



# **Community Based Surveillance Framework for COVID-19 in Mogadishu**



**DSU Benadir**

**FLATTEN.CA**



# **Community Based Surveillance Framework for COVID-19 in Mogadishu**



[FLATTEN.CA](https://flatten.ca)



## COMMUNITY BASED SURVEILLANCE FRAMEWORK FOR COVID-19 IN MOGADISHU

First published in Mogadishu in 2020 by the Durable Solutions Unit in the Benadir Regional Administration

Copyright © Durable Solutions Unit / Benadir Regional Administration

Durable Solutions Unit (DSU) / Benadir Regional Administration (BRA)

<https://dsu.so/>

CBS/01/1A

### **ACKNOWLEDGMENTS:**

Principal Author: Tessy Aura

Contributors: Abdihamid Warsame; Arthur Allshire, Eric Herring, Hodan Ali, Isabella Ieraci, Jabril Abdullahi; Liban Muxudin; Maanav Dalal, Martin Staadecker, Mohamed Yusuf, Rachael Gooberman-Hill, Ranjani Somayaji, Sejal Jain Shrey Jain, Surya Krishnan and Yifei Zhang,

# Message from the Mayor

The Benadir Regional Administration (BRA) has developed a tool questionnaire, trained and mobilized enumerators to collect data in all 17 districts to fully understand the impact of COVID-19 is having on people living in the Benadir region. This is part of ongoing efforts by the regional Emergency Operations Centre (REOC) to push for data and knowledge as a key drive to inform regional policies on COVID-19 and similar urban shocks.

The Community Based Surveillance (CBS) programme will serve to prevent further spread of COVID-19, decrease mortality in the region, identify areas of high vulnerability or need, direct health-care engagement to reduce risks, and help communities understand the direct and indirect effects of COVID-19 and required response to halt the spread of the virus. This is all underpinned by the regional authorities recently launched durable solutions strategy that aims to directly implement its visions across local government sectors in a bid to increase access to basic services for the most vulnerable in the region.

The BRA understands many of its constituents often face multiple daily challenges, the recent urban floods that destroyed businesses, homes and infrastructure with the added pressures of a global pandemic threatening to wreak havoc on our region. It is important, now more than ever, that we establish a knowledge and data base that will help local government institutions better respond to recurring urban shocks.

This groundbreaking Somali – led research and knowledge development effort that makes up the CBS programme is being entirely driven by Somali epidemiologists, public health professionals, primary healthcare experts, urban planners, engineers, architects and administrators setting new practice of data driven solutions at the municipal level.

We are committed to serving all those who call Mogadishu home safely, working in ensuring their health and general well-being, we request cooperation with the regional government employees that are working hard to collect community data. This CBS programme would not have been possible without the support of the European Union who have generously funded it, and the Flatten Group who have designed the digital data collection platform and will assist in the management and analysis of the data. We also acknowledge that the effectiveness of this process is highly dependent on the people of Mogadishu, so we thank our constituents in advance for their participation.

**Omar Mohamud Mohamed**

Mayor of Mogadishu & Governor of Banadir





# Table of Contents

<b>1. Introduction.....</b>	<b>7</b>
<b>2. Community Based Surveillance.....</b>	<b>10</b>
2.2 Surveillance Population and Locations.....	11
2.3 Added Value of the CBS System.....	11
2.3.1 CBS and Community Interventions.....	12
2.4 Safety Precautions.....	13
2.4.1 Integration.....	14
<b>3. Data Collection and Management.....</b>	<b>16</b>
3.1 Digital Surveillance Tools.....	16
3.1.1 Household and Website Based Surveys.....	17
3.2 Case Defintions.....	17
3.3 Data Mangement and Analysis.....	19
3.4 Data Dissemination.....	19
3.4.1 Community Communication and Feedback.....	21
3.4.2 Policy and Research.....	21
<b>4. Monitoring and Evaluation.....</b>	<b>23</b>



# 1. Introduction

The Benadir Regional Administration (BRA) developed a regional strategy for responding to the Coronavirus disease 2019 (COVID-19) in Mogadishu. The BRA COVID-19 management strategy outlines the plans to address and mitigate the effect of COVID-19 especially on vulnerable populations including Internally Displaced Persons (IDPs) and the urban poor. The strategy is aligned with the WHO Guidelines and Global Humanitarian Response Plan<sup>1</sup> and the NTI-CGD COVID-19 Frontline Guide for Local Decision-Makers<sup>2</sup> and encompasses the objectives depicted in Figure 1.

It is important to note that while all the strategic objectives are interlinked and interrelated, the key to the management of COVID-19 in the region will be surveillance, specifically, a continuous methodical collection, analysis and evaluation of data for subsequent action. Thus, the data collected with regards to COVID-19 will be crucial for planning, implementing and monitoring the efficacy of prevention and transmission reduction initiatives. These measures also need to be in appropriate balance with efforts to support health, livelihoods and inclusion.

Nonetheless, numerous gaps and challenges still exist with regards to collecting real-time data on the progression of COVID-19 within communities, particularly those with high populations of vulnerable groups. Limited infrastructure and resources of health institutions and systems creates additional challenges in addressing and mitigating the COVID-19 pandemic in these communities. Measures to tackle COVID-19 also risk causing other harms to health, livelihoods and inclusion that outweigh the harms of COVID-19 itself. Equally, measures to enhance general health, livelihoods and inclusion are contributions to dealing with COVID-19. Moreover, the country currently lacks the capacity to test all people who may have COVID-19. The most recent estimates suggest a cumulative prevalence of 1,219 confirmed people who have COVID-19. Although this is likely to be a significant underestimate (in cases and fatalities) due to testing limitations, it highlights that there is ongoing transmission in the community and the need for increased systems to detect, monitor, and respond accordingly during the pandemic.



Figure 1: Seven Strategic Objectives in the BRA COVID-19 Management Strategy

1 Global Humanitarian Response Plan COVID-19. United Nations Coordinated Appeal. April - December 2020

2 COVID-19 Frontline Guide for Local Decision Makers. 2020

In the absence of diagnostics, the syndromic surveillance data collected relating to the COVID-19 pandemic will be essential for providing a foundational understanding of the burden in the region as well as for planning, implementing, and monitoring the effectiveness of current and future prevention initiatives. Thus, active epidemiologic (syndromic) surveillance is critical to understand the impact of COVID-19 on a population and to guide the implementation of resources and interventions accordingly.

A Community Based Surveillance (CBS) system will help to detect cases early and enable stakeholders (e.g. individuals, health providers/systems, public health, governments) to act in a timely manner. This system will serve to prevent further spread of COVID-19, decrease morbidity and mortality in these regions, identify areas of high vulnerability or need, direct health-care engagement to reduce risks, and help communities understand the direct and indirect effects of COVID-19 and required response. Specifically, the BRA's district CBS systematic approach will function to achieve the following objectives illustrated in Figure 2.



Figure 2: CBS objectives



# 2. Community Based Surveillance

The BRA launched a Regional Emergency Operation Center (REOC) for regional-level coordination, planning, monitoring and epidemiological surveillance. The REOC will also serve as the prime contact point for all parties interested in collaborating towards mitigating the COVID-19 crisis. It currently consists of 20 staff based physically and virtually at the REOC who are medical professionals from the Somalia Medical Association, Geographic Information System (GIS) experts, enumerators, communication and Gender Based Violence (GBV) experts. The REOC works in conjunction with the National Emergency Operation Center (NEOC) and Ministry of Health(MoH).

Complementary to the National initiatives and directives, the BRA will apply a CBS system for real-time collection of data, case investigation and movement restriction advisories within the prospective areas when required. The CBS system will function at 4 regional levels depicted in Figure 3 below.

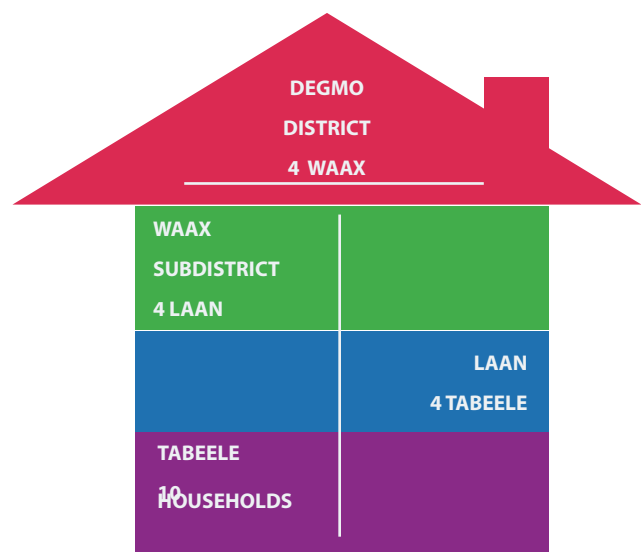


Figure 3: District Community Structure

The REOC will work with approximately volunteers from each district to survey symptoms and other reportable information such as burials, demographics and movements within their community using digital platforms. This will enable the CBS volunteers to immediately report circumstances that require immediate action, including unexplained clusters of people with COVID-19 symptoms/deaths, unusual increase in burials and health care workers with COVID-19 symptoms. The volunteers will also be able to record specific information about comorbidities and demographics specifically gender and age. In addition, through follow up visits, the CBS teams will be able to capture any new developments or visible worsening of symptoms. Overall, the main tasks for the CBS reporting and response teams will be to:

- Report the number of people who may have COVID-19 and community outbreaks;
- Identify unusual events of public health importance including increase in number of deaths; and
- Give feedback to the community about the investigation outcome and the success of interventions



## 2.2 Surveillance Population and Locations

The population of the Benadir region is approximately 3 million, in 17 districts. IDPs and the urban poor constitute 61.5% of the population and their access to basic services including housing is minimal or non-existent, and where it does exist it is not protected. The majority of IDPs and urban poor live in overcrowded camps and settlement sites. They are socio-politically marginalised and economically destitute (constituting 71% of Somalia's poverty rate); these characteristics add to their vulnerability. Specifically, in Mogadishu, the main challenges the IDPs and urban poor in Mogadishu face are forced evictions, substandard living conditions, limited access to basic services such as shelter, food, water, sanitation and education, and limited livelihood opportunities. In addition, common diseases reported are acute watery diarrhea (AWD), respiratory tract infections (RTI) and gastroenteritis. Between January and May 2019, Acute Respiratory Tract Infections (ARTI) with 144,125 cases was the leading cause of morbidity. Studies show that Coronavirus affects the respiratory tracts, which may increase the morbidity rates amongst these groups. Without adequate consideration, IDPs will simultaneously be affected disproportionately by COVID-19 as well as exponentially suffering from and contributing to ongoing/recurring community outbreaks. Thus, it is imperative that IDPs and urban poor have adequate awareness and access to basic services and shelter options to limit the spread of the COVID-19 and enhance their social protection.

## 2.3 Added Value of the CBS System

Currently, there are four laboratories in Somalia in Mogadishu, Bossaso, Hargeisa and Garowe that have the capacity to diagnose epidemic prone diseases however the one in Nairobi is the most advanced. Nonetheless, while in Mogadishu, the biological samples are collected, they are subsequently shipped to Kenya to the Kenya Medical Research Institute (KEMRI) and other regional reference labs for advance studying and processing. This considerably hampers Somalia's ability to report real time and accurately assess the spread of the disease to the community.

The added value of the CBS system is that it helps compensate for the Government's lack of capacity to test widely. It can contribute to a greater understanding of the geographical spread of COVID-19 within different communities especially those often marginalized. It can also collect information about the movements of people within the communities and requires less participation and human capital than contact tracing. Through the CBS, an effective two-way communication channel can be established to share information on the status and progress of COVID-19 and interventions; and to enable communities to have agency over their own well being through early detection and monitoring of adherence to directives such as those relating to social distancing and hygiene maintenance.

## 2.3.1 CBS and Community

### Interventions

The BRA has mapped and identified—through GIS and Urban Planning—high risk areas which lack water and sanitation, particularly in IDP camps and informal settlements throughout the city and noted potential areas for the construction of WASH points. The construction of these WASH stations will ensure that local and district governments can plan for potential hot-spots and move to ensure necessary provisions are made to alleviate potential outbreaks. As clusters of cases are identified through the CBS, the locations may be changed to respond to the needs of the communities. The BRA also mapped health centers and maternal and child care health (MCHs) facilities in the region. While the facilities are limited, it is anticipated that the active surveillance, education and feedback to at-risk communities may help to reduce healthcare utilization although this will be monitored and resources will need to be re-directed based on community-level needs over the course of the pandemic.

In areas where medical facilities have the capacity to respond, the CBS teams will be able to notify the nearest health facilities of serious or critical suspected cases for proper preparedness and arrangements for their arrival to be made. In this way, exposure of persons with infection to others will be minimized, adequate personal protective equipment can be donned for care, and will result in a reduced number of secondary cases.

The CBS teams will also work in tandem with health care workers to guide further efforts in raising awareness and educating the community to adopt behaviors to prevent and contain community outbreaks with key messages pre-approved by the BRA. In areas with limited medical facilities with little to no capacity to respond to COVID-19, BRA will construct COVID-19 care centers that can sustain and tend to 50 persons who are in serious or critical condition with oxygen therapy. Strict Infection Prevention and Control measures will need to be maintained within these centers.



## 2.4 Safety Precautions

It is important to note that, despite the added value of the CBS approach, given the fact that COVID-19 is a highly infectious disease, face-to-face data collection poses a threat to the CBS teams and the individuals being surveyed. As such, key procedures and protocols have been put in place to mitigate the risks of the data collection becoming a vector and potentially facilitating the outbreak.

The BRA will ensure that the CBS volunteers have ample training, tools, and resources necessary to minimize the risks of contracting and/or transmitting the disease to the survey participants. The CBS volunteers will undergo training in order to ensure best and safe practices for data collection. The BRA will ensure on an ongoing basis that the CBS teams have the required PPEs and are knowledgeable on the infection prevention practices relating to COVID-19 as depicted in Figure 4.

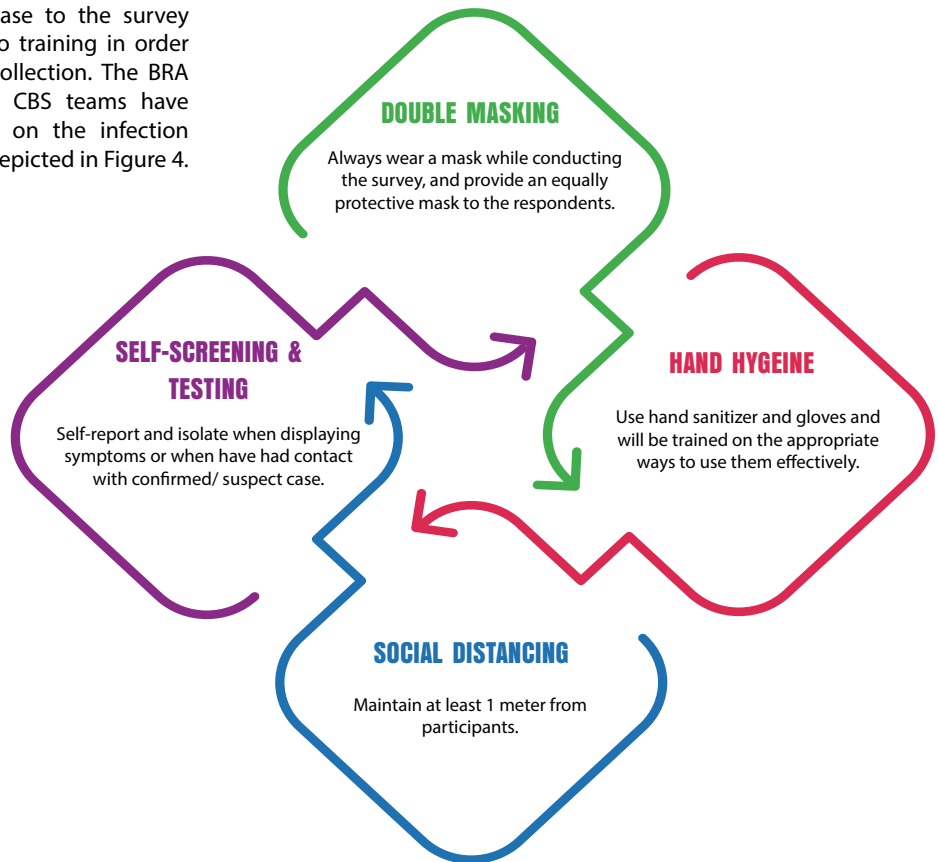


Figure 4: CBS Safety Precautions

## 2.4.1 Integration

The CBS teams are constituted by local volunteers from the prospective communities that they are currently living in the areas they are surveying. They will support in ensuring that the data collection tools adequately capture the local context. Moreover, to ensure that the surveillance is conducted in a manner that ensures gender inclusivity, fifty percent of the volunteers will be women. This will ensure that the survey does not disproportionately limit the participation of men or women, especially given that the cultural and social differences between the two may influence the outcomes of the results. Targeted communicator messages will also be developed that take into account the differences between men and women with regards to socio-political participation and access to service provision and delivery.

The BRA will also work with WHO in addition to pertinent international and nongovernmental organizations to ensure that reviews happen collaboratively and inline with their established guidelines on ethics to be maintained throughout the whole surveillance processes. Currently, WHO is carrying out contract tracing within the 17 districts in the Benadir Region. In order to avoid unnecessary duplication of research effort, discussions with WHO have ensued on how to address this risk. While both surveys are geared towards service provision, WHO's community contact tracing is from the point of delivery of health services. Implementing mechanisms of data sharing between WHO and the data collected by BRA will assist in ensuring the delivery of services on a broader aspect to include WASH, health care, housing, and social safety net interventions that together can contribute to adherence to stay at home and social distancing National directives.

The BRA will also follow guidance in its documentation, public communications and staff training issued by the WHO and others on preventing and addressing social stigma associated with COVID-19, both in relation to people who have or might have the disease and in relation to health workers.<sup>3</sup> It will consider how to adapt the general guidance to the specific context of the region including:

- Maintaining the privacy and confidentiality of those seeking healthcare and those who may be part of any contact investigation;
- Sharing accurate information about how the virus spreads; and
- Engaging with stigmatized groups in person and through media channels including news media and social media.

---

<sup>3</sup> IFRC, UNICEF, WHO, Social stigma associated with COVID-19, 24 February 2020; Centers for Disease Control and Prevention, Reducing Stigma, 30 March 2020; Mayo Clinic, COVID-19 (coronavirus) stigma: What it is and how to reduce it, 17 April 2020





## 3. Data Collection and Management

Syndromic surveillance has proven effective during past pandemics, historically being used in the eradication of smallpox and rinderpest. Participatory disease surveillance is able to collect feedback directly from the population at risk by submitting relevant data through survey tools. Hence, the BRA will use a digital syndromic surveillance tool with a shared goal of mitigating the burden and impacts of the COVID-19 pandemic and the health, livelihoods and inclusion impacts of responses to it. The BRA team will be working with a not-for-profit organization, Flatten, to coordinate and implement the digital surveillance tools.

An implementing partner will be the Flatten Group, the organization has previous experience in the creation of a digital data collection platform for monitoring the prevalence of COVID-19 (Flatten). The concept is based on active syndromic surveillance that aims to measure health indicators in real-time to provide feedback about the spread of an infection. Flatten has been deployed in Canada and has had 430,000 users to date submit their data onto the platform. The team at Flatten has partnered with public health entities in the City of Montreal and are the official self-assessment tool for the city. Syndromic surveillance through Flatten also gathers information faster compared to that of traditional channels of public health surveillance. The Flatten team is working closely with the Ministry of Health at the provincial levels in Canada as well as Public Health Canada (federal public health body). The BRA seeks to apply the same concepts adapted to the context in Somalia with the COVID-19 pandemic.

### 3.1 Digital Surveillance Tools

There are four different mediums of data collection that the BRA will aim to capture through the CBS system using the Flatten digital tool (Figure 5). The tools will be curated by the BRA, Flatten in addition to a team of international epidemiologists, infectious diseases specialists and public health experts. The forms will be modified as per the needs of the DSU in Somalia to ensure feasibility.

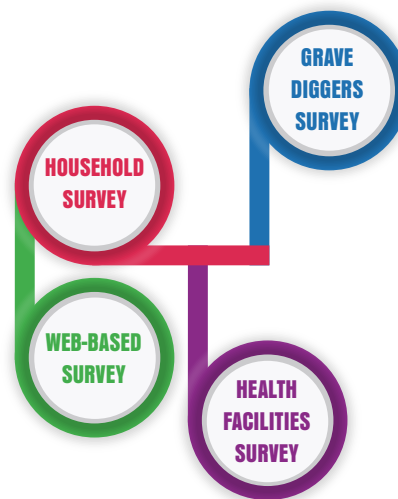


Figure 5: CBS Data Collection Tools



### 3.1.1 Household and Website Based Surveys

The form in Somalia will be launched in two different methods of distribution. The first method of distribution will be through volunteers. The CBS teams will conduct a household survey on individuals living in specified at-risk districts in Somalia. The second method of distribution will be through a website-based survey which will be released and advertised to the public via local and national media (i.e. social media, news companies, telecoms-amber alerts).

The purpose for launching these two separate forms is to enhance the coverage for data collection. A systematic sampling approach will be used by the volunteers. By leveraging a website to be distributed via other mediums of connections, we can reach the individuals who are not being surveyed by the volunteers. Through this parallel process, we hope to ensure that those who are illiterate or without access to phones, computers, or internet are not excluded.

At the health facilities, the CBS teams will also report on end of day data with regards to how many health workers are exhibiting symptoms, and a synopsis of symptoms exhibited by patients.

The CBS teams will also map the 5 grave sites in Mogadishu using GIS and maintain communication with grave diggers at these locations on a daily basis to report on the number of burials. These numbers will also be instrumental in cross-checking data collected at the household level. Ultimately, the data collected through these different modalities aims to help inform the BRA of the key elements portrayed in Figure 6.

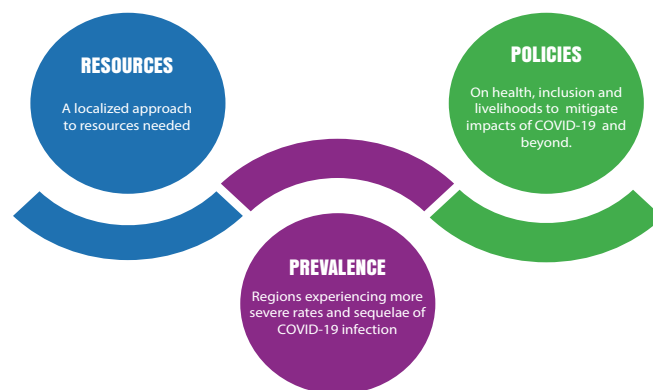


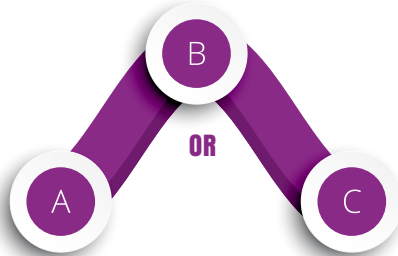
Figure 6: Key Areas CBS will Advise

## 3.2 Case Definitions

In lieu of limited capacity to test, the BRA will mainly use the CBS teams to track suspect and probable cases as well as contacts. It is envisioned that once testing capacity increases, the information gathered with the CBS system will be able to guide further testing locales and the results of confirmed cases will be shared by national entities to WHO on confirmed cases as per their guidelines. The information collected will be made public where WHO and other stakeholders will receive regularized briefing reports on the findings of the CBS. In accordance with WHO Guidelines, the following case definitions, depicted in Figures 7 will be used.

## SUSPECT CASE

A patient with any acute respiratory illness  
AND having been in contact with a  
confirmed or probable COVID-19 case in  
the last 14 days prior to symptom onset



A patient with acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath), AND a history of travel to or residence in a location reporting community transmission of COVID-19 disease during the 14 days prior to symptom onset

A patient with severe acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath; AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical presentation

## CONFIRMED CASE

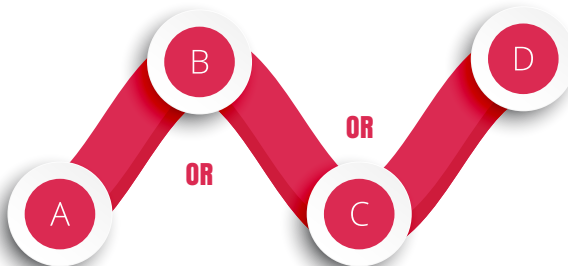


A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms

## CONTACT

Direct physical contact with a  
probable or confirmed case

Other situations as indicated  
by local risk assessments



Face-to-face contact with a  
probable or confirmed case  
within 1 meter and for  
more than 15 minutes

Direct care for a patient with  
probable or confirmed COVID-19  
disease without using proper  
personal protective equipment

## PROBABLE CASE

A suspect case for whom  
testing for the COVID-19  
virus is inconclusive



A suspect case for whom  
testing could not be  
performed for any reason

Figure 7: Case Definitions

### 3.3 Data Mangement and Analysis

The weekly data that is collected by the CBS teams will be used to provide real-time insights which will be presented in Google Data Studio. Through this, the BRA will be able to analyze a variety of metrics. The data will be regularly analysed and any disparities will be noted. Additional partners will include ESRI, CIFAR, Vector, Google Cloud, and Form.io in order to provide the best quality insights and services. The Flatten group will work in collaboration with the research committee established by the BRA to develop predictive models with up-to-date syndromic and regional data (i.e. demographics, socio-economic status). This data will be further used to guide ongoing interventions, monitor their effectiveness and mobilize resources and implement strategies to cater to the needs of the population. Moreover, the data collected will be modelled to capture insights that will benefit the population within Mogadishu and the greater Somalia. There are partners from academic institutions including University of Toronto, MIT, Harvard and more that are interested in assisting in the modelling efforts for the BRA.

### 3.4 Data Dissemination

Effective feedback is a vital element in community-based surveillance. It will be imperative to rapidly synthesize and disseminate this information to relevant stakeholders, allowing them to manage the effects of the pandemic; mitigate negative impacts of COVID-19 on social protection issues; and ensuring sustainable and durable solutions through and in the context of COVID-19 response. This proposed research program will identify effective and sustainable interventions through engaged knowledge synthesis, while making recommendations for efficient use of the health systems in the region based on the data.

Additionally, the community-based surveillance team will provide the community with summary information about the investigation of COVID-19 in their respective communities and address community concerns.

Subsequent to validation and confirmation of results from case investigations, the EOC will liaise with authorities at the regional and national level. After this, directives and key messages will be provided by the regional authorities in alignment with the national strategy, which the surveillance focal points will share within their communities. The response teams will be tasked with the duties illustrated below in Figure 8.

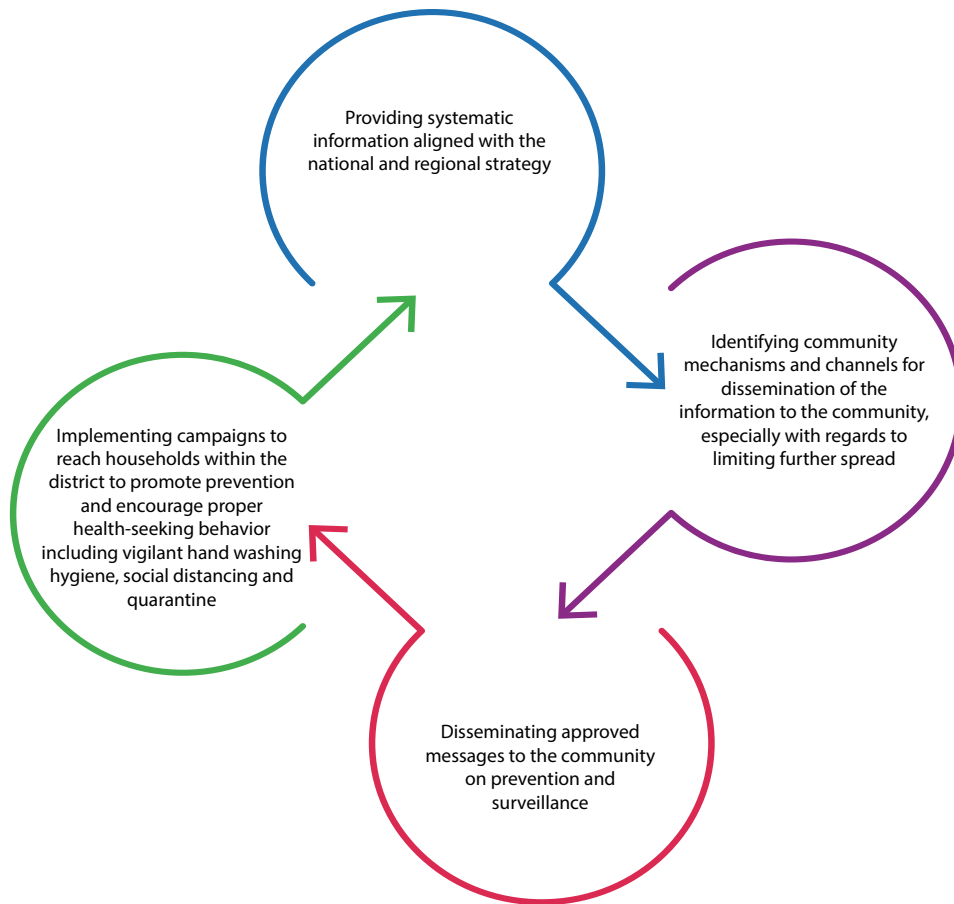


Figure 8: CBS Teams Data Dissemination Responsibilities



### **3.4.1 Community Communication and Feedback**

The CBS teams will communicate by using key messages approved by the regional and national authorities on how COVID-19 is contracted and update frequently on the progression of the virus and the populations at risk. The key messages will also include how to manage mild symptoms at home and directives on when to seek assistance at health facilities for medical evaluation and severe symptoms management and treatment. Messages will use Afsomali and Afmaay in order to be clear and culturally sensitive and address false beliefs about COVID-19. Different modes of communication will be used including radio, television and social media. Moreover, prominent members of society will be instrumental in sharing pertinent information amongst communities such as religious and traditional elders, health workers, community group leaders and local authorities.

A public virtual map will also be created to illustrate the geographic coverage of the spread of COVID-19 within the districts and identify high risk areas. It will also display clusters and patterns of infection and transmission. The maps will be updated regularly and will advise the prevention and response initiatives, for example reconfiguring the locations identified for the construction of WASH stations and upgrading of health facilities.

### **3.4.2 Policy and Research**

It is expected that the data collected through the CBS system will inform current and future interventions and policies including on housing, health, water, urban planning and social protection.

In order to manage and analyze the data collected at the community level to advise public policy and intervention, the BRA is establishing a Research committee that will provide reports, recommendations and/or advice to the regional administration.



# 4. Monitoring and Evaluation

The BRA will also assess the effectiveness of the surveillance and response systems, particularly reporting timelines, information quality and case management. Any problems and challenges will be identified and corrective action and solutions applied. Standard operating protocols will be readily available for the EOC staff and response team for regular review and will be improved and updated as needed. The BRA will use the following indications to monitor progress:

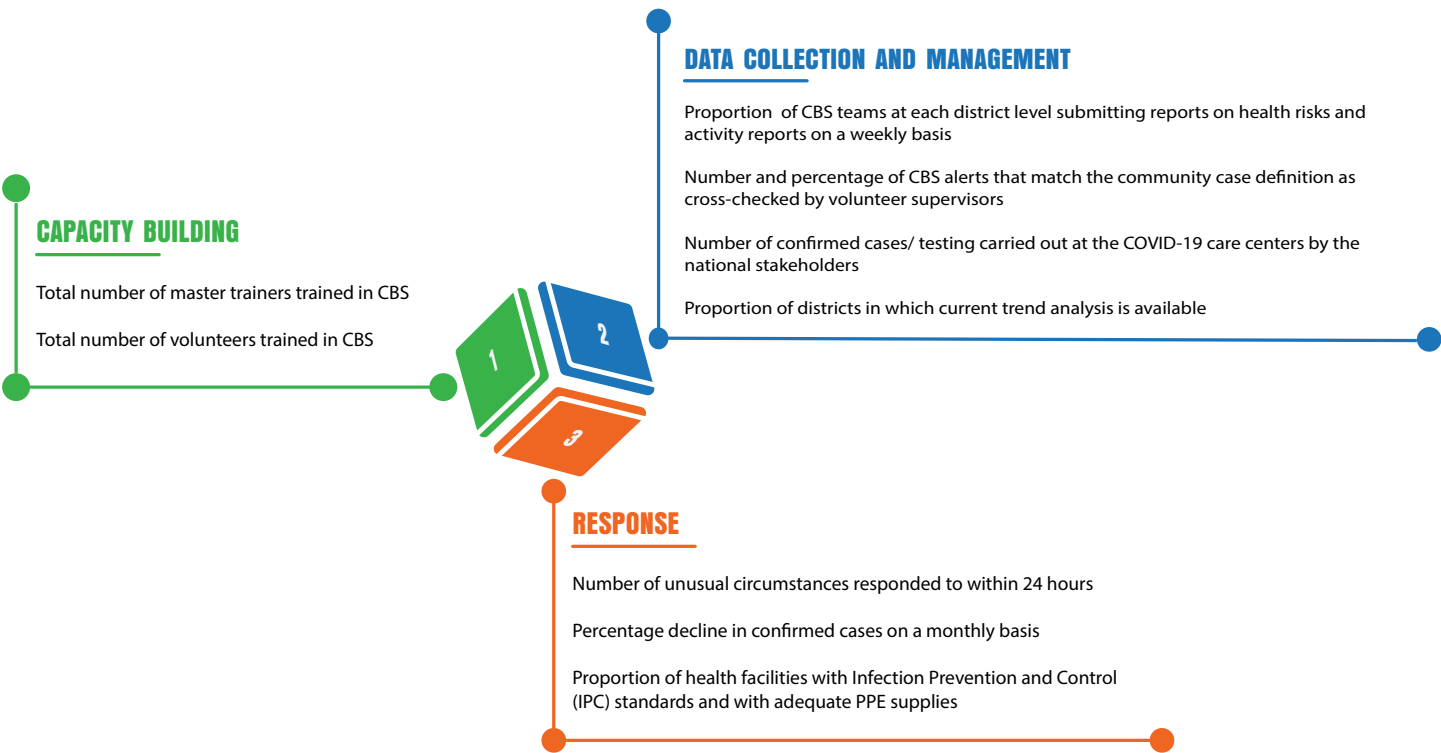


Figure 9: M&E Indicators









**BENADIR REGIONAL ADMINISTRATION**  
**XAMARWEYNE DISTRICT**  
**MOGADISHU, BENADIR**  
**SOMALIA**