

Leveraging Community Health Workers for intensified case-finding: experience from South Africa's COVID-19 response

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The Community Screening and Testing programme has provided evidence that Community Health Workers play a crucial role in undertaking community-based activities to address behaviour change, case-identification, and referrals for testing and linkage to health facilities.

On 30 March 2020, the South African President proclaimed the need for intensive community screening and testing, utilising community health workers to curb the spread of COVID-19 and to scale up and expand local, district and provincial case investigation. The objectives of community screening and testing were to: facilitate early identification of probable COVID-19 cases and early referral for testing; identify people sick at home and facilitate their referral to Primary Health Care facilities or hospitals; and provide health education on COVID-19 so as to increase awareness and promote behaviour change and prevention.

CST included a series of approaches, namely door-to-door-screening, a cluster approach, and a targeted-area approach. The targeted-area approach was the last to be introduced, with screening and testing teams deployed to identified COVID-19 hotspot areas and individuals with medical needs prioritised for clinical diagnosis, including contacts of

confirmed COVID-19 cases. Implementation of the targeted screening approach was effective in identifying a higher yield of positive COVID-19 cases, and in strengthening the integration of CHWs into facilities for service delivery at community level.

The Community Screening and Testing programme has provided evidence that Community Health Workers play a crucial role in undertaking community-based activities to address behaviour change, case-identification, and referrals for testing and linkage to health facilities.

This chapter provides a descriptive analysis of South Africa's community screening and testing strategy, and outlines the impact of its implementation on case-finding at community level. A comparison of active and passive case-finding was used to illustrate the outcomes of using community health workers to conduct screening in the community.

Introduction

Following confirmation of the first COVID-19 case in South Africa on 5 March 2020,¹ there was concern about the devastating impact this could have, given the quadruple disease burden that the country has been battling for years.² In an effort to contain the spread of the virus, a national state of disaster was declared on 27 March 2020, with the country placed under risk-adjusted level 5 lockdown, which included limiting movement within, into and out of the country. Specific interventions were enforced, including a curfew, travel restrictions, and public health measures such as physical distancing, mask-wearing, and hand-sanitising.³⁻⁴ As the number of new cases began to increase, physical tracing was introduced to find and test COVID-19 contacts. When numbers continued to rise, it was decided to intensify case-finding at community level.⁵

Thus, community screening and testing (CST) was introduced in April 2020 as one of the active case-finding strategies to control the spread of the virus and ultimately eliminate COVID-19.⁵ At that time, Community Health Workers (CHWs) (themselves under level 5 lockdown) were recalled and assigned to the communities they served to conduct health education, prevention, and screening for COVID-19. In most instances, the screening teams included nurses who collected specimens for SARS-CoV-2 PCR (polymerase chain reaction) testing. CHWs played a key role in the early identification of cases, screening and promoting the use of non-pharmaceutical interventions.⁶

Background of CHW interventions in South Africa

In South Africa, the first community-based health worker programmes date back to the 1920s and were designed to combat malaria, with innovative Community-oriented Primary Care (COPC) – as it was then named – continuing through the 1940s. After 1994, the increased HIV/AIDS and tuberculosis burden led to the development of large-scale community-based healthcare services managed by non-governmental organisations (NGOs) and community-based organisations (CBOs).⁷ The District Health System became the organisational unit for health service implementation post 1994. The idea was for CHWs to promote health, emphasise primary and secondary disease prevention, and offer counselling on healthy lifestyle and treatment adherence. This was accomplished through the provision of basic screening, with appropriate referral in close co-operation with facility-based health practitioners.⁸

The CHW programme was renewed in 2011 to align with the re-engineering of Primary Health Care (PHC) services. Ward-based PHC Outreach Teams (WBPHCOTs) form one of the three streams of PHC re-engineering and are part of PHC service delivery at the foundation of the health platform. Each team comprises generalist CHWs, supervised by an Enrolled Nurse who is the Outreach Team Leader (OTL). In the re-engineered model, the WBPHCOT team provides

services in the community to families and individuals, with the aim of facilitating improved population health outcomes.

Numerous studies⁹⁻¹⁵ show that CHWs have been recognised as one of the pillars in COVID-19 strategies, but there have been no reports on COVID-19 community case-detection using CHWs other than in South Africa. Thus, South Africa appears to have been one of the first country internationally to embark successfully on mass community screening for COVID-19 using lay health workers (CHWs).

Methodology

This chapter describes a quantitative descriptive case study of an intervention and the real-life context in which it occurred¹⁶, the purpose of which is to analyse the approach to CST, and the role of CHWs in this process between April 2020 and February 2021. We conducted a retrospective analysis using data accessed from two main sources: provincial CST reports, and testing data from the National Health Laboratory Services (NHLS). The CHWs collected information on people they screened, those swabbed by nurses, and those referred for testing at PHC facilities (in instances where swabbing could not be done in the field). This information was collected manually, collated at district level, and submitted by the Provincial Departments of Health to the National Department of Health (NDoH) daily, using a standard reporting tool. The NHLS data reflect passive testing (at private and public health facilities) and active testing (at community level). Microsoft Excel was used for analysis and the data elements were the number of persons screened, tested, or referred for COVID-19 PCR testing and quarantine. Positivity rates were compared for tests done on samples collected through CST activities (active case-finding) versus passive case-finding to assess the impact of CST in the community and its contribution to case-finding.

In the first part of the study, South Africa's approach to CST is described in relation to training, implementation and the use of CHWs. The data analysis is then presented to describe the outcomes of the CST. Given the approach adopted, the limitation of this analysis is the absence of the individuals' perspectives and inputs of the screening teams, particularly CHWs.

South Africa's approach to community screening and testing

Training of CST teams

CST implementation was initiated at the time of level 5 lockdown (in April 2020); this posed a challenge for the orientation of CHWs and OTLs about processes for conducting CST. Various strategies were adopted to ensure that CHWs and OTLs were trained (including being informed of COVID-19 infection risk) and given the necessary resources such as personal protective equipment (PPE) and screening tools. Presentations were uploaded onto the

NDoH training platform – the Knowledge Hub; in addition, training was conducted virtually with all provincial and district trainers, who were responsible for cascading the training to the screening teams as and when they were established across all provinces. District Support Partners funded by the US President’s Emergency Fund for AIDS Relief (PEPFAR) also played a key role in scaling up training of CHWs and OTLs on COVID-19, including data collection and reporting. In addition to training content, videos were developed to supplement the virtual learning, and circulated via WhatsApp.

The training content covered topics such as the basics of COVID-19, the role of COVID-19 response teams, how to conduct home visits and screening, and keeping oneself safe. A pamphlet on COVID-19 awareness was developed and translated into seven local languages. This was used by the screening teams to educate households on COVID-19, and it was also instrumental in facilitating engagement with household members at the time of complete lockdown. The content of the pamphlet provided information on the evolution of the virus, how the virus spreads, signs and symptoms, the incubation period, preventive measures, myths, the effect of the virus on HIV and TB, and the benefits of antiretroviral therapy (ART) for people living with HIV and treatment for TB patients.

The NHLS developed additional training content to orientate OTLs and other nurses on specimen-collection and labelling, which training was also conducted virtually through the Knowledge Hub. An information sheet was designed for use as a quick reference guide while in the field to reinforce the training content on the collection and labelling of specimens.

CST implementation: approaches and challenges

When CST was first introduced, the approach was to conduct mass screening in communities, within people’s homes, as the country was under level 5 lockdown. However, during this period, some controlled activities led to the spread of COVID-19 infections. As a result, situational approaches were implemented depending on provincial needs, including:

- door-to-door screening using a series of questions, where every person in a household was screened by CHWs during home visits in communities with confirmed cases;
- a cluster approach, with teams deployed to conduct screening during cluster outbreaks in communities, such as at funerals and supermarkets, and among vulnerable groups such as those in old age homes; and
- a targeted area approach, with teams conducting screening and testing in heavily frequented public spaces, such as taxi ranks and malls.

Initial implementation of CST was planned to take place over six weeks, from 7 April to 17 May 2020. However, due to the increase in cases, CST was extended beyond May. The rise in cases led to more people presenting with symptoms, and more specimens being collected for testing. To manage

testing resources and improve test-result turnaround times, CST had to be targeted. The CST targeted strategy, co-developed by the NDoH and NHLS, was updated and targeted to ensure balance in supply of and demand for testing resources.

The revised CST strategy focused on targeted testing of higher-risk individuals and active surveillance of cases and contacts only. In the community, this meant that only contacts of confirmed COVID-19 cases were tested. This targeted approach focused more on settings and areas at high risk, outbreak hotspots, and super-spreader events. In June 2020, the targeted testing strategy was rolled out, informed by identified hotspots and positive case data from the National Institute for Communicable Diseases (NICD). Screening teams screened all identified suspects and their contacts, including high-risk individuals in identified hotspots (as opposed to the door-to-door, cluster, and targeted area approaches previously implemented).

The role of CHWs in CST

Leveraging the presence of WBPHCOTs in communities assisted with the rapid deployment of COVID-19 screening teams and early detection of community transmission. CHWs facilitated rapid access to households, especially during level 5 lockdown. CHWs were organised into screening teams, comprising CHWs and Enrolled or Professional Nurses; (where OTLs were not available, PHC facilities assigned nurses to CHWs). The number of CHWs or nurses in the team varied depending on availability of cadres and geographical location, but usually teams were made up of six CHWs and one OTL or nurse. The teams were equipped with PPE, health-education materials, testing kits and data-collection tools. The number of screening teams grew as lockdown restrictions were relaxed and more CHWs were made available to be deployed for CST. The various team members had different roles to play in facilitating screening and testing uptake. Where available, the screening teams were supported by Environmental Health practitioners, health promoters, and key stakeholders in the community.

CHWs were involved in conducting health education and health promotion using COVID-19 awareness pamphlets developed by the NDoH. The pamphlets guided CHWs in providing information on COVID-19, including symptoms, preventive measures, the importance of knowing one’s status, isolation and quarantine, and the myths around COVID-19. The pamphlets were also distributed to households, as most communities had not been exposed to factual information on COVID-19. The health-education approach facilitated entry at household level. The benefit of this approach was observed as the uptake on CST increased over time, and was demonstrated in the outcomes of CST.

During home visits, CHWs were tasked with screening all household members found at home. They went from door to door using a series of questions to conduct screening. Using the COVID-19 case definition, CHWs were able to determine

possible symptoms, exposure, and risk for every individual found at home. Those who met the criteria for a person under investigation (PUI) were referred to testing sites or PHC facilities for further investigation and testing. Where CHWs were accompanied by nurses, they referred PUIs to the nurses, and the latter collected specimens there and then in people's homes. CHWs also provided information on how results would be communicated, and what people should do depending on the outcome of the tests. Given that COVID-19 positive results were communicated via phone-call or SMS, CHWs could not provide follow-up support to those who tested positive; however, the contact tracing teams filled this gap. Individuals who were unable to initiate self-quarantine at home were referred to quarantine facilities accessible to them. In the course of conducting home visits, the CHWs were also able to find households with sick individuals and refer them to PHC facilities for investigation and treatment.

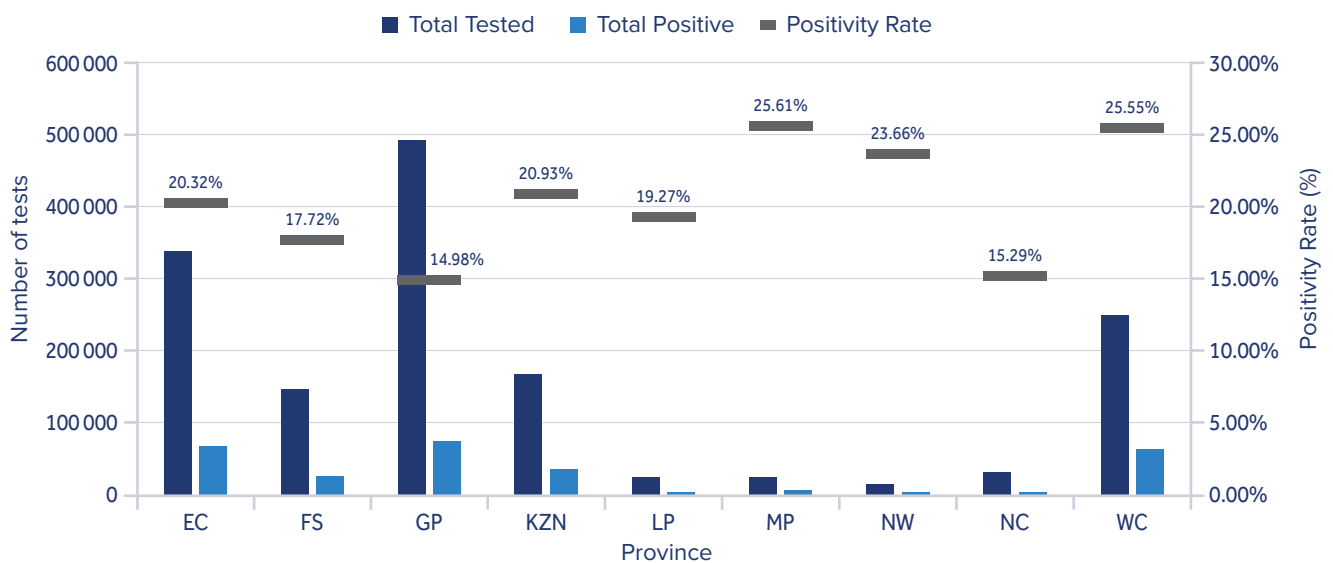
The CHWs' knowledge of the area and community arrangements also assisted in ensuring access to

households and community engagement, which in turn facilitated speedy uptake of CST interventions.

Outcomes of CST in South Africa

CST was implemented in all provinces; however, the number of screenings and tests done varied according to the deployment of CHWs, the approach implemented, and the COVID-19 case load. Initially, CST was meant to be a short intervention aimed at case-finding and containment. It was to be executed over six weeks (from 7 April to 17 May 2020), with a target of testing 10 million people. By 17 May 2020, 20 626 969 people had been screened and 169 216 had been tested. Over the six-week period, 24% of tests conducted by the NHLS were referred through CST activities, yielding a 3.92% positivity rate, compared with the national positivity rate of 4.69% yielded through both public and private sector testing. CST played a significant role in COVID-19 case-finding in all provinces (Figure 1).

Figure 1: CST COVID-19 positivity yield by province as of 4 February^a



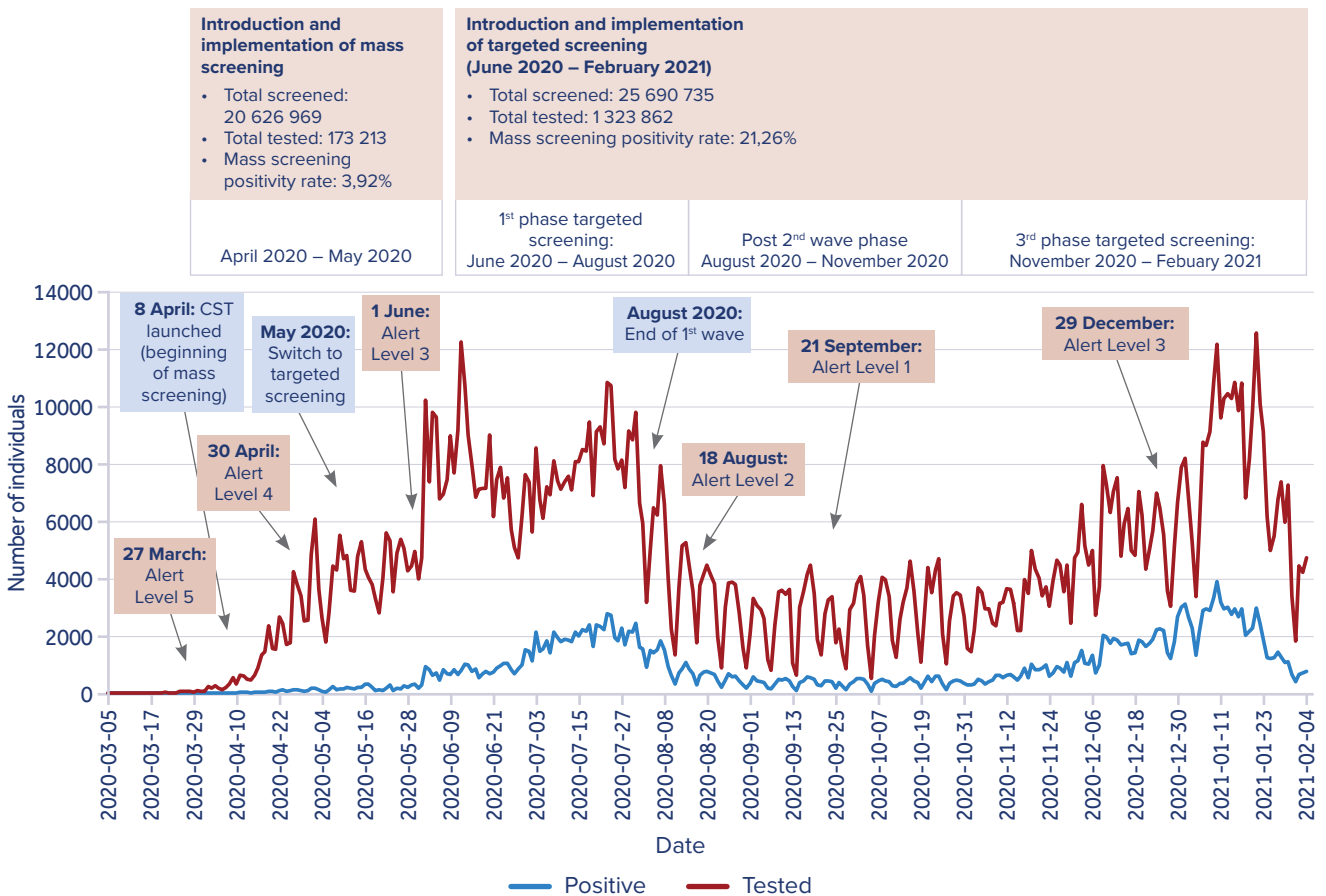
Screening numbers declined significantly when the targeted testing strategy was initiated in June 2020, also leading to reduced testing in the community. Despite this, the switch in screening approach resulted in an additional 25 690 735 people being screened from June 2020 to February 2021, with a total of 1 497 075 tests conducted through referrals via CST activities, yielding an overall positivity rate of 19.25% as at 4 February 2021. In comparison, the national positivity rate for tests referred through passive case-finding methods was 17.51% (in both

the public and private health sectors), which showed that targeted screening assisted in active case-finding due to the successful deployment of CHW teams in areas with high community-transmission rates.

Although the number of screenings and tests decreased from June 2020 to February 2021, a stable increase in positive testing yield was observed, reflecting a successful deployment of CHW teams in areas with high community transmission (Figure 2).

^a Data based on NHLS and provincial CST performance reports received as of 4 February 2021.

Figure 2: South Africa's CST trend, 4 February 2021



Lessons learnt

How pairing CHWs with PHC nursing personnel can increase efficiencies in household screening interventions

When the CST teams were established, WBPHCOTs (CHWs and OTLs) were paired with nurses working in health facilities as they conducted door-to-door visits for COVID-19 screening and testing, and other screening interventions in the communities. The screening teams, paired with nurses allocated from the local clinics, were able to increase testing efficiencies as there was less dependence on referred individuals having to present at facilities for testing. This was also a benefit for individuals in communities because COVID-19 specimens were collected in the comfort of their homes, and they did not have to go to PHC facilities, which they were often afraid to do.

CHWs working in partnership with nurses increased community confidence in the role of CHWs, and increased testing uptake. Literature has highlighted poor integration of CHWs into PHC service delivery with very little or no support from PHC nurses in the work that they do.¹⁷⁻¹⁹ There is a need to continue to strengthen the integration of CHWs into PHC, ensuring that all the teams have OTLs or are supported by clinical staff for future pandemic responses.

Absence of standardised data-collection and reporting processes as a barrier to immediate decision-making by outbreak response teams

Manual data-collection and reporting procedures are not ideal during pandemics, given the need for faster-than-usual turnaround times. The systems used for CST data collection and reporting were not robust enough to elicit prompt response and intervention. Manual data-collection and reporting processes were developed and implemented in all provinces. Adoption of the National Indicator Data Set (NIDS) for CST activities ensured that all provinces were reporting on their efforts. This was achieved through development of a reporting template, which was shared with provinces and cascaded down to outbreak response teams via district-level training. The template was designed for quantitative data-collection purposes only, and did not allow for collection of qualitative data experiences in COVID-19 CST activities. Although provincial uptake and compliance was commendable, this approach to data-handling and reporting posed a significant challenge due to submission of incomplete data. This resulted in inconsistencies in reporting, which affected routine reporting. Only community testing data were useful, as these data were reported by the NHLS and used to map COVID-19 hotspot areas.

To mitigate data-collection and reporting challenges, a digital mobile system was introduced and rolled out in the provinces to support data collection at community level. This effort was the result of a partnership between the NDoH and the Council for Scientific and Industrial Research (CSIR). However, the absence of technical support in deployment and implementation caused roll-out delays. Due to data demand and delays in roll-out of the national system, provinces developed and made use of multiple non-standardised applications, making it difficult to rely on a single source for data-screening and reporting. This resulted in the implementation of both systems, i.e. manual and automated systems, but only data collected manually could be used as data agreements allowing CST data to flow from provincial systems into the NDoH centralised data warehouse had not been established. Data triangulation during a pandemic is key to ensure synergy in the implementation of outbreak response interventions. In addition to facilitating accurate recording of data, this will help to ensure that decisions are guided by real-time data in pandemic responses.

How deployment of CHWs to COVID-19 activities had a negative impact on routine services

With the introduction of CST, CHWs were redirected to COVID-19 response teams; this undermined their ability to conduct their daily tasks, namely provision of essential health services to individuals in their homes. An analysis was conducted, comparing District Health Information Software (DHIS) data for January to June 2019 with data for January to June 2020, and it was found that the COVID-19 response activities had a negative impact on some of the CHW programme indicators. Follow-up visits to CHW clients receiving a range of health-related support declined by 31%; the number of visits was lowest among clients being supported with adherence to chronic medication (27%). A decline was observed in all provinces, with North West showing the greatest drop. Pandemic responses should be designed to promote the provision of integrated services at household level. Although efforts have been made to integrate COVID-19 in the daily activities of CHWs, implementation remains a challenge.

Conclusions

CST programme roll-out has provided evidence that CHWs can be leveraged for community-based activities when they are adequately trained, provisioned with resources, and supported by clinical staff. Their service capacity is useful in addressing behaviour change, identifying cases, and referring people for testing or linkage to health facilities in communities. CST has served to strengthen the integration of CHWs into PHC facilities for service delivery at community level. Lessons learnt highlight the need for an integrated national outbreak response strategy, with a clear role for CHWs to ensure that they are well capacitated in outbreak

response and that their interventions are well co-ordinated. The response strategies should promote integration of essential services in households to ensure continuity of health services. Furthermore, there is an urgent need for electronic data-collection and reporting systems at community level, linked to the national reporting repository for ease of access to information by all provinces and implementers. This will help to eliminate adoption of multiple systems by provinces and ensure easy availability of data through a single data source.

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