseminate lessons learned through engagement with District Health Management meetings.

## 4.2 GEOGRAPHICAL COVERAGE

The Project worked largely at community setting, as well as supporting the 3 contracted Private Practitioners in the 3 Sub- districts) (Sub-district A, Sub-district B and Sub-district C) in Nelson Mandela Bay Metro District, Eastern Cape Province, South Africa.

Figure 1: The NMBM district has 3 district sub-divided to Sub-district A, B & C.



## 4.3 TECHNICAL ASSISTANCE PARTNERS

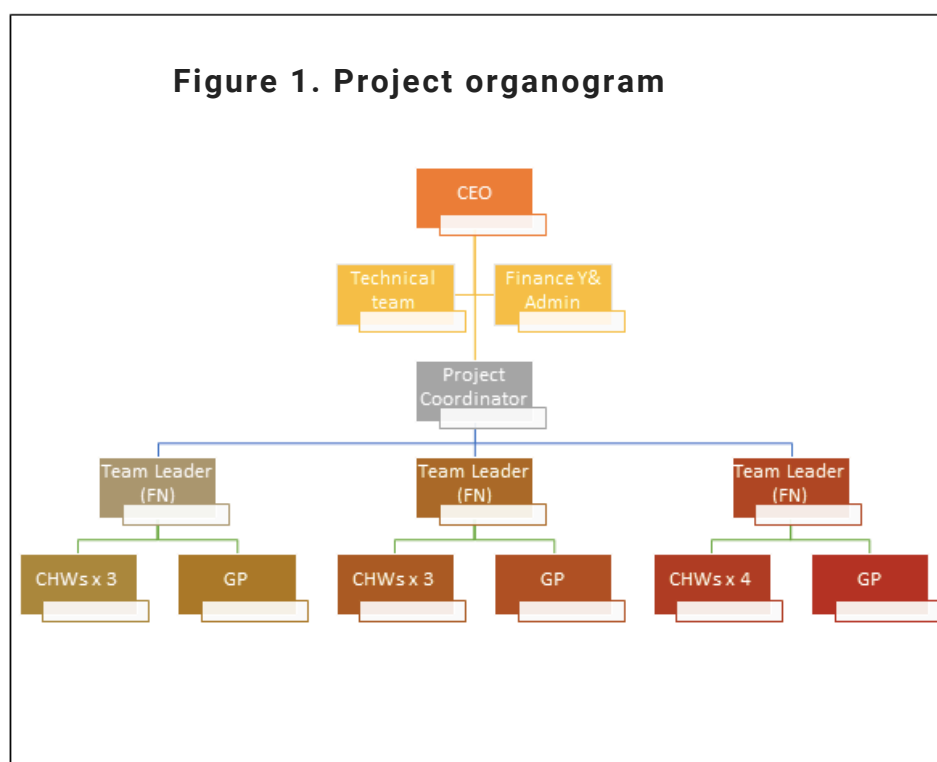
AQUNITY Project Team subcontracted EPCON to assist with the online database development on mHealth platform, generating maps and dashboard to assist teams with planning, monitoring, and managing the project. EPCON is a European-South African health technology company that uses Artificial Intelligence to quantify health risks in specific regions and population groups as well as on individual patient.

## 4.4 COORDINATION AND COLLABORATION

AQUNITY built relationships and worked regularly with a District/Sub-District Health Teams (Program and Information Managers), National Health Laboratory Services (NHLS) Teams, implementing partners (Beyond Zero), contracted Private Practitioners and other nongovernmental organisations.

## 4.5 PROJECT MANAGEMENT

The project staffing was structured into Technical (Program & M&E) and Operations team Program Manager, Nurse, Enrolled Nurse, Community Health Workers, and Data Capturer). A Management team comprising the CEO and Directors (Health, M&E and Finance) met regularly to review progress and guide program implementation as required. The Technical and Operation Team also held meetings weekly; the Operational team met weekly, and the Team staff met daily. The Project team had several mechanisms and tools for communication and sharing information - (i.e. emails, MS-Teams, telephone calls, mHealth and WhatsApp).



## 4.4 PROJECT MONITORING AND EVALUATION

The Project team developed a Project Monitoring Framework designed to measure indicators across the Project, which was based on the existing DOH monitoring framework, tools, and indicators. The Project also developed database on mHealth on platform for data collection and reporting, to capture process and output-level data.

## 5. SUMMARY OF RESULTS

### 5.1 QUALITATIVE RESULTS

Table 2: Progress activity update including achievement, August 2021- June 2022

Activities	Status	Plan date	Actual date	% Of activity completed	Partners & Stakeholders	Deliverables	
<b>Project design and preparation</b>							
1	Contract signed with FIND and partners	Achieved	Jul 2021	Jul 2021	100%	FIND	<ul style="list-style-type: none"> <li>All relevant contracts were signed with FIND &amp; Epcon</li> </ul>
2	MOU signing with District	Achieved	Aug 2021	Aug 2021	100%	NMBM District	<ul style="list-style-type: none"> <li>A reviewed MOU signed with updated addendum</li> </ul>
3	Onsite project introduction and buy-in from stakeholders.	Achieved	Aug 2021	Aug 2021	100%	NMBM District & Sub-district	<ul style="list-style-type: none"> <li>The project was introduced to the District Management Team and to NHLS</li> <li>Since then several meetings were made with 1) Subdistrict Coordinator and Outreach Teams to understand tracing of index patients and contacts allocation, testing and data capturing; 2) Sub-district Information Officers to discuss data tools, systems, data management alignment, exchange of data and reporting; 3) District Lab Coordinators to understanding the use of covid-19 antigen testing and reporting of the results.</li> <li>The District Manager welcomed the project and assigned the PHC Coordinator and Lab Coordinator to work with the Project Coordinator, and Project team Leaders to work with the Subdistrict Outreach Teams Coordinators.</li> </ul>

4	Identify, recruit, contract, orientation and allocate key staff	Achieved	Aug 2021	Aug 2021	100%	EPCON & GPs	<ul style="list-style-type: none"> <li>1 Project Lead, 3 Professional Nurses as Team Leaders, 3 Enrolled nurses, 1 Data Officer, 1 Patient Linkage Officer and 9 CHW'S were, recruited following advertising of the positions</li> <li>Allocation of the 3 Project Teams for Practical training to the DOH Out -reach teams and NHLS to conduct screening, testing, and recording.</li> <li>3 Project Teams were allocated to cover the 3 Subdistricts of NMBM districts and 3 Private GP. Each Team was led by a Professional Nurse, 1 Enrolled Nurse and 3 CHW's.</li> </ul>
5	Procure equipment & design plan for logistics (PPE, oximeter, thermometer, cooler box, containers, tablets, laptops, phones, chairs, gazebos, etc.	Achieved	Aug 2021	Aug 2021	100%	Various Providers	<ul style="list-style-type: none"> <li>5 laptops,</li> <li>13 phones,</li> <li>100 oximeters,</li> <li>And 20 Thermometers were procured</li> </ul>

Project activities implementation							
6	Train and mentor of all project staff (Nurses, CHWs, GPs, Data/Program Officer, etc.) on use of Ag RDT test, waste management, Infection control, Data management and other SOPs.	Achieved	Sep 2021	Sep 2021	100%	NHLS	<ul style="list-style-type: none"> <li>Project trained 3 Team Leaders, 3 Enrolled nurses, 10 CHWs, 1 Data Officer and 3 DOH Subdistrict Out- Reach Team Coordinators. Total trained is 20.</li> <li>Topics covered: Covid-19 (infection &amp; prevention, screening &amp; testing, Ag RDT testing &amp; demonstration, current updates &amp; DOH plans; M&amp;E (indicators, targets, data tools, mHealth &amp; NHLS data management &amp; reporting)</li> </ul>
7	Community contact tracing, screening, testing and support to patients	Achieved	Sep 2021	May 2022	100%		<ul style="list-style-type: none"> <li>The project screened a total of 25 347 clients for both TB &amp; Covid-19 symptoms, 15 909 were tested for covid-19 using antigen test, 1669 tested positive for covid-19 and we referred for isolation. 1190 clients had a sputum collected, 122 tested positive for TB &amp; they were referred for treatment in their local clinic.</li> </ul>

8	Weekly quality assurance and supportive supervision on Ag RDT testing (observations, data review, mentorship etc.)	Achieved	Sep 2021	May 2022	100%		<ul style="list-style-type: none"> <li>The project manager conducted weekly support visit to all teams on the ground.</li> <li>M &amp; E team conducted bi-weekly data completeness &amp; accuracy check to ensure there is no duplication of data, falsification or altering without sound documentation.</li> </ul>
9	Data tools, daily recording, capturing, verification, DQAs and data management.	Achieved	Sep 2021	Sep 2021	100%	NHLS	<ul style="list-style-type: none"> <li>Project developed integrated TB/covid-19 screening tool, Ag RDT logbook and adopted some other tools (TB ID Registers, Linkage, Lab registers etc.) to be used.</li> <li>The project Team staff collected data and capture its data daily on mHealth and NHLS system</li> </ul>
10	Development, installation of digital data tools and enrolment of patients into mHealth systems.	Achieved	Aug 2021	Oct 2021	100%	EPCON	<ul style="list-style-type: none"> <li>Functional Database</li> </ul>

11	Conducting surveys (patient follow up, satisfaction and providers).	No done	Jan 2022		10%	Patients	<ul style="list-style-type: none"> <li>Patients' satisfaction reports or patient case studies.</li> <li>Challenges in accessing patients or lack of responses among patients received the services.</li> </ul>
12	Develop/Strengthen and implement community based advocacy strategies (e.g. radio slot etc.)	Achieved	Sep 2021	Sep 2021	100%	NMBM District	<ul style="list-style-type: none"> <li>Project manager worked close with DOH Health promoter to create demand, get public buy-in and do health education for covid-19, antigen testing and TB</li> </ul>
13	Printing of materials (training, SOPs, IEC),	Achieved	Sep 2021	Sep 2021	100%	Printers	<ul style="list-style-type: none"> <li>Printed project training material and data tools (integrated TB/covid-19, Ag -RDT logbook)</li> </ul>

14	Analysis of Ag-RDT performance indicators, test uptake, sharing data & using data for outbreak detection, investigation, management, prevention, and surveillance	Achieved	Sep 2021	May 2022	100%	NMBM District	<ul style="list-style-type: none"> <li>The key finding was shared in the stakeholders meeting held on the 30<sup>th</sup> of June.</li> <li>Final report was shared with District manager &amp; NHLS</li> <li>Project review meeting was conducted on the 17<sup>th</sup> of May to share progress of the project and find strategies to improve the project.</li> </ul>
15	Documenting best practices and scaling up	In progress	Jan 2022	On-going	100%		<ul style="list-style-type: none"> <li>The project has submitted an abstract to union 2022 conference which was accepted for presentation.</li> </ul>

16	Project management, monitoring and reporting/feedback to all stakeholders (DOH, FIND, NHLS etc.)	Achieved	Sep 2021	On-going	100%	NMBM District, NHLS	<ul style="list-style-type: none"> <li>Stakeholder meeting was held on the 30 of June 2022 to give feedback to the district and partners about the community based integrated covid-19 &amp; TB project.</li> <li>Monthly feedback meeting to the District Management Teams about the progress of implementation.</li> </ul>
17	Close-out report	Achieved	July 2022	July 2022	100%	NMBM FIND	<ul style="list-style-type: none"> <li>Close-out report completed and shared.</li> </ul>

## 5.2 QUANTITATIVE RESULTS

The AQUITY Project exceeded the targets for the individuals tested for COVID-19 using antigen testing (Ag RDT):

- Performance Indicator:** Total number of people tested for COVID-19 is 15 909 (110%) against the 9 months target of 14 400.

## 5.3 SUMMARY OF PERFORMANCE:

Key indicators		Baseline (If applicable)	Quarterly Target	Sep 2021	Q1	Q2	Q3	Total
1	Total # of individuals/covid-19 contacts screened			*	8126	8166	9055	25347
<b>COVID -19 screening and testing using Ag RD</b>								
2	# of individuals screened for covid-19 symptoms			*	8126	8166	9055	25347
3	# of individuals with positive covid-19 symptoms			*	3704	4004	4074	11782
4	# of individuals tested for COVID-19 using Ag RDT		4800	*	5396	4810	5703	15909
5	# of individuals tested COVID-19 positive with Ag RDT			*	652	406	611	1669
<b>TB screening and testing among the individuals tested for COVID-19 or COVID-19 contacts</b>								

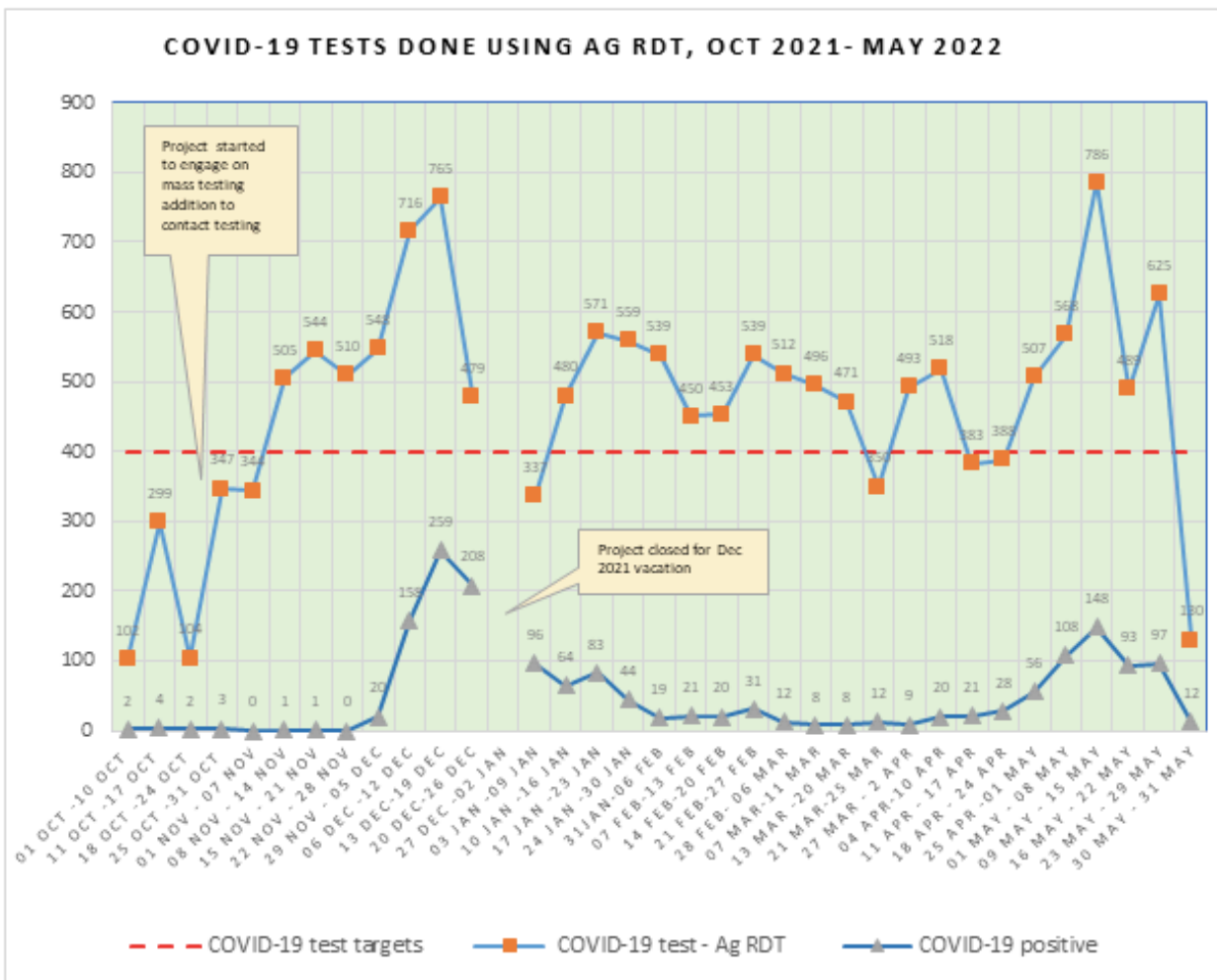
7	# of individuals/covid contacts screened for TB			*	8126	8166	9055	25347
8	# of individuals with presumptive TB			*	463	211	516	1190
9	# of presumptive TB with sputum collected			*	463	211	516	1190
10	# of individuals with sputum TB positive results			*	17	52	53	122
11	# of individuals tested TB sputum positive referred for treatment			*	17	52	53	122

Tests per type of testing centres								
12	# Of individuals tested for COVID-19 using Ag RDT at Private Clinic/GP setting			*	788	761	785	2334
13	# Of individuals tested for COVID-19 using Ag RDT at community setting			*	4499	4130	4846	13475
Please detail any changes to the scope of work for this activity, including specific targets and outcome measures:		During January 2022, the team moved away from contact tracing to focus on mass screening & testing (testing in the malls, sport events, Health facility entrance, social events, old age homes & schools).						

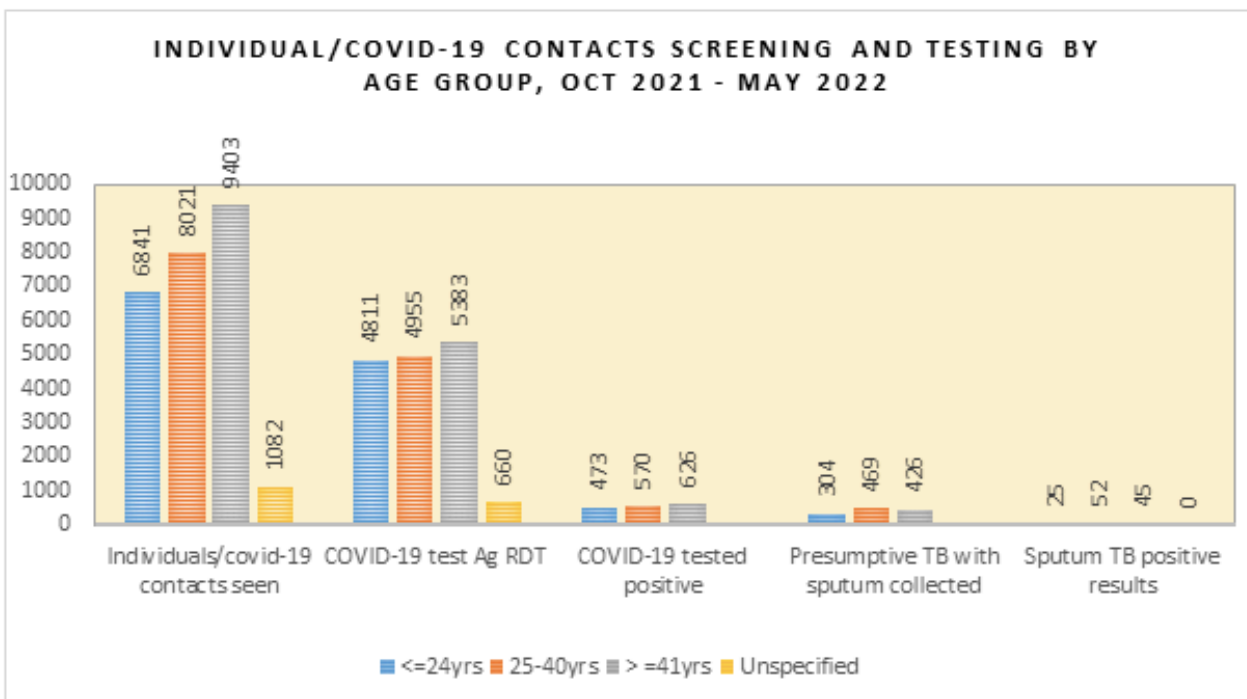
- Since October 2021 to 31 May 2022, 25 347 individuals were screened for TB and COVID-19 symptoms. 15 909 clients against the target of 14 400 (110%) were tested for COVID-19 using Ag RDT, 1669 (100%) sputum among TB presumptive were collected.
- 13 475 (85%) screenings were conducted from community outreach settings.
- Of the patients tested, 7901 (50%) were males, 7338 (46%) were females and 570 (4%) were unspecified or missed during data collection.
- The age ( $\leq$  24yrs ) accounted for 4 811 (30%) of clients tested, age (25-40yrs ) made of 4 955 (31%) of clients tested,  $\geq$  41yrs accounted for 5 383 (33%) and (n = 660) 4% of those tested were unspecified or missed the age indicator during data collection .
- The unvaccinated group accounted for 61% (n = 9 674) of those tested.
- 1 669 out of 15 909 (10%) patients tested positive for covid-19 and 122 (10% of presumptive TB) patients tested positive for TB.

Highlights of the Project results are presented below, and more details are available in data annexure

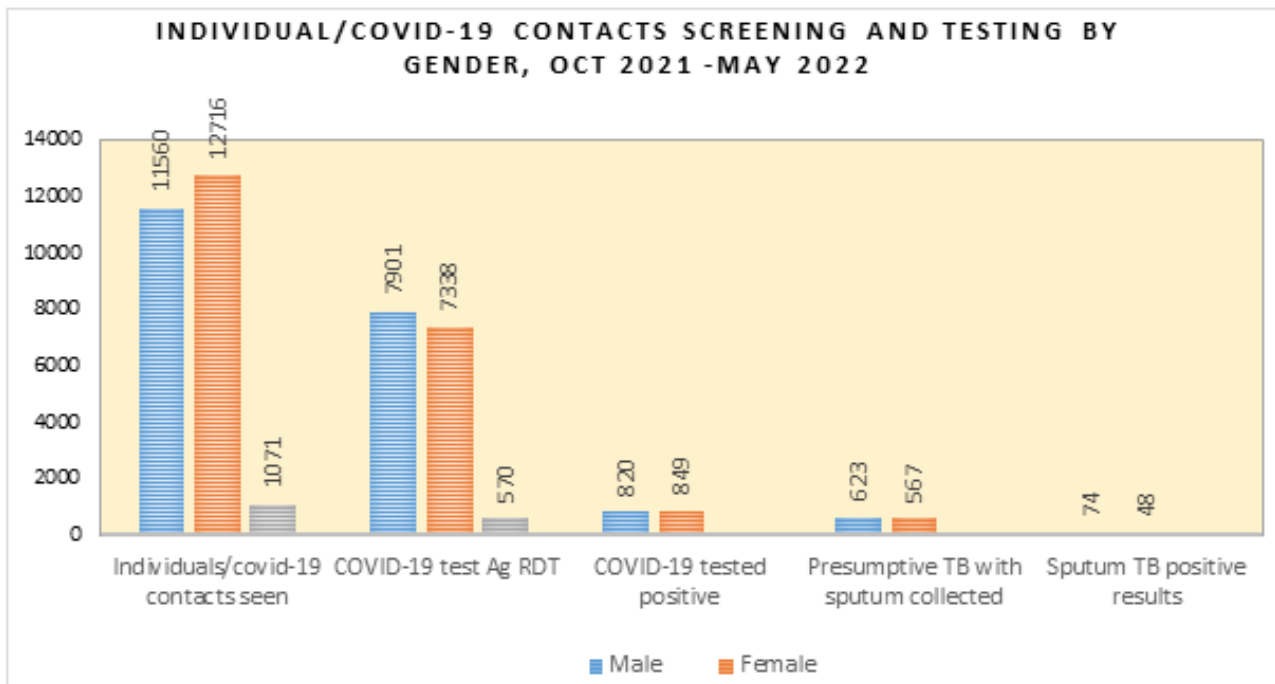
**Figure 2. Performance trends - Covid-19 tests done using Ag RDT  
Oct 2021- 31 May 2022**



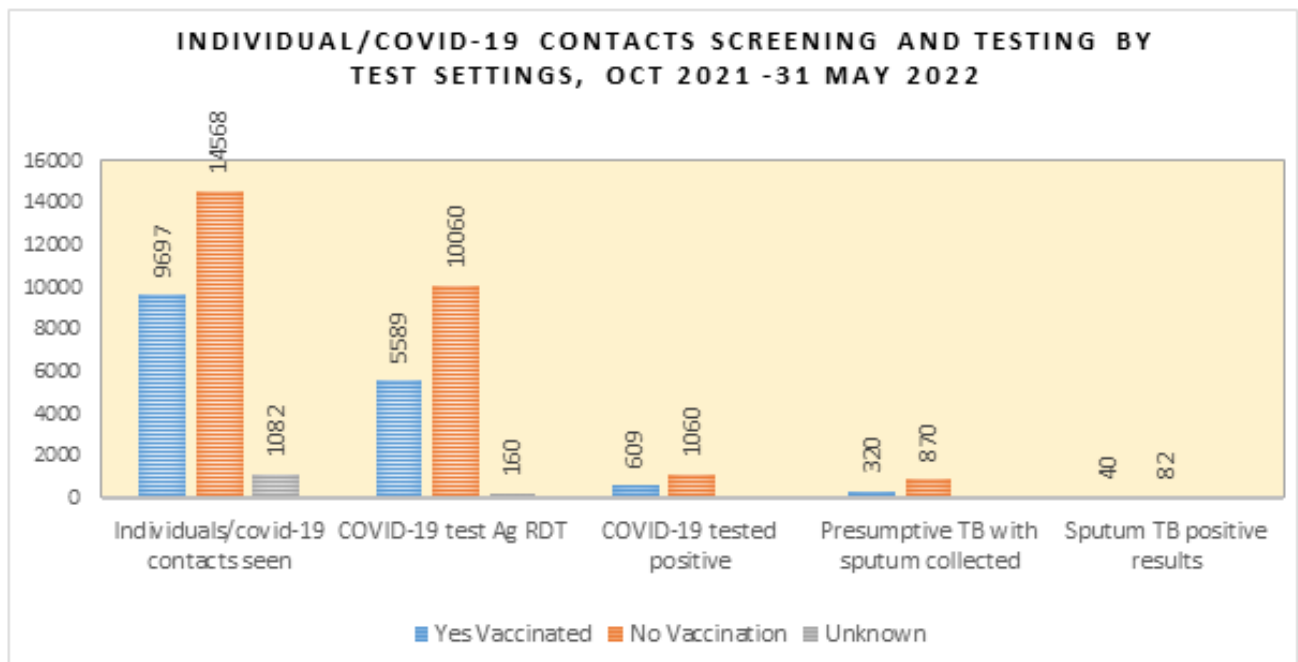
**Figure:3 - Individual/covid-19 contacts screening and testing by age group, Oct -2021- May 2022**



**Figure 4 Individual/covid-19 contacts screening and testing by gender, Oct 2021 - May 2022**



**Figure:5 - Individual/covid-19 contacts screening and testing by test settings, Oct 2021- May 2022**

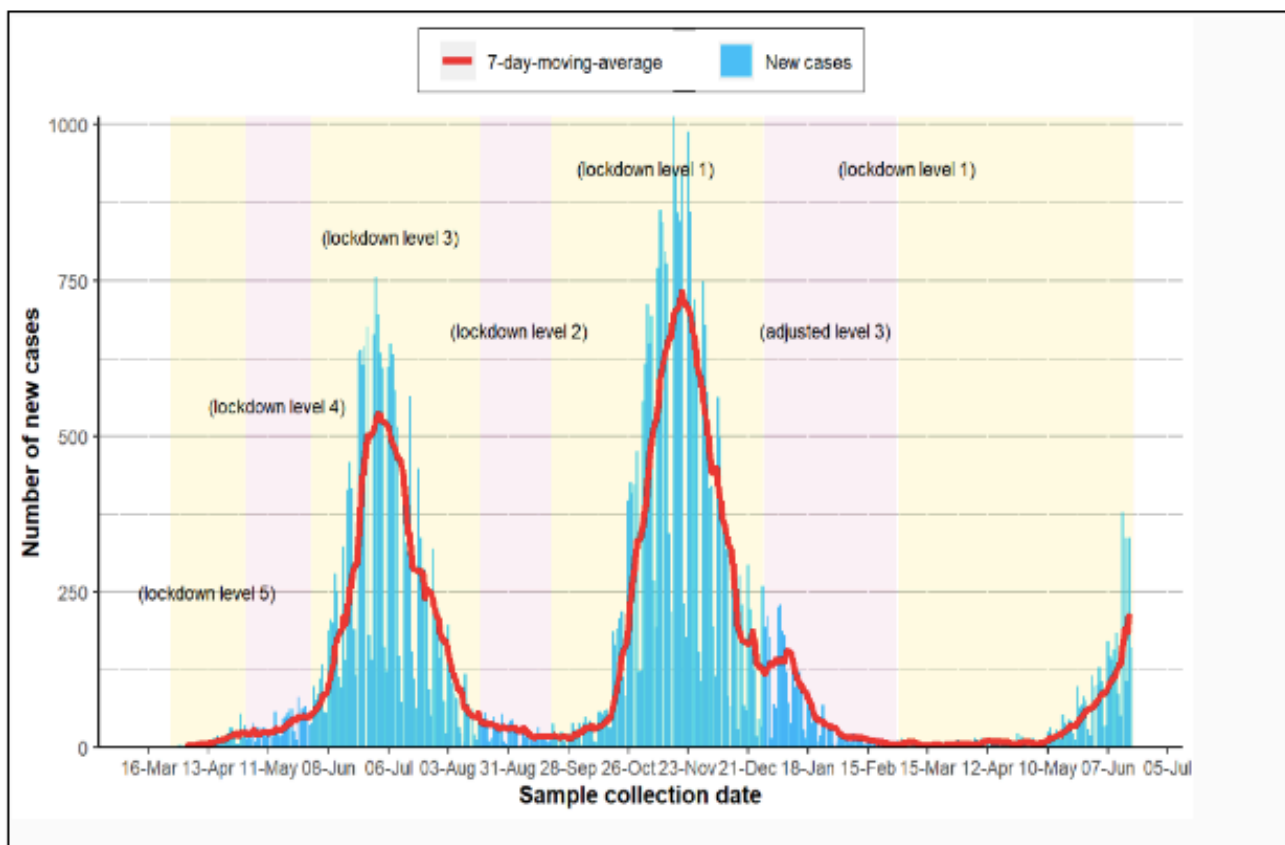


We have demonstrated that it is feasible to conduct integrated community based TB/COVID screening and testing in high prevalence areas in Nelson Mandela Metro. The project sought buy in from the District Health Management Team (DHMT) to ensure the district understood the strategy the project sought to undertake, including the implications for the district. While the district was testing a specific location, the AQUITY team used addresses generated by the district to primarily conduct contact management, and later used hot spots to direct community COVID-19 testing. Data collected by the project was also fed into the district reporting database so it could be included in the national prevalence figures.

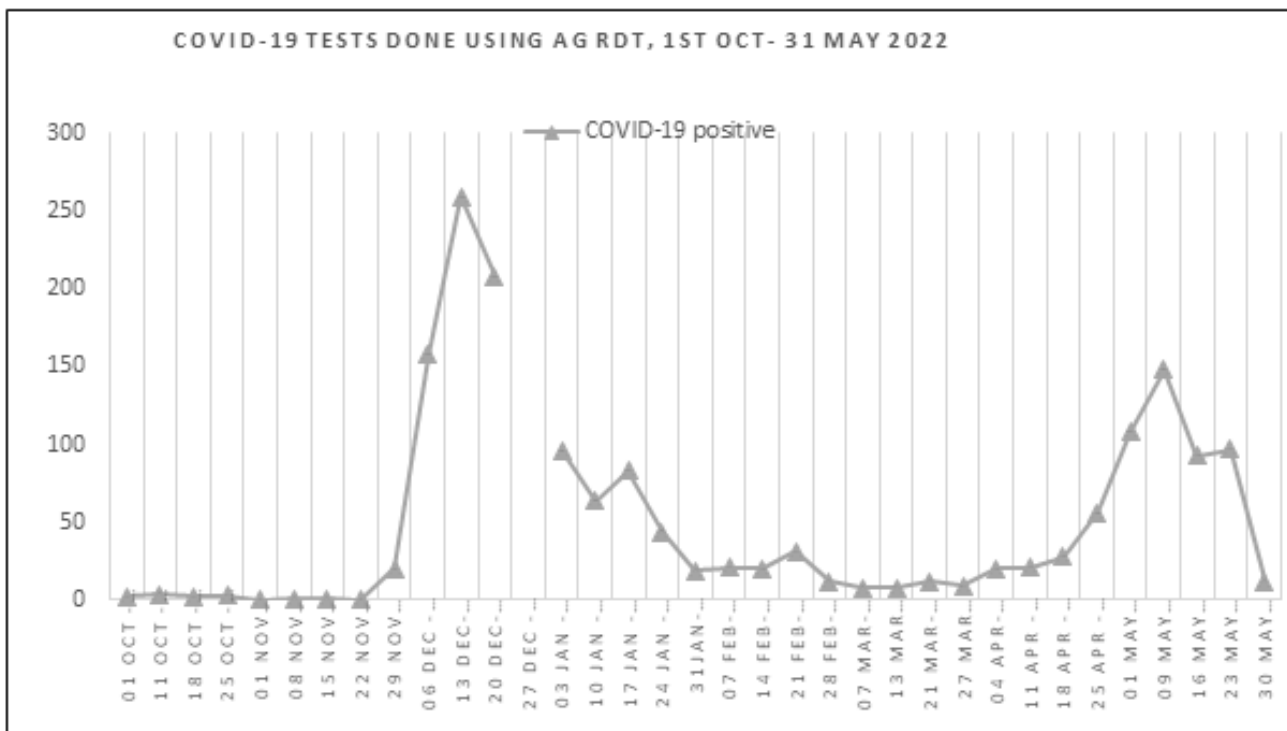
Feasibility was measured by uptake of Ag RD testing with testing increasing from 102 clients in the first week of project inception, to over 347 clients by the end of the first month. The project subsequently was able to exceed weekly testing target of 400 people. This was leveraged by engagement of general practitioners (GPs) who also provided testing in their practices, which are located within the communities. Tested patients were thus able to be referred for management, including advise on quarantine for those eligible.

The epidemic curve of clients tested through the project mirrored results reported by the district as illustrated by the image below.

**Image 5. Epidemic curve showing the 7-day-moving average of new cases in Nelson Mandela Bay Metro**



**Image 2. Epidemic curve showing positive clients tested by AQUITY**



Nationally the average number of patients identified in the peak between May and July 2021, and October to January 2022 were approximately the same. One could potentially infer the impact of community based testing in Nelson Mandela Metro, as the peak was higher during the project intervention.

The uptake of integrated TB/COVID-19 screening was also high, with 100% of all COVID-19 screened for TB. Presumption rates were very high, though with highly variable positivity rates. By the end of the project, the prevalence of TB was 481/100 000, which is very high suggesting that it is meaningful to provide integrated TB/COVID-19 services.

An analysis of variables associated with a positive Ag RD testing was also conducted with results illustrated below.

**Table 4: Characteristics clients tested positive covid-19**

	Variable	Variable in details	N	%
1	Gender	Male	855	50.9%
		Female	826	49.1%
2	Age group	<=15 yrs	165	9.8%
		16-24 yrs	292	17.4%
		25-35 yrs	409	24.3%
		36-49 yrs	437	26.0%
		50+ years	354	21.1%
		3	Occupation	Employed
Student	304	18.1%		
Unemployed	466	27.7%		
4	Clients request to be tested	No	987	58.7%
		Yes	694	41.3%
5	Have been a covid-19 contact	No	833	49.6%
		Yes	343	20.4%
6	Have been taking care of covid patient	No	1640	97.6%
		Yes	41	2.4%
7	Vaccinated for covid (self-reported)	No	1072	63.8%
		Yes	609	36.2%

8	Covid symptoms prior testing	Cough	3	0.2%
		High fever >38°C	2	0.1%
		Running nose / blocked nose	3	0.2%
		Loss of smell or taste	1	0.1%
		Sore throat	3	0.2%
		Headache	694	41.3%
		Body aches and pains	1	0.1%
		Diarrhoea	101	8.0%
		Chills	135	8.0%
		Shortness of breath	117	8.0%
		9	Pre-existing medical conditions (self-reported)	Anaemia
Arthritis	1			0.1%
Asthma	11			0.7%
Arthritis	1			0.1%
Cardiac and Hypertension	4			0.2%
Cholesterol	3			0.2%
Depression	1			0.1%
Diabetic	35			2.1%
Hypertension	41			2.4%
Sinus	2			0.1%
Thyroid	1			0.1%
10	Referred or linked to care	Hospital	3	0.2%

While age, gender and employment status seem to mirror what has been observed in most countries implementing aggressive COVID-19 testing, there are some observations that warrant further investigation. Clients with headaches had the most positive tests (compared to cough, fever and sore throat). Pre-existing conditions that had the most association with a positive result were patients with Diabetes, and Hypertension. Interesting, clients who self-referred for COVID-19 testing were also more likely to have a positive result.

A meta-analysis of these observations should be conducted to better define future community-based interventions.

## 6.PROJECT DATA QUALITY

**Table 4: Data issues experienced:**

<b>Data quality issues:</b>	<u>Description</u>
<b>Inaccurate, inconsistency and duplicate data</b>	Through our weekly data verification and monthly data reviews, the Project noted some inaccuracies and inconsistencies (<4%) in data capturing (e.g. incorrect ID number or missing some demographics) and potential data duplication (2%) due to human capturing errors as well as patients opting to be tested twice by different health care workers.
<b>Backlog in capturing on the NHLS system</b>	Limited access to online NHLS system to capture both positive and negative test results. During October to Dec 2022, the Project had one user access code and was testing over 500 patients a day which created a backlog as the systems also depends on other factors such as network. Towards February 2022, the Project managed to negotiate for 3 other team members to get access to the system to capture and address the backlog which was cleared by the end of May 2022.

### Interventions undertaken to resolve the data quality issues

- All identified records with duplicates and discrepancies were removed from the datasets and excluded from all reporting periods.
- During the reporting period, The Project team engaged on the task of reviewing all screening registers and updated the missing information in both the registers and mHealth according to the available source documents.
- Monthly data assessments and re-training of the team members.

### The success factors to ensure data quality include:

- Several measures in place to ensure data quality, The M&E team generating mHealth data report daily to identify any data quality issues in capturing errors, data completeness, consistency and validity. All the queries are then submitted to the Program Manager & Team on the ground daily for correction.
- The Program Manager meeting with the team weekly to debrief and address any challenges the team is facing regarding data collections and data quality. In addition, the project introduced a WhatsApp group for all project staff to ensure daily interactions on data quality challenges and support required.
- Head office Technical and M&E team conducting monthly data support and verification visits.

## **7. OVERALL PROJECT CHALLENGES AND LESSONS LEARNED**

### **7.1 PROJECT CHALLENGES**

Critical challenges the project faced during the project implementation include:

- Less covid contacts to follow up for screening due to low covid positivity rate in the district.
- The reluctance and resistance from community members to accept covid test using Ag RDT.
- Staff shortage from health facilities due to termination of contracts of the staff appointed for COVID-19 Pandemic. The Project staff were then requested by the district to assist health facilities with covid testing which has altered the project scope of work slightly.
- Clients not fully trust the antigen test and opted for re-testing with two different teams which ended up creating data duplication. This had potential to create duplication of data to some extent

**Table 5: Project lessons learned**

Project Successes	Detailed Description
<p>The project was the first project to create demand for use of AG RDT targeting the community and health workers.</p>	<ul style="list-style-type: none"> <li>• There was poor knowledge &amp; negative attitude towards Ag RDT. The guidelines were not clear in some facilities.</li> <li>• The project team provided capacity building (onsite training &amp; mentoring) of public health facility staff &amp; WBOT teams (n=15) and other stakeholders (=5) There was poor knowledge &amp; negative attitude towards Ag RDT. The guidelines were not clear in some facilities.</li> <li>• Acceptance of Ag-RDT by community was achieved by education and explaining the benefits of getting results immediately.</li> <li>• The Project became popular and received requests from Private sector, schools, and other government departments</li> </ul>
<p>Contribution towards strengthening M&amp;E systems</p>	<ul style="list-style-type: none"> <li>• Project developed TB/COVID-19 screening algorithm and tools which have been adopted by the district</li> </ul>
<p>As the pandemic regulations evolved, the project had to change its approach in ensuring optimised case detection.</p>	<ul style="list-style-type: none"> <li>• When planning for future projects, there should be flexibility to adjust to the local request and accommodate other approaches as health facilities were overwhelmed due to staff challenges and could not accommodate clients who requested testing.</li> </ul>
<p>Achieving project targets</p>	<ul style="list-style-type: none"> <li>• The project increased COVID-19 testing in the community and identified a significant number of TB Cases.</li> </ul>
<p>Adopted a collaborative shared leadership and team approach</p>	<ul style="list-style-type: none"> <li>• Teamwork and promoting regular communication among the Team members have improve daily workplan schedule.</li> </ul>

<p>Responsiveness to the district/sub-district authorities or priorities</p>	<ul style="list-style-type: none"> <li>• Flexibility of the team, weekly schedule including ability to work extended hours &amp; weekends allow the project to respond to district urgent requests as well as meeting its targets.</li> </ul>
<p>Improved patient/contact tracing and follow up.</p>	<ul style="list-style-type: none"> <li>• Project team engaged and created good relations with workplace and schools which has made the process easier to conduct follow up or contact tracing.</li> </ul>

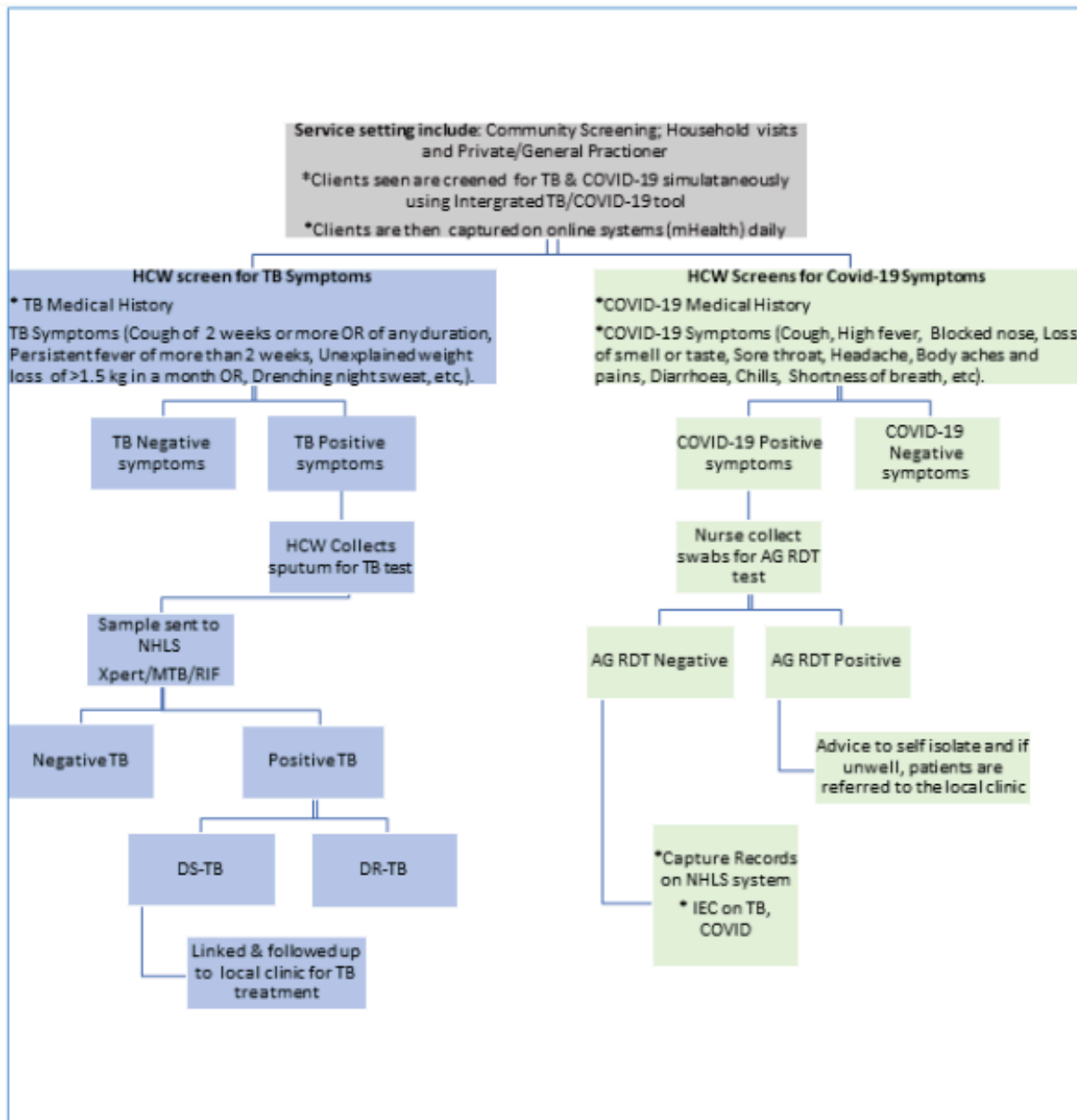
## 8. CONCLUSION

The Project was successful and contributed immensely towards early detection of diseases (TB and Covid), followed by early intervention and treatment to improve patient outcome including controlling the disease to the NMBM district. The integrated approach to TB/COVID-19 testing was built on existing TB and covid programme and systems, and successfully implemented through a stakeholder (NHLS) collaboration backed by a strong commitment at the district a sub-district level. Our results show that increased integration of TB and COVID-19-related activities and adaptations can limit the impact of the COVID-19 pandemic on TB notification. The documents and tools developed by the Project can serve as useful resources for NMBM district for improving integrated TB and covid screening and testing services.

## 9. PROJECT ARCHIVES AND EQUIPMENT

	Project archives	Location	How can it be used
1	Integrated TB/covid-19 screening tool	AQUITY Office and District	Adopted and in use by the district.
2	Integrated TB/covid-19 screening algorithm	AQUITY Office and District	Adopted and in use by the district
3	mHealth system	AQUITY Office	Systems available for further use or modified
4	Project data	AQUITY Office All project paper data is stored in the access control room and all the data from mHealth will be stored on the Aquity data server. The data is available for audit and will be kept safely and destroyed after 7 years.	The data is available for audit and will be kept safely and destroyed after 7 years.
5	Covid Antigen Test kits	District Office	Handed over to the district for use
6	Equipment (Laptop and phone)	AQUITY	To be used in other non-funded AQUITY projects

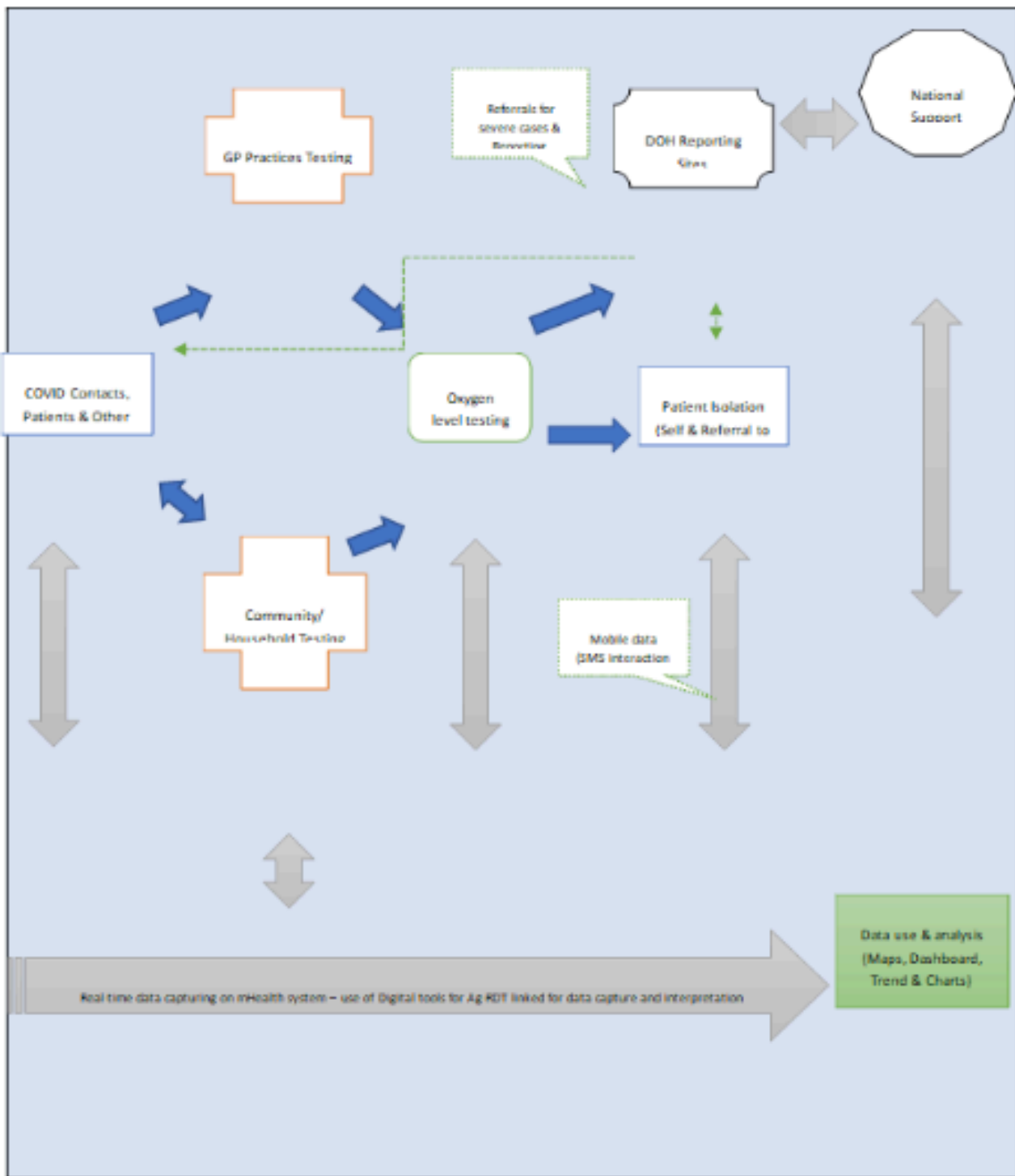
## Annexure 1: Integrated TB and covid algorithm



## Annexure 2: integrated TB and COVID screening tool

INTEGRATED TB/COVID SCREENING TOOL											
This form must be completed immediately by the health care provider who diagnosed the condition. Please mark applicable areas with an X.											
<b>Sub-District name:</b>				<b>Patient filefolder number:</b>				<b>Date of notification:</b>			
Patient demographics											
<b>Name:</b>			<b>Surname:</b>			<b>Patient residential address</b>					
Date of birth		Year (yyyy)	Month (mm)		Day (dd)	Street name, building, location description					
Age		Years	Months (0* 1 year)			Sub-place, suburb, village, postal area					
Gender		Male	Female	Self-declared		<b>Occupation</b>			Student	Employed	Unemployed
Contact number		Name of school/company (if student or employed)									
NEXT OF KIN											
<b>Name:</b>			<b>Surname:</b>			<b>Relationship to the patient:</b>				<b>Contact number:</b>	
Medical History - TB						Medical History - COVID -19					
Close contact of a person with TB		Yes	No	Unknown		Have you ever tested for covid-19 before?			Yes	No	
Diabetes		Yes	No	Unknown		Have you been in contact with a person who has tested positive for covid-19?			Yes	No	Unknown
HIV Status		Positive	Negative	Unknown		Are you taking care of a covid-19 patient?			Yes	No	
TB status		Positive	Negative	Unknown		Have you been vaccinated for covid-19			Yes	No	
If TB, is patient on TB treatment		Yes	No	Completed		If "Yes" have you completed your vaccination course?			Yes	No	
Other pre-existing medical condition (Specify)											
TB Symptoms -Do you have any one /more of these symptoms?						COVID -19 Symptoms -Do you have any one /more of these symptoms?					
<b>Adult</b>											
Cough of 2 weeks or more OR of any duration		Yes	No			Cough			Yes	No	
Persistent fever of more than 2 weeks		Yes	No			High fever >38°C			Yes	No	
Unexplained weight loss of >1.5 kg in a month OR		Yes	No			Running nose / blocked nose			Yes	No	
Drenching night sweat		Yes	No			Loss of smell or taste			Yes	No	
						Sore throat					
						Headache					
						Body aches and pains					
						Diarrhoea					
						Chills					
						Shortness of breath					
<b>Children</b>											
Cough of 2 weeks or more which is not improving		Yes	No								
Persistent fever of more than 2 weeks		Yes	No								
Unexplained weight loss/failure to thrive (check Road to Health card)		Yes	No								
Drenching night sweat		Yes	No								
Fatigue (less playful/always tired)		Yes	No								
Guide											
If "Yes" to one or more of these questions, consider TB.						If "Yes" to one or more of these questions, provide COVID-19 (Ag-RDTs) test.					
If the patient is coughing, collect sputum specimen and send it for Xpert testing. Update test results later and if positive refer the patient to the nearest Clinic for treatment as well as making follow up on treatment status.						If "No" to all of these questions, provide COVID-19 test (Ag-RDTs) test if patient requested it or other factors.					
If the patient is NOT coughing but has other symptoms, clinically assess the patient or refer for further investigation.						If the patient tested positive, counsel patient about self-isolation/quarantine OR Refer to nearest hospital for mild to severe symptoms.					
Date of last TB test		Year (yyyy)	Month (mm)	Day (dd)		Ag-RDTs performed			Yes	No	Declined
Sputum collected		Yes		No		Ag-RDTs barcode/test identification number					
Barcode number:		Referral Facility				Ag-RDT Result			Positive	Negative	Undetermined
Sputum Results		Positive	Negative	Unknown		Oxygen saturation level upon diagnosis					
If sputum positive, patient referred to the clinic		Yes	No		Referral offered (if the patient tested Ag-RDT positive)			Self-isolation		Referred to Hospital	
Treatment start date (yyyy/mm/dd)		Not yet		Unknown		Feedback from patient tested Ag-RDT positive			Well	Not well	No response
<b>Notifier Name:</b>				<b>Date:</b>				<b>Other comments:</b>			

# Annexure 1: Project data flow



# PARTNERS

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