

Leveraging Technology to Fight the Epidemic

Hong Kong has not recorded a single local case for 48 days in a row since June 7. The epidemic situation is clearly under control. Meanwhile, the vaccination rate has been rising steadily over the past month. So far, a total of 5.27 million doses of vaccine have been administered to members of the public, and 44.6% of the eligible population have received the first dose of vaccine. If the vaccination rate can be maintained at a high level, it can hopefully reach 70% by the end of September, building an initial immune barrier for Hong Kong. This achievement does not come by easily. I would like to thank various anti-epidemic teams for their hard work and members of the public for their full co-operation.

How the epidemic has developed and the anti-epidemic efforts

Over the past month, the epidemic situation has rebounded in different parts of the world, especially in Southeast Asia, and many of the cases involved mutant virus strains. Because of this, Hong Kong has to keep up its guard against the importation of cases. With stringent border control measures in place, coupled with the relaxation of social distancing measures in late June, business and social activities have already resumed to a large extent, and some large-scale exhibitions could also take place as scheduled. However, although the vaccination rate has been rising steadily, there is still some way to go before reaching the desired vaccination rate. Having balanced various factors, the Government has decided to largely maintain the anti-epidemic measures and will review them again next month.

Meanwhile, for the sake of prudence, we have taken a cautious approach for places where patients of imported cases have visited before leaving or after returning to Hong Kong, including cordoning off buildings to carry out testing and conducting compulsory testing operations to ensure that the virus has not entered the community.

Fortunately, the imported cases have not caused any local infections so far.

On vaccination, we are pleased to see that more organisations have participated in the outreach vaccination programme. Participants in the programme included global professional services enterprises, property developers, financial institutions, the construction industry, public utilities, property management companies, schools, theme parks, district organisations, etc. In addition, we have arranged vaccination for schools at community vaccination centres (CVCs) through group booking, and provided taxi and public light bus drivers with free, one-off health check services to allay their worries about receiving vaccination. We have also increased the subsidy for private clinics providing vaccination to the elderly and allowed the elderly to receive vaccination at CVCs without prior appointment. Since COVID-19 has a higher incidence in elderly people and the conditions of elderly patients are often more serious, the whole community must make concerted efforts to encourage the elderly to get vaccinated.

Leveraging Technology to Fight the Epidemic

The success of the Hong Kong Special Administrative Region (HKSAR) Government's anti-epidemic work does not come by chance. Apart from the concerted efforts of the community to fight the epidemic, it is also down to the wide application of innovation and technology which the Government has been actively promoting and supporting in recent years. The following are some examples of how we have used technology to help fight the epidemic:

Virus Testing

- Virus testing is a very important part of our anti-epidemic work. We have facilitated the introduction of testing technology on a large scale by local private laboratories to increase the testing volume since the outbreak of the epidemic early last year. The maximum testing volume has increased from a few thousand samples per day in the early stage of the epidemic to about 100 000 samples per day at present. In fact, Hong Kong has conducted more than 21

million tests in total, which ranks among the top in the world in terms of the number of tests conducted per million people, and with regard to our number of confirmed cases, our testing volume is higher than any other places in the world¹.

- Since last year, the Environmental Protection Department and Drainage Services Department of the HKSAR Government have been working with the cross-disciplinary team of the University of Hong Kong (HKU) in conducting sewage surveillance. We have also applied the testing technology developed by the HKU team to trace the transmission of COVID-19 in the community and in individual buildings. Hong Kong is a global leader in the research and development and application of sewage surveillance, and the technology is becoming increasingly mature. Since late last year, nearly 5 000 sewage samples have been taken for testing in Hong Kong. Compulsory testing operations have been conducted at 236 buildings with sewage tested positive for COVID-19. Fifty-two confirmed cases have been identified, many of which were detected before any confirmed case was found in the building. At present, there are 112 regular sewage inspection points in Hong Kong, and nearly 200 sewage samples are taken for testing every week, covering a population of 5.3 million. Recently, the HKU team has developed a new testing method that can quickly detect mutant virus strains in sewage, enabling earlier warnings about the epidemic situation in the community.

Supporting Quarantine

- To support the mandatory home quarantine measure, we developed the StayHomeSafe mobile app in the early stage of the epidemic. Making use of the technology developed by local universities and technology start-ups, paired with the Bluetooth electronic wristband developed by the Logistics and Supply Chain MultiTech R&D Centre, the mobile app effectively monitors whether the quarantined person stays at the designated residence, greatly reducing the manpower needed for monitoring, while at the same

¹ <https://ourworldindata.org/coronavirus-testing>

time protecting the personal privacy of the quarantined person. So far, the StayHomeSafe mobile app and the electronic wristbands have been used by more than 540 000 people under compulsory quarantine. It is the first time in the world that such technology has been applied on such a large scale. It is also a successful outcome of collaboration among the Government, industry, academia and research sector in Hong Kong. Over 40 overseas economies have inquired about the technologies and experiences in respect of the StayHomeSafe app and the electronic wristbands. Relevant equipment and technologies have also been exhibited on invitation in the Museum für Kommunikation, a renowned communications museum in Germany.

- To meet the demand for quarantine facilities during the peak of the epidemic, we adopted the Modular Integrated Construction (MiC) technology to significantly reduce the construction time of quarantine facilities. Since the beginning of the epidemic, we have built more than 4 000 quarantine units using the MiC technology. The North Lantau Hospital Hong Kong Infection Control Center, which was built with the support of the Central Government, was also constructed with the use of MiC technology. The Centre completed construction in just four months and is equipped with negative pressure wards that can accommodate some 820 beds, providing our medical system with sufficient capability to fight the epidemic.

Supporting Contact Tracing

- The LeaveHomeSafe mobile app was launched in November 2020 to provide members of the public with a convenient digital tool for recording their whereabouts while their personal privacy would not be compromised. To facilitate people to present their vaccination records when entering certain designated premises, the LeaveHomeSafe 2.0 was launched in June this year with a newly added Electronic Vaccination and Testing Record function to provide members of the public one more tool to store their vaccination records and QR codes to facilitate their easy retrieval if needed. Since the launch of the LeaveHomeSafe app, the number

of downloads has exceeded 4.9 million, with the participation of some 90 000 public and private premises across the territory in the scheme.

Supporting Information Dissemination

- To enable members of the public to keep abreast of the latest situation of the epidemic, the Lands Department of the HKSAR Government took the lead to work with the other departments and the information and technology sector to launch the Interactive Map Dashboard on the Latest Situation of COVID-19 in Hong Kong (Interactive Map) in February 2020, providing such information as confirmed cases, buildings which patients have resided/visited, collection points of specimen for virus testing and statistics on testing. The Interactive Map has recorded over 55 million views to date.

Enhancing Personal and Environmental Hygiene

- During the early period of the epidemic, disposable masks were in very short supply in the market. With an earlier research and development achievement developed by the Hong Kong Research Institute of Textiles and Apparel (HKRITA) with a subsidy from the Innovation and Technology Fund (ITF), we commissioned HKRITA to co-ordinate the production of CuMask+™ which can be reused for 60 times. The Government has distributed more than 10 million CuMask+™ to members of the public for free to date.
- The Hong Kong University of Science and Technology, with the research and development achievements of a number of scientific research projects subsidised by the ITF, developed a Multilevel Antimicrobial Polymer coating which can be sprayed on material surfaces to kill bacteria and viruses with an effective period of up to 90 days. This achievement has been transformed into an innovative product, which has been widely used in schools, residential care homes for the elderly and child care centres and more.

- With a government subsidy, the Hong Kong Productivity Council (HKPC) has developed the kNOw Touch - Contactless Elevator Control Panel, which can be easily installed in existing elevators, enabling users to “press” the buttons in the elevators without touching the panel to minimise the risk of virus transmission. In addition to a number of public buildings and government offices as well as the Central Government Offices in Tamar and the Legislative Council Complex, the system has been installed in some 50 places by the HKPC in collaboration with elevator contractors. In addition, the Hong Kong Housing Authority and the Hong Kong Housing Society also plan to install it in about 200 elevators in their housing estates.

Research and Development of Vaccines

- The Government’s Health and Medical Research Fund has approved a total of \$170 million in funding last year to support local universities to conduct 49 research studies on COVID-19, including supporting two local universities to undertake four vaccine development projects. Among them, a nasal spray COVID-19 vaccine developed by HKU in collaboration with researchers in the Mainland is in first phase safety clinical trials. It is the first nasal spray vaccine approved for phase I clinical trials. The Food and Health Bureau and the Fund will allocate a further \$300 million, while the University Grants Committee and the Research Grant Council have allocated \$350 million in research funding last year to support anti-epidemic scientific research projects.

Conclusion

The current-term Government attaches great importance to innovation and technology development. It is encouraging that innovation and technology application has played an important role in the fight against the virus. We are pleased to share with other regions around the world our experience in fighting the virus with the aid of technology. While attending the Asia-Pacific Economic Cooperation

Informal Leaders' Retreat via video conferencing recently, I called on the leaders to step up collaboration, including supporting the use of innovation and technology in combating COVID-19.

Members of the public can also contribute to the global fight against the epidemic - by getting vaccinated as soon as possible. Only by building an immune barrier through vaccination can we resume cross-boundary travel gradually.

Mrs Carrie Lam
Chief Executive
Hong Kong Special Administrative Region
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