



## Important Strategies for COVID-19 Containment in the Hospital

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### Introduction

The outbreak of infectious Coronavirus Disease 2019 (COVID-19) has caught people unprepared. At the beginning of the pandemic, the Johns Hopkins Research Team predicted that Taiwan's confirmed cases should be the second highest next to China due to Taiwan's close link in terms of travel and distance to mainland China [1]. To date, Taiwan's confirmed cases, including 79.6% (356/447) cases imported, ranks at the 145<sup>th</sup> across worldwide. Comparing with the worst of global confirmed rate, Taiwan is in the international spotlight for its mitigation efforts [2].

Not only early detection can refrain COVID-19 from the hospital immediately; but also regular preparedness, rehearsals, and flexible response strategies all play timely prevention of the outbreak. Health Care Personnel's (HCPs) are essential workers and are at higher risk of COVID-19 infection because they have more contact with the patients/public and continue to circulate among others. As a safety protocol during/after this pandemic, nurses must apply the strategies of COVID-19 containment [3].

### Strategies of Containment

The current evidence has shown that COVID-19 is spread through droplets, from touching surfaces and then touching your face, or close personal contact. The virus can also survive in the environment and air for a period of time. Therefore, various important precautions should be strictly followed [4-6].

### STOCC Screening

When facing emerging epidemics, early detection of confirmed cases to restrain them and their close contacts (i.e., source control) is one of the important measures to suppress the outbreak. If medical team doesn't implement STOCC (symptoms, travel history, occupation, contact history, clustering), it will have significant cluster spread [7,8]. Screening of STOCC has been practiced in all departments of emergency and special outpatient in Taiwan for many years. The triage unit conducts early inquiries and records, and then triages emerging high-risk infectious diseases [9]. The use of detection method for COVID-19 has been expanded from the emergency department to the entire hospital. The screening content will be adjusted by the reported symptoms from the present confirmed cases, such as focusing on the respiratory symptoms initially, then adding diarrhea and new loss of taste or smell subsequently.

### Setting infrared thermometer at the hospital entrances

Using automatic thermometers to monitor whether any of people in the hospital have fever, including HCPs, patients, caregivers, visitors, and others (i.e., manufacturers, transporters), etc. If someone is detected with fever over 37.5°C, that person will be sent to fever screening clinics for further exam.

### Tracing travel and contact history

The National Health Insurance (NHI) smart card system is used to screen real-time arrival and departure history of passengers entry, to identify every person who has been in close contact with a confirmed case, or to gather info of particular occupations (e.g., medical personnel, civil air service, long-term care practitioners) etc. Any people need to quarantine for 14 days after entry. During these 14 days period, delaying doctor visits is recommended. If a medical treatment is urgently needed, then go to fever screening clinics first instead.

### Scheduling medical visits via online

In order to ensure hospital safety and to prevent further infection spread, a specific APP was developed for citizens to book doctor's appointments, visitation of patients, etc., and to fill the health

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declaration (including STOCC) online.

### Ward management

Wards are the important prevention and control points for infection. During the epidemic, measures of ward management in place are as follows:

Controlling single-entry to restrict one person to accompany the patient and to forbid visitation; encouraging to use alternative mechanisms for visitation, such as virtual video communication App; lifting restrictions gradually based on the risk. Keeping everyone's STOCC records for 28 days, which is the timeline 2 times of the COVID-19 incubation period, to restrain those confirmed cases and their close contacts; taking temperature check for all staff every day before entering the workplace. If an employee has a fever or respiratory symptoms, the employee must see a doctor right away for further check. If allowed to take off, the symptomatic employee will be sent home afterwards and must stay home to self-isolate until fever or symptoms has been relieved; redefining hospital's vacation-off policy to avoid staff shortage during the pandemics.

### Droplets and Contact Precaution

Medical personnel must wear a mask when facing patients, make a habit to wash hands correctly and don't touch eyes, nose, and mouth.

### Implement hand hygiene

Hand hygiene is the basis of preventative measure. Enough devices, the accessibility and willingness to wash hands are all important issues since 2006 Taiwan had responded the promotion of global hand hygiene. Wards need to set up enough hand sinks and alcohol-based sanitizers to let HCPs wash hands at the point of care conveniently. Also, continuous education is needed to improve hand hygiene compliance. During the pandemic, let personnel have easy access to wash hands anytime by storing hand sanitizers at all counters and control entrances such as gates, elevator, wards, and examination rooms; also by storing at the entrances of gathering places such as conference rooms, education rooms, restaurants.

### Providing enough PPEs

Based on the policy of Taiwan's Centers For Disease Control (CDC), domestic and international articles, and our hospital's own experience, the Infection Control Department has established couple guidance on PPEs (personal protective equipments) usage and response strategy. The standard procedure for PPE usage was tailored by transmission route, different type of workplace or job characteristic, and contact risk.

For example, HCP should wear double layered PPE if in contact with a high-risk patient such as specimen collection; otherwise, dress a single layer of PPE when negative once for SARS-CoV-2. If a waterproof gown is not available, place a waterproof apron over a water repellent isolation gown. It doesn't mean that wearing more layered PPE would be safer. The most safety essential is to put on and take off PPE correctly.

In Taiwan, medical personnel always wear masks when facing patients with respiratory symptoms or droplet transmission. However, in a pandemic, it became a nationwide campaign that everyone wear masks actively and must wear it when go to the hospital. If patients presented with dyspnea, they can take off the mask but HCPs are asked to wear masks all the time, including taking care patients and nursing handover. They could take off the mask when eating, but

need to avoid face to face and talking. However, incorrectly wearing a mask can decrease its effectiveness for protection. One report about a cluster of COVID-19 cases pointed out that 2/3 of HCPs who didn't wear masks during the patient care had become positive later; others had worn most of the time but sometimes took off when speaking (Heinzerling).

Gloves not over the wrist of the gown unfasten gown's ties and neck closures correctly are the most common mistakes of gown wearing. Thus, the educational training should emphasize and remind on the part that HCPs usually ignored. The Infection Control Practitioners (ICPs) would use fluorescence and an ultraviolet lamp to inspect if you're contaminated after removing PPE. During the epidemic, ICPs enhance to cultivate seeded medical personnel and cleaner of COVID-19's designated units. The seed personnel are in charge of teaching co-workers to make sure everyone has practiced the procedure of donning and doffing PPE before entering isolation rooms.

### Social Distancing Implement

People should maintain social distance of more than 1 meter outdoors and 1.5 meters indoors, and wear mask if can't. When taking care of patients, especially with respiratory symptoms, the HCP must wear a mask all the time and avoid face to face as much as possible. HCP should take staggered seating and wear a mask all the time if attending meetings or educational activities is needed. The hospital should divide the seats to ensure appropriate social distancing in the public areas including wards, outpatient departments and lounges of examination units. Any other areas where can't keep the social distance, such as restaurants, registrations, blood collection counters, etc., should install a plastic barrier to divide people.

### Conclusion

After suffering the experience of SARS outbreak back in the year 2003, since then Taiwan's hospitals have hold trainings to respond emerging infectious disease, the training includes the proper wearing and removal of PPEs; and practical exercises for emergency planning (such as personnel precautions, traffic control and epidemic prevention measures, placement of high-risk personnel, and sufficient PPEs stocks).

The worldwide is still suffering now the devastation of COVID-19. The HCPs should keep following the strategies of containment firmly. When Taiwan lifted restrictions, we need to re-think how the hospital can still prevent future unknown epidemics. After the epidemic, the hospital culture/habits must be changed, including continuing to restrict the arbitrary access of visitors; to require reservations of all caregivers and visitors; to use technology to trace people's STOCC; and to wear masks all the time while taking care of patient's respiratory symptoms. With these precautionary actions in place, may we can better defend next pandemic and contain virus inroad.

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