

## Narrative Report 3



## An overview of COVID-19 control strategy implemented by the City of Colombo

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### Summary

The City of Colombo is 37 km<sup>2</sup> with resident and migrant population of 1.2 million, representing the highest population density in the country. It comprises six medical officers of health (MOH) areas sub divided into 47 public health inspector (PHI) areas. The Chapter 252 of Municipal Councils Ordinance empowers the Chief Medical Officer of Health (CMOH) of the Public Health Department (PHD) to be in charge of all matters pertaining to public health in the city including epidemic control.

In managing COVID-19, a few essential components were identified, namely i) Emergency preparedness and response, ii) Stockpiling, iii) Establishing proper channels and links, iv) Enhancing technical capacities, v) Risk communication and Public engagement, vi) Enforcement of public health measures based on epidemiological analysis, and vii) Efficient case and cluster management at the community level. This narrative review discusses how the Public Health Authority of the Colombo Municipal Council (CMC) organized and implemented public health measures to control and contain the COVID-19 outbreak in the City and how it prevented the outbreak from reaching epidemic proportions averting community transmission.

### Public health response and its impact

#### 1. Emergency preparedness and response with a clear vision, goal and a strategy

Knowing the degree of infectivity and the contagiousness of the COVID-19, taking immediate mitigation measures that were essential for prevention of the disease outbreak was identified as a

priority by the city administration. The PHD presented the 'COVID-19 Contingency Plan for the City of Colombo', where the City Vision was presented as 'Keep the city free of COVID-19

patients'. The ultimate goal was to intervene proactively to prevent an outbreak of epidemic proportions, to prevent its community transmission and to contain the disease within the city limits of Colombo until its final eradication.

The City's prevention and mitigation action plan identified the following levels of preventive interventions:

- **Primary prevention activities**

*Awareness and health promotion* - Social distancing, hand hygiene, sanitizing and face masks advocated, leaflets and posters were produced in all 3 languages and distributed (Figure 1). Addressing the citizens of Colombo using all three languages was important as the city is multi-cultural, multi-ethnic. and educationally and economically diverse

- **Secondary prevention activities**

*Trace, Test and Treat:* a) an early detection of COVID-19 positive case/s, isolation by immediate hospitalization to a tertiary care institution, regular medical examinations and PCR testing to monitor the disease progress status, and b) rigorous tracing of 1<sup>st</sup>

and 2<sup>nd</sup> contacts, isolation, surveillance and periodic PCR testing are the key.

## 2. Emergency preparedness and stockpiling

The 1<sup>st</sup> COVID-19 patient of the City of Colombo was reported on 12 March 2020. The enhanced preparedness for an outbreak with adequate material stocks was important. A sum of Rs. 500,000 allocated to the PHD for emergency purchases of personal protective equipment (PPE) such as face shields, gloves, gowns, foot and head covers etc. were purchased with immediate effect. As hand sanitizers were in scarcity, the department purchased 70% ethyl alcohol and glycerine, and made their own sanitizers following WHO formulation. Alcohol also was used to disinfect the patients' households.

## 3. Enhancing technical capabilities

Ten nursing officers were trained at the National Institute of Infectious Diseases (NIID) to perform nasopharyngeal bio sample collection for PCR testing (Figure 2). The PHIs, disinfection staff, crematorium workers and sample collecting staff were trained on proper use of PPE



*Figure 1: Public awareness on COVID-19 safety measures - poster campaigns*



*Figure 2: Sample collection for PCR and antibody testing in the City of Colombo*

#### 4. Establishing proper channels and links

Close coordination with all the stakeholders is essential for efficient and timely COVID-19 response. The PHD established and strengthened the channels between the Epidemiology Unit, State Intelligence Service and virology laboratories of the Medical Faculties of Universities. This resulted in creating a pathway for timely information sharing with the Epidemiology Unit, prompt PCR testing, contact tracing, etc. A direct channel of communication with the Director General of Health Services (DGHS), Secretary Health, Additional Secretaries, Deputy DGHS and the chief and deputy epidemiologists was maintained by the CMOH.

An Operation Center was established to coordinate and execute Rapid Response Activities of COVID-19 control. This Rapid Response Team consists of an

MOH and five PHIs who are on-call for 24 hours and seven days a week. The RE of CMC coordinates the centre, while the teams are expected to locate the COVID-19 positive or suspected patients as soon as possible; assess the patient; and call 1990, the city ambulance service to hospitalize the same. The teams should also collect case histories, do immediate contact tracing and pass that information to the regional epidemiologist to be sent to the Epidemiology Unit and State Intelligence Service, who would seek more information on the patient's whereabouts and detailed information on further contact tracing. This team is also responsible for initiating the quarantine process.

#### 5. Risk communication and public engagement

Social media platforms were used, and a web page was created to make aware and engage the public in



controlling the spread of COVID-19 within the city (Figures 3 and 4). Mass media and public lectures, interactive discussions used to inculcate healthy habits among the general public. An excessive COVID-phobia led to unnecessary stigma among the citizens, which resulted in social exclusion, forceful rejection and social isolation of infected individuals, families and ethnicities in Colombo and efforts made

to destigmatize people and remove phobia. For surveillance, a social media group was created including CMOH, deputy CMOH, chief epidemiologist, deputy chief epidemiologist, regional epidemiologist, MOH and PHI, Mayor's advisor on health and the director of solid waste management. Information disseminated prompt decisions and actions taken and follow up information reported.



Figure 3: Quarantine measures in the City of Colombo

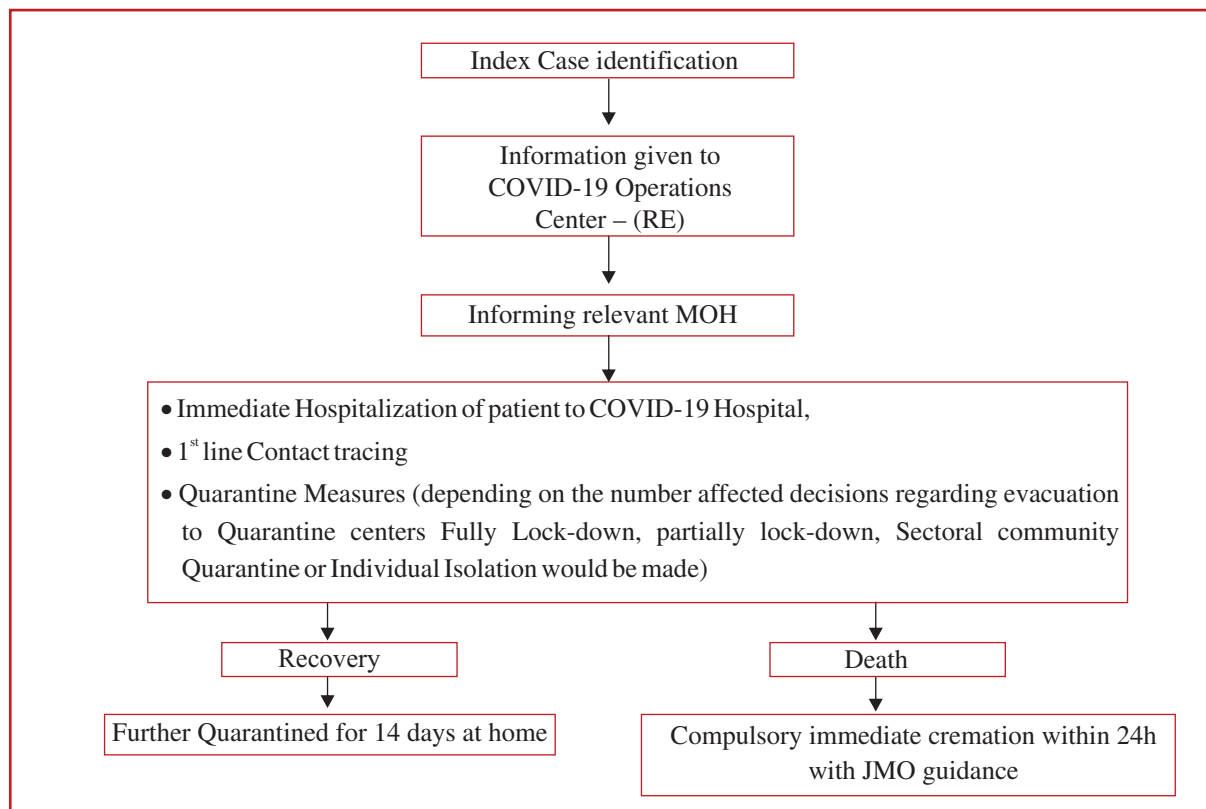


Figure 4: Flow chart of COVID-19 Management Strategy of the City of Colombo

## 6. Enforcement of public health measures based on epidemiological analysis

When a patient is reported, the following specific public health measures were enforced by the PHD of the CMC:

1. Immediate and mandatory hospitalization of the positive case/s
2. Contact tracing: by MOHs, PHIs and by State Intelligence Service
3. Hospitalization of all symptomatic first contacts and compulsory PCR testing
4. Quarantine of all exposed but asymptomatic first and second contacts: home-quarantine or at designated quarantine-centres
5. Their health status surveillance 24/7
6. Lockdown based on the number of cases and first contacts, decision was taken either to impose full lockdown, partial lock down, sectoral community lockdown, to evacuate to a quarantine centre or home quarantine
7. Random PCR testing among the lockdown community to ascertain if there was a community transmission
8. Provision of dry rations to the families of the lockdown area to maintain their nutrition status
9. Continues public health vigilance and random PCR testing among most vulnerable and high-risk population segments (78% of all the cases of the city were diagnosed through such active case surveillance, proactive contact tracing and PCR testing conducted by the CMC)
10. Creating awareness and health promotion among vulnerable communities and the general public regarding public health preventive measures; social/physical distancing, hand washing and sanitizing

## 7. Efficient case and cluster management at community level

By 13 July 2020, COVID-19 cases reported in Sri Lanka was 2511, of whom only 131 (5.2%) cases emerged from Colombo. Epidemiological analysis revealed that 28 of them were sporadic cases and 103 were in three major clusters. Hence, cluster identification and management was important in controlling the outbreak.

### *Cluster No. 1: Four patients Elvitigala Mawatha*

This was Patient No. 1 reported on 12 March 2020. A tour guide while sharing the same accommodation contracted the disease from a colleague who was the first Sri Lankan national diagnosed with COVID-19. Patient was living in a congested household of 500 sq. ft with 10 others, of whom three persons, their first contacts; his wife and two children who were living and sleeping in the same room had prolonged and close contact with the patient were tested positive. This cluster identification enabled those who showed even mild symptoms to be referred to IDH together with the patient. Other asymptomatic first contacts were quarantined in-house and health status monitored for 14 days. This vigorous surveillance prevented the disease transmission beyond this household.

### *Cluster No. 2: Six persons from the first case*

Patient No. 13 was the first death in the city who was a 72-year old male with a past medical history of diabetes mellitus, chronic kidney disease and hypertension. His son-in-law had visited Mecca on 28 February. Following prompt action taken to hospitalize his daughter and the son in law who were symptomatic, together with their asymptomatic two children to IDH, they were detected positive early. Patient's wife too was tested positive at the quarantine centre. This vigilant contact tracing and timely referrals resulted in prevention of COVID-19 transmission beyond this family.

### **Cluster No. 3: 93 persons from Bandaranayake Mawatha**

Patient No 21 was the turning point in COVID-19 outbreak control of the City of Colombo. Son of a 59-year old female patient from Bandaranayake Mawatha called the national ambulance service to take his mother to hospital, since she was complaining of chest pain. Through the proper channel that has been established, this information was passed on to the 1390 hotline and thereafter to the RE of CMC and the Operation Centre. From there, the MOH and PHI visited the patient within minutes following which he was admitted in hospital and tested positive. Her history revealed that she had returned from India one month ago and had completed her home quarantine imposed by the area MOH and PHI two weeks ago. During medical examination and vigilant contact tracing by CMC's public health officials, other three members of the family were also found to be showing respiratory symptoms and were referred to NIID for PCR testing.

This area is an underserved settlement with a massive population density. It consists of more than 650 families and 2200 inhabitants in an area of 700 m<sup>2</sup>. Diagnosing four positive patients from this location was an epidemiological emergency. Hence, a large-scale community PCR sampling from houses of the close proximity was done and 93 cases were detected positive. As a result, the second largest cluster in the country was identified. Accordingly, 1342 people from neighbouring settlements were evacuated to a quarantine center as they were at high risk. If the local health authority has missed the index case and the proper channel of communication was not established, it would have led to a massive community transmission, not only in the city but also in the country as a whole. Hence, prompt identification of the index case along with its resultant cluster confined to where it emerged and each case carefully managed, ensured that no important epidemiological links have been missed (Figure 5).

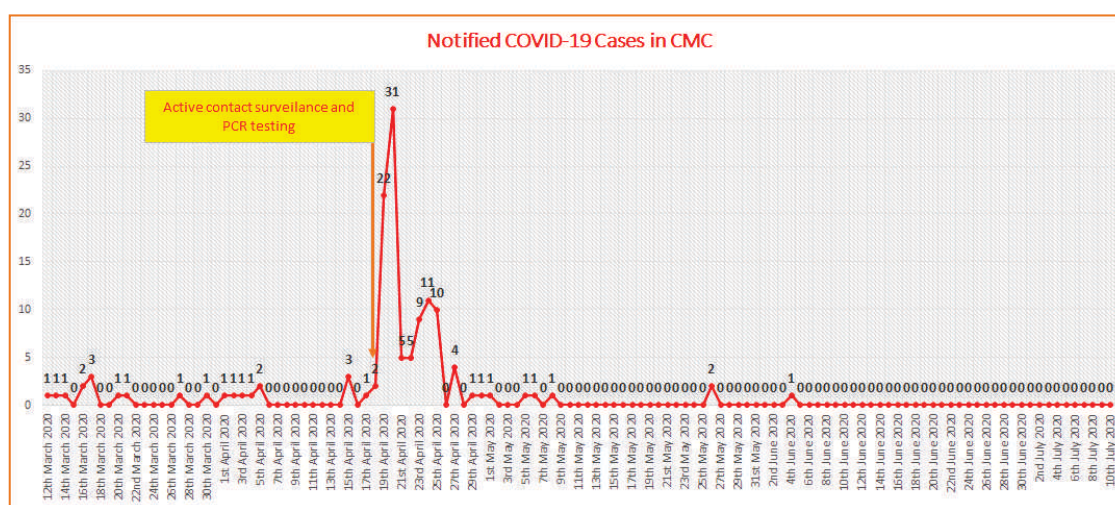


Figure 5: Notified COVID-19 cases in CMC

### **Conclusion**

Early and compulsory hospitalization of all positive cases irrespective of their disease manifestation curbed the spread within the immediate family members and the virus shedding to the neighbourhoods. Proactive and prompt contact tracing with the help of State Intelligence Service helped immensely to get detailed information on

patients and contacts, which was the key to prevent community transmission within the city. Mandatory quarantine of all the first and second contacts in their homes or at designated quarantine centres remarkably prevented further COVID-19 spread. Evacuation of all contacts to a central quarantine facility was proven effective in the management of clusters. Timely and targeted PCR testing among high-risk categories resulted in early detection of

positive cases and was of paramount importance in ascertaining if community transmission had taken place or not. It was also important in evaluating if the control strategy of the city was successful. The information collected and provided by the COVID-19 Operation Centre was crucial in designing the city exit-strategy and deciding on the date for lifting quarantine curfew imposed by the government and gradual opening up of the city with new normal status. Accordingly, an early action taken by the city of Colombo in its emergency preparedness and response, establishment of proper channels, enhancing technical capacities, enforcement of stern public health measures and efficient case and cluster management at community level were proven effective in limiting the number of cases to a level as

low as 5.2% (n=131) of all the cases reported in the country (2). Thus, a public health authority of a densely populated and diverse city was able to contain the disease transmission to its lowest possible level, where the outbreak did not develop into epidemic proportions, which would otherwise be disastrous for Sri Lanka.

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