Follow-up of cases and their contacts using a COVID-19 Tracker in Botswana

Background

In the fight against COVID-19, data is crucial in understanding caseloads and influencing decisions all over the world. For purposes of planning and adequate response measures, updated data on COVID-19 confirmed and suspected cases, deaths and recoveries, as well as contacts is vital. In a rapidly evolving COVID-19 context, relying solely on paper-based data collection and reporting mechanisms compromises both the quality of the data, and the availability of timely data. In addition, paper-based data collection systems make the follow up of suspected COVID-19 cases and tracing of contacts a daunting task. With technical and financial support from UNICEF, Botswana's Ministry of Health and Welfare (MoHW) has managed to consistently provide up to date data for decision making by scaling up the use of a COVID-19 Surveillance and Response Tracker in DHIS2.

Why use a COVID-19 Tracker in DHIS2

Since 2018, the Government of Botswana, and UNICEF has been working closely with the University of Oslo (UiO) and partners (HISP Uganda and HISP Rwanda) on the configuration of a DHIS2 tracker for nutrition, EPI, PMTCT and other programmes with a pilot rolled out in the South East and Boteti districts[1]. Recently, UiO together with HISP groups in consultation with WHO built and released a collection of ready to install DHIS2 tracker configuration packages including for COVID-19 Case-Based Surveillance and Contact Tracing and Follow-up and made them available for countries to adapt. In leveraging already existing tools, systems, and DHIS2 capacities in the country, the Government of Botswana adapted the COVID-19 tracker to ensure a sustainable response, while minimizing additional burden to the health system and on health care workers.

Installation and customization of the tracker

Stakeholder consultative meetings were held with the COVID-19 Response and Surveillance Team to discuss the specifics of the tracker. A decision was made that the tracker would initially be used at all ports of entry and would be android based. The MoHW's Health Informatics and Information Technology (IT) teams, with technical support from UNICEF and UiO (through HISP Uganda) installed the COVID-19 Case-Based Surveillance and Contact Tracing and Follow-up on identified servers. MoHW led the process to review existing manual data collection forms, dashboards, information system interfaces and agreed on a list of indicators (listed in Box 1) needed for COVID-19 tracking in Botswana. From an M&E perspective, the COVID-19 tracking system has the advantage of generating individual longitudinal data that can improve reporting of key COVID-19 indicators. The individual data can easily be aggregated at national or subnational level.

Box 1: Indicators

1. Total number of arrivals
2. Total number of people screened
3. Total number of people screened with signs and symptoms
4. Total number of suspected cases with history of travel to affected countries
5. Total number of deaths
6. Total number of suspected cases
7. Total number of inconclusive results
8. Total number of international transmitted cases
9. Total number of locally transmitted cases
10. Total number of recovered cases
11. Total number still hospitalized
12. Total number referred
13. Total number of probable cases
14. Total number of truck arrivals
15. Total number monitored in quarantine
16. Total number referred for hospital from quarantine
17. Total number of swabs collected

[1] National rollout of the DHIS2 tracker has been delayed on account to the COVID-19 pandemic.

Components of the COVID-19 Tracker System

The COVID-19 Tracker System supports surveillance workflows and automated analysis for three key components of routine and active surveillance including a COVID-19 Case-Based Surveillance program, a Contact registration and follow up program, and a Ports of Entry (POE) screening and follow-up program.

COVID-19 Port of Entry Program

The POE tracker program is designed to support the registration of travelers entering a country with a history of travel to, or residence in, a country/area/territory reporting local transmission of COVID-19 who may need to be followed up until it is ascertained that they are not infected. For this use case, it is assumed that a traveler may be 1) screened and cleared immediately with no follow-up needed; 2) screened and followed up for 14 days [with or without isolation measures] to ensure no symptoms develop; or 3) screened and referred for testing and/or initial case management. If a traveler is a suspected case, they would be enrolled into the complementary DHIS2 COVID-19 Case-Based Surveillance Program

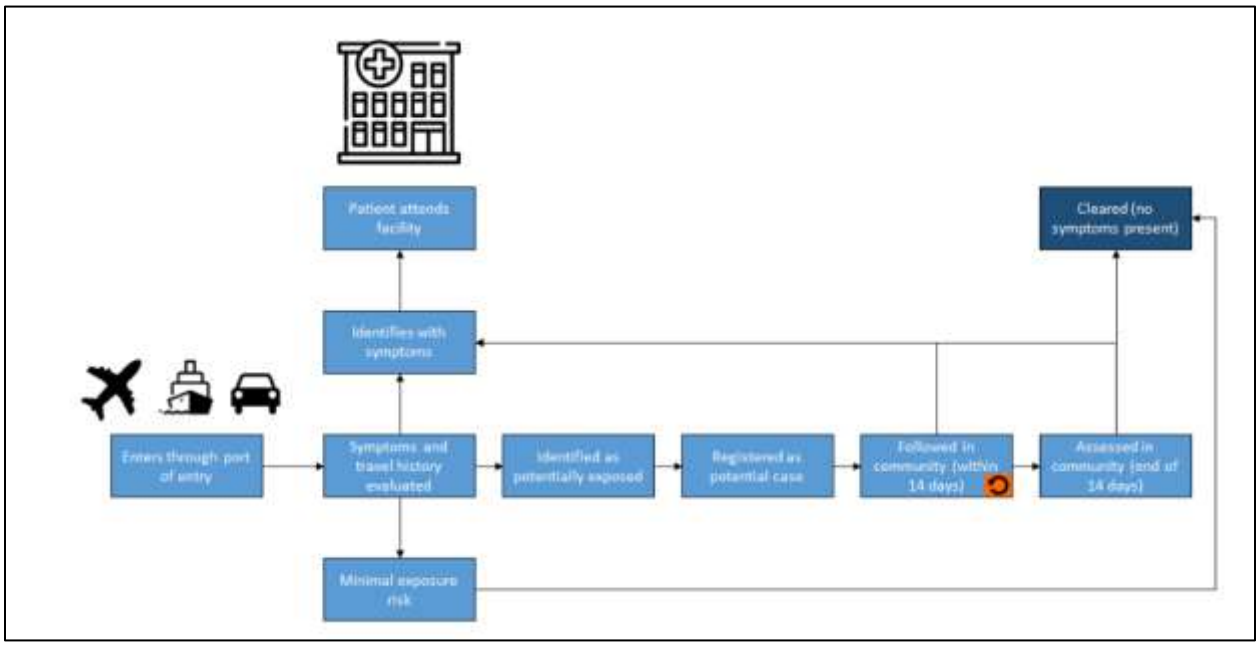

Figure 1: Workflow - COVID-19 Port of Entry Program

COVID-19 Case-Based Surveillance program

The case-based surveillance program is designed in such a way that it enrolls all suspected COVID-19 cases, wherever they are identified. Figure 1 shows the workflow for a suspected case identified at a health facility. The program captures key information about the suspected case including demographics and exposures, such as symptoms, contact with a previously confirmed case and travel history. Once the key information is captured, a laboratory request for COVID-19 confirmation is generated. Details of the resultant laboratory diagnosis are captured on a case reporting form, and for every case identified, the contact elicited and recorded for follow up and tracking. The program facilitates case notification and national/regional/global case reporting and generates dashboards for monitoring disease trends and planning response efforts.

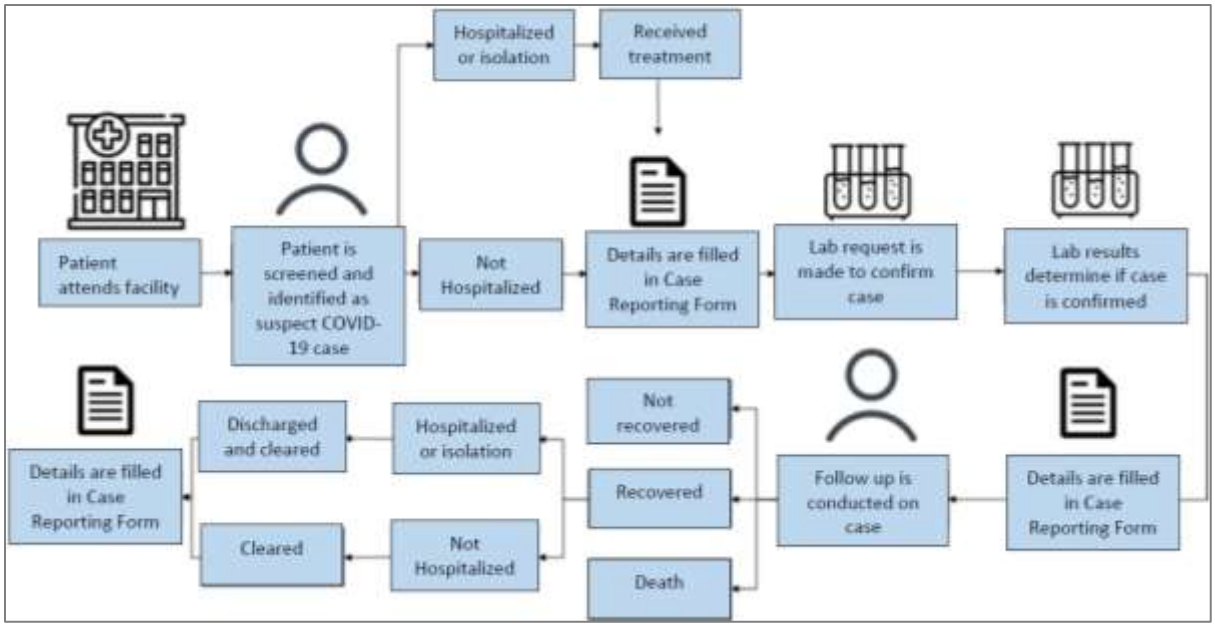

Figure 2*: Workflow - COVID-19 Case-based surveillance program*

Contact registration, and Ports of entry screening and follow-up programs

Contact tracing is part of the process of supporting patients and warning contacts of exposure in order to stop chains of transmission. When combined with physical distancing, contact tracing has proven to be a powerful asset in controlling the spread of COVID-19. Botswana's MoHW is using the contact registration and follow up program in addition to the case-based surveillance tracker to facilitate the registration and follow-up of contacts of a confirmed case. The program registers each contact of a case (as described in COVID-19 Case Surveillance Use Case) as a new Tracked Entity Instance (person) and links them to the index case in the COVID-19 Case Surveillance Program by creating a 'relationship.' It has a simple repeatable follow-up stage where symptoms and any follow-up undertaken can be registered.

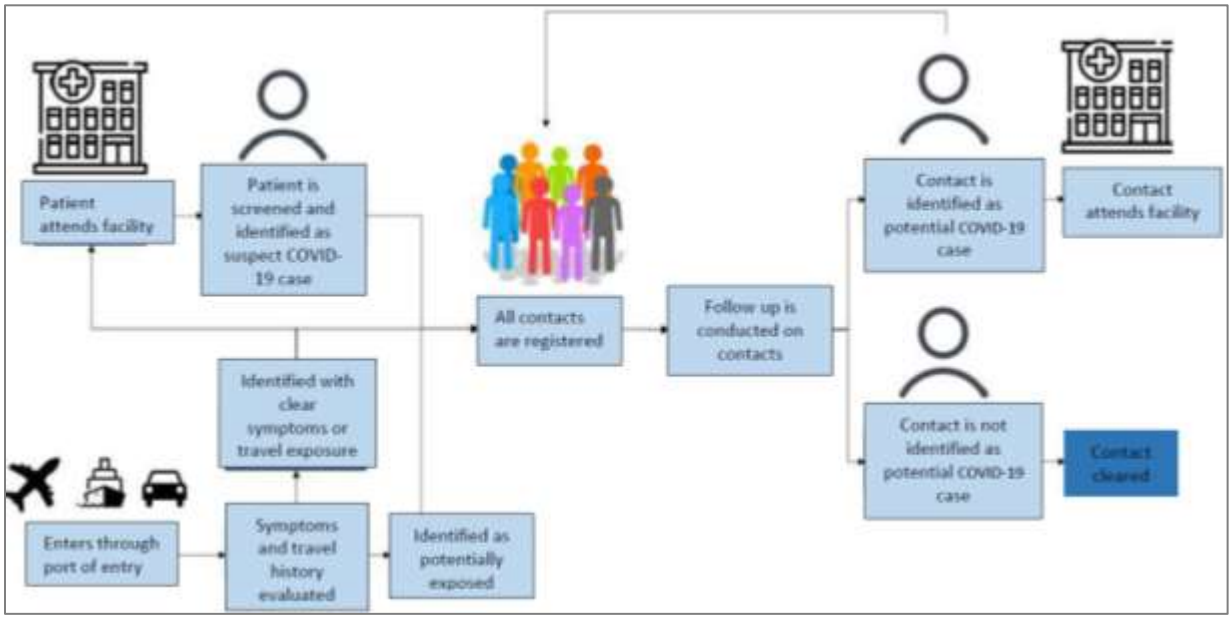

Figure 3: Workflow - Contact registration & follow-up program

Rolling out of the COVID-19 tracker

UNICEF procured 60 android tablets, and as the COVID-19 situation evolved, MoHW purchased an additional 200. The android tablets were distributed to all 14 operational ports of entry, 9 isolation sites and 10 District Health Management Teams (DHMTs). The MoHW provides primary health care services through DHMTs, which are responsible for running a network of health facilities, hospitals, clinics, health posts and mobile stops as well as community-based preventative and promotive services.

Through a public private partnership with Mascom, a mobile network provider, UNICEF negotiated a zero-rating internet access for the COVID-19 tracker system. Mascom further provided 260 sim cards to be used on the android tablets. The COVID-19 tracker system was piloted, providing on-job training to the users. Leveraging on the existing expertise on DHIS2 within MoHW, the government of Botswana was able to deploy the COVID-19 surveillance system quickly and efficiently.

Results

The COVID-19 tracker system has been functional in Botswana since 27 March 2020. Figure 4 shows the COVID-19 dashboard that keeps a real-time track of COVID-19 numbers. Managers at different levels use the information to keep track of the unfolding COVID-19 situation and implement effective control measures

Figure 4 COVID-19 Case based surveillance dashboard (screenshot June 2020)

Lessons learned

Public Private Partnerships are a powerful way to make progress: The partnership between the MoHW and Mascom, negotiated by UNICEF, facilitated the roll out of the COVID-19 tracker system in an efficient manner. Mascom provided the needed sim cards and agreed to a zero-rated internet access towards the implementation of the COVID-19 tracker system. The zero-rated *URL* will be extended to the gov.bw domain that will be housing the Nutrition Information System as well. This will ensure near real time data on children receiving child welfare services at health facilities is available for timely child health and nutrition interventions for every child, even after Covid-19 has passed.

Leverage existing resources and capacities to maximum advantage: The MoHW leveraged its human resources who had expertise on DHIS2 from previous engagements to seamlessly roll out the COVID-19 tracking system. Because not much training was required, implementation of the COVID-19 was fast and cost-efficient.