Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Perspectives

The preventive strategies of community hospital in the battle of fighting pandemic COVID-19 in Taiwan

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Taiwan Centers for Disease Control (CDC) announced some unexplained deadly pneumonia with unknown etiology in Wuhan, China since this January. Many infected patients progressed to acute respiratory distress syndrome and died rapidly.[1,2] A novel coronavirus was finally identified and named it as SARS-CoV2 and the related disease as COVID-19 (Coronavirus disease 2019). COVID-19 could rapidly spread to others and many hospital staffs were also infected and died in Wuhan. Furthermore, it soon transmitted to all cities and counties of Hubei, China, then spread to whole China and worldwide later.

Till now, there are more than 166,000 confirmed COVID-19 and 6400 patients died in the disaster. Though Taiwan is very close to China geographically, there were much fewer confirmed COVID-19 infected patients in Taiwan, compared with many countries.[3,4] Since Taiwan is not a member of WHO, we receive a limited assistance from

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WHO.[5] However, the successful control programs for COVID-19 infection in Taiwan are promising and it may resulted from the experience of managing the outbreak of Severe Acute Response Syndrome(SARS) in Taiwan, 2003.[6,7] Initially, government of Taiwan took several rapid responses since January to prevent the COVID-19 outbreak crisis, such as border control from the air and sea, case identification, quarantine of suspicious cases, holiday extension, travel restriction and so on.[8] In addition, the government decided to prohibit the export of surgical masks to make sure masks were not too short and started to manufacture masks. Several studies demonstrated the infection control policy of medical centers in Taiwan.[4,9,10] For different infectious diseases, the roles and infection control strategies in various levels of healthcare system would be different. The strategies of preventing COVID-19 in community hospitals have not been described. Therein, we present our strategies of how to prevent COVID-19 infection in a community hospital without negative pressure isolation room in Taiwan. Kaohsiung Municipal Ta-Tung hospital (KMTTH) is a 428-bed community hospital in Kaohsiung, Taiwan. Our policy is that we have to do our best to prevent any possible COVID-19 infection in the hospital. We described our strategies as beneath.

First of all, we inventory personal protective equipment (PPE) immediately. According to the usual daily consumption amount of PPE, five-time amount of PPE were prepared, such as surgical masks, gowns, gloves, hand disinfectants etc. Because of the shortage of PPE worldwide, we recruited all PPE back to central storehouse, especially surgical masks, were allocated by the number of hospital staffs and we made the usage rules such as all staffs need signature when taking new equipment to prevent inappropriately waste or individual storage due to panic.

Daily committee is collecting updated information including the amount of PPE, staff health, new interventions and the pandemic status Taiwan and worldwide. We also had summarized important information to all our staffs via internet social medias efficiently. For all hospital staffs, included doctors, nurses, pharmacists, radiologists, cleaners etc., had to learn how to wear PPE again and examined by infection control personnel.

To prevent hospital infection, all entrance doors to the hospital buildings were closed as possible. Outdoor quarantine stations in front of the entrance were established. Body temperature of all entrance persons was checked by forehead thermometer or intra-red thermal camera. In addition, the National Health Insurance Administration (NHIA) and the National Immigration Agency worked together to integrate patients' past travel history[8] and we orally asked the TOCC history (travel, occupation, contact and cluster) and checked the NHI identification card data from NHIA for all visitors who will enter our hospital. For visitors who didn't take his own NHI identification card, we asked them to check and sign TOCC history sheet, the TOCC sheet was designed by a daily committee according to the daily announcement of Taiwan CDC. The procedures prevent lone awaiting line in front of hospital.

In addition, all people have to wear surgical masks and sprayed 75% alcohol for hand hygiene when they entered and left the hospital. About the proactive action of febrile person detection, the patients would be checked several times after they entered the hospitals. In addition to restrict the number and time of inpatient care-givers and visitors, all persons entering to our hospital, who had fever or respiratory symptoms, just came from epidemic countries or closely contact with a confirmed COVID-19 infected patients, will be referred to emergency department for throat swab of COVID-19 immediately. A temporary outpatient clinic outside the buildings was setup to serve these asymptomatic patients came from epidemic countries with a media-assisted consulting system. For example, the duty doctors with PPE and faced the patients in the outpatient clinic outside the hospital, he can prescribe regular medicine for patients with chronic diseases, and may consult specialist-inside-the hospital via media if he cannot resolve or handle the disease. We also established the out-door pharmacy service for providing medications of chronic diseases.

Staff health surveillance is very important. Therefore, all healthcare workers have to check body temperature and reported whether they had respiratory symptoms or not every day. In addition, our hospital staffs came from epidemic countries or regions within 14 days, all have to receive tests for COVID-19 and will take a chest radiography twice with 3-day apart. They were not allowed to enter or work in the hospital temporally until all examinations were both negative. For hospitalized patient surveillance, a warning system was setup to survey patients with suspected COVID-19 among inpatients, included rapid progressed pneumonia, persistent fever or respiratory symptoms, poor response to empiric antibiotics, lymphopenia, low procalcitonin and so on. All information will automatically transmit to duty physicians by cell phone and they have to recheck the patients' condition or consult infectious diseases specialists or pulmonologists at the same day. The hospitalized patient, who cannot be excluded from COVID-19 by infectious diseases specialists or pulmonologists, had to be transferred to an isolation room and received throat swab soon. The patient will stay there until negative result of SARS-CoV2 test.

We established a rule of environmental clearance and checking. The area and frequency of environmental clearance increased and the clearance was checked by ATP fluorescence assay randomly.

Finally, besides the above strategies, we also setup a simple isolation room without negative pressure in the hospital and design a plan of re-allocation of hospital staffs and work spaces step by step according to the stage of the COVID-19 pandemic.

Community hospitals play an important role in the health system in Taiwan, which provide the basic medical needs for general population with limited human and equipment resources compared to medical centers. Maintaining the operation of community hospitals is crucial in the pandemic crisis, especially through the experience of 2003 SARS. We shared our experiences and hope to keep all medical services provided.

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