



How Can a Country Effectively Control the Spread of Coronavirus Disease-2019: a Case Study from Thailand

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Commentary

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Abbreviations: SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; WHO: World Health Organization; GCI: Global COVID-19 Index; EIS: Epidemic Intelligence Service; FETP: Field Epidemiology Training Program.

Commentary

In the last 9 months, an emerging infectious disease caused by a new coronavirus - severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) - has spread from one country to over 213 countries and territories around the world. It has become the most wide-spread pandemic of an emerging communicable disease since the emergence of AIDS 37 years ago, affecting millions infected people and the entire global society. The coronavirus disease (COVID-19) epidemic began in December 2019, with the first report on pneumonia of unknown cause in Wuhan City, China [1]. Within a few weeks, the cause of the disease was identified to be a new coronavirus [2]. On 30 January 2020, the World Health Organization (WHO) declared the outbreak to be a Public Health Emergency of International Concern and gave the virus a name as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [3]. On 11 March 2020, the epidemic was classified to be a pandemic by WHO due to its occurrence in various countries around the world resulting in high numbers of cases and deaths [4]. As of 20 September 2020, WHO reported that there were altogether 30,675,675 cumulative cases and 954,417 deaths with a wide range of 0 to 646,263 weekly new cases and 0 to 8,166 weekly new deaths among countries and regions around the world [5]. Varying degrees of severity of outbreaks are believed to be associated with different phases of epidemic each country is facing and the strength of the national control program. In addition to health consequences, the disease has caused massive and widespread social reactions, affecting socio-economic wellbeing of people in almost all countries. It has caused

such a high magnitude of undesirable outcomes include interference or interruption on population mobility, closure of various social functions including airports, educational institutions, hotels, markets, business centers and many others resulting in severe negative impact on economy and huge investment for the control of the outbreaks.

Although the magnitude of morbidity and mortality of COVID-19 vary among affected countries, the prevention and control strategies were quite similar. They include case and outbreak investigation, routine screening, viral testing, symptomatic and physiological treatment of cases, isolation of cases, contact tracing, and quarantine of contacts [6]. The common measures toward the public include mass media education and warning, promotion of the use of personal protective devices, individual temperature screening, and physical distancing (social isolation). People are advised to wear masks, wash hands frequently and refrain from traveling. Stronger social control has been observed in various medium and high incidence countries including the provincial and country lock down, travel band, and imposition of curfew [7].

There are still many questions to be answered with regard to the situation, epidemiological characteristics, clinical manifestations, and the prevention and control of COVID-19. One main question on the situation is the reasons underlying the difference in the severity of the epidemic among countries. WHO has provided regular update on the situation and response to the epidemic [8]. Up to now, countries can be categorized in to the following epidemic situation:

- Countries with extremely high incidence of cases (over 1 million cumulative cases): 4 countries: United States of America (over 6.6 million cases), India (over 5.4 million), Brazil, (over 4.4 million), Russian Federation

(over 1.1 million).

- Countries with very high incidence (from 100,000 to 999,999): 34 countries in all continents and majorities are in Europe and Americas.
- Countries with high incidence (from 10,000 to 99,999): 61 countries.
- Countries with moderate incidence (from 1,000 to 9,999): 66 countries.
- Countries with low incidence (from 100-999): 27 countries.
- Countries with limited spreading (lower than 100): 21 countries.

Many countries have been able to bring down the epidemic during the initial outbreak; and subsequently observed the resurgence of the epidemic [9-11]. Reports on the second wave of COVID-19 have created concerns over the possibility to resume the pre-COVID-19 social norm or the preparation on how to impose fewer restrictions that are sufficient to contain the spread. One main approach to identify the solution is to learn from the first wave of the epidemic. So far, many countries are still capable of preventing the emergence of the second wave; and Thailand is one country among them. Learning on the situation and response from Thailand can not only benefit the prevention of the second wave but also the implementation for the control during the initial phase of the epidemic in any given country.

Situation and Response on COVID-19 Epidemic in Thailand

Thailand was ranked the second severity country in the world during the initial phase of the COVID-19 pandemic when the first 2 imported cases were reported for the first time outside China [2]. Subsequently, the rapid spread was observed during March and April 2020, followed by zero local transmission in the subsequent 100 days. As of 20 September 2020, the cumulative number of case was 3,506 (138th severity ranking) with 59 deaths [5]. Most of the cases reported in the last 3 months were Thai citizens returning from high incidence countries. The successful management of COVID-19 epidemic in Thailand has been recognized worldwide. In June 2020, Thailand **was ranked the second best recovery country listed in the Global COVID-19 Index (GCI) [12]; and changed to the first rank in July and August 2020 [13]**. The current GCI ranking places Thailand at the second rank after Australia [14]. Many experts in Thailand had tried to explain to the public the reasons behind the effective response of the epidemics; and majority of them gave credit to the technical strength of epidemiologists and the strong health service systems [15,16]. In reality, the Thai epidemiological work is not stronger than the US Epidemic Intelligence Service (EIS) program (where the number of cases is over 6.5 million); and the health service system is

not stronger than Singapore (where the number of cases is over 57,000 cases – over 16 times of the Thai cases). Based on the author's opinion, there are 5 important components in Thailand that make the country capable of controlling the epidemic.

- ❖ Cooperation of all Thai citizens (over 69 million) to protect themselves from contracting the virus. Since the May 2020, the percentage of people wearing mask in the public has been very high (approaching 100%). People have been practicing mask wearing, hand washing, and social distancing until today. This phenomenon is the most essential component in the control because it is the main reason that limits the number of COVID-19 cases up to the level that can be handle by the health sector. Imagine there is a case of traffic accident coming to a hospital, the facility will have no problem to handle the case. However, if there is a massive accident with over a hundred cases attending the same hospital at the same time, it will be almost impossible for the health facility to provide medical care. Not to mention about the risk of contracting and spreading the virus if the all patients are attending the hospital because of COVID-19. The overwhelming situation in high incident countries almost always due to the flooding to health facilities of high number of affected population who did not practice essential behavior to protect themselves from the corona virus.
- ❖ The strong government policy. Various actions taken by the central and provincial government of Thailand are very effective in handling the situation. Such actions include the inclusion of COVID-19 in the list of dangerous infectious disease (which enable authorities to take strong actions of social and health control), the closure of various at risk infrastructures (schools, department stores, entertainment establishments, airports, etc.), imposition of travel band and curfew, establishment and implementation of coordinated quarantine system in all provinces, and daily update on the situation to the public.
- ❖ The strength of Thailand epidemiology program. The year 2020 marks the 40th anniversary of the Field Epidemiology Training Program (FETP) in Thailand which was established in 1980 with the support from WHO and US Centers for Disease Control and Prevention. To date, over 250 epidemiologists have graduated; and over 100 of them have contributed to the COVID-19 response in Thailand. They are called by some academicians as "health detectives" who work behind the scene providing recommendations to the national authorities and supervision services to the local health personnel.
- ❖ Strong health service providers (doctors, nurses, laboratory technicians, and other medical and health

staff) who have to provide medical services to the patients and, at the same time, perform universal precautions in order to ensure containment of the spread of the corona virus.

- ❖ Participation from civil society and private sector who have to stop or reduce their economic activities so as to be complied with the national control requirement.

These 5 components have been maintained since the first wave of the epidemic. In particular, the public observation and social reactions have emerged once in a while when some people let their guard down. This observation can hopefully help the country to avoid the subsequent waves of the COVID-19 epidemic. It is not difficult to believe that any country with these 5 components mentioned above would be successful in controlling the massive spread of the virus.

Currently, global communities are expecting to have COVID-19 vaccines for the control program. So far, there is still no commercial vaccine available; and it is still uncertain that the vaccines being developed nowadays will have high efficacy enough to completely eliminate the virus. Thus, the universal use of face mask, frequent hand washing and social distancing is still the most efficacious “social vaccine” available. Continued promotion of highest level of personal protective behavior is the essential approach to control the epidemic.

Many experts in Thailand continue to warn the public that the second wave of COVID-19 epidemic is unavoidable [17]. There is an increased risk of cross-border transmission from some neighboring countries. However, if the 5 essential components are still in place, it should be effective enough to prevent the resurgence of the epidemic. The zero transmission observed in the last 3 months support such statement. The Thai experiences should be widely advocated and applied in other countries in order to verify whether the success can be achieved for the containment of the COVID-19 pandemic.

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