

**CORRESPONDENCE**

# Infection control strategies of patient diversion in response to COVID-19

Since the COVID-19 pandemic was first reported in Wuhan, China at the end of 2019, 1.98 million people have been diagnosed worldwide, with 120 000 deaths. Taiwan suffered a major impact from the SARS outbreak in 2003 because of its close proximity to China and its close contact,<sup>1-3</sup> and it took a great deal of effort from the whole population to overcome its effects. Here, we would like to share our actions and add a few measures which could be useful during the COVID-19 pandemic from the contingency team of Kaohsiung Municipal Siaogang Hospital.

## 1 | PATIENT DIVERSION

### 1. Outpatient medical services of the Emergency Department

- a. Medical diversion control: establishment of a temperature screening station, wearing masks, hand disinfection, door virtual private network to check whether the patient have been abroad, their travel, occupation, contact, and cluster history (TOCC) status, conduct diversion control for those with respiratory symptoms, implement a TOCC real name system, and prohibit nonpatients and people accompanying the patient from entering the hospital. Those with no TOCC history or respiratory symptoms are allowed to enter the hospital. The aim of this strict patient diversion policy is to reduce the risk of infection and ensure the safety of the public's medical environment.
- b. Diversion of emergency triage: According to the definition of severe special infectious pneumonia (COVID-19), patients with suspected symptoms are separated from general patients to avoid cross infection.
- c. Set up a quarantine clinic: For patients without obvious respiratory symptoms or fever and those returning from countries with level 3 travel health notices who require medical treatment due to other diseases, a quarantine clinic has been set up to provide a safe and convenient way for people to get medical treatment outdoors.
- d. Provide telemedicine for subjects in home isolation/quarantine, and self-health management: For those who are in home

isolation, home quarantine or self-health management and require independent health management, the hospital will arrange telemedicine upon notification by the Health Bureau, Kaohsiung City Government.

- e. Online appointments for chronic prescriptions: Advocating that patients who receive regular medications for chronic diseases follow the hospital's implementation of subdivision and diversion control to collect their prescriptions by making an appointment or go directly to a community pharmacy to reduce the time spent in the hospital. Except for those who make an appointment to collect chronic prescriptions online, depending on the severity of the outbreak, an outdoor window will be set up in the drug collection area, or the patients will be advised to go to community pharmacies to collect their drugs to reduce the risk of infection when visiting the hospital.
  - f. In line with changes in the status of the pandemic, the health examination policy for foreign migrant workers has been updated as follows:
    - New immigrants and migrant workers are required to cooperate with the government's quarantine policy. It is necessary to complete 14 days of quarantine before taking the health examination regardless of whether the worker has symptoms or a suspected infection.
    - Due to the increased risk of infection in the community, those with a forehead temperature of 37°C or more and an ear temperature of 37.5°C or more at the entrance of the hospital should go to the quarantine clinic or medical institution to confirm that there is no risk of infection before undergoing the health examination.
- ### 2. Inpatient medical services
- a. Set up a special quarantine ward: In addition to the original four negative-pressure isolation rooms, the 9B (ninth floor, B area) special quarantine ward has been set up (all wards have been changed to simple negative pressure rooms). Moreover, the double rooms have been changed to a "one room for one person" policy to accommodate high-risk and suspected patients.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2020 The Authors. *The Kaohsiung Journal of Medical Sciences* published by John Wiley & Sons Australia on behalf of Kaohsiung Medical University.

**TABLE 1** Conditions and admission principles for the isolation wards

| Category                         | Conditions for admission and treatment of patients (in order of priority)  | Transfer conditions  |
|----------------------------------|--|--|
| Negative pressure isolation ward | <p>Diagnosed with severe special infectious pneumonia (COVID-19)</p> <p>Suspected of having severe special infectious pneumonia <i>with any of the following</i>:</p> <ul style="list-style-type: none"> <li>• History of travel abroad within 14 d.</li> <li>• Contact with confirmed cases.</li> </ul> <p>Suspected of having severe special infectious pneumonia <i>without any of the following</i>:</p> <ul style="list-style-type: none"> <li>• History of travel abroad within 14 d.</li> <li>• Contact with confirmed cases.</li> </ul> <p>Confirmed or suspected subjects placed in respiratory isolation, such as tuberculosis, chickenpox, etc.</p>       | <ul style="list-style-type: none"> <li>• After symptom relief, three consecutive negative tests at intervals of 24 h.</li> <li>• No need for hospitalization, subjects can be discharged.</li> <li>• Transfer to the general isolation ward if there is a need for hospitalization.</li> <li>• Second negative coronavirus tests. <ul style="list-style-type: none"> <li>◦ No need for hospitalization, subjects can be discharged.</li> <li>◦ Transfer to the general isolation ward if there is a need for hospitalization.</li> </ul> </li> <li>• Second negative coronavirus tests. <ul style="list-style-type: none"> <li>◦ No need for hospitalization, subjects can be discharged.</li> <li>◦ Transfer to the general isolation ward if there is a need for hospitalization.</li> </ul> </li> <li>• If the ward is full, the first sampling is negative, and after the second sampling has been completed, subjects can be transferred to the special quarantine ward.</li> <li>• If the ward is full, subjects can be transferred to the special quarantine ward.</li> </ul> |
| Special quarantine ward          | <p>Suspected of having severe special infectious pneumonia <i>without any of the following</i>:</p> <ul style="list-style-type: none"> <li>• History of travel abroad within 14 d.</li> <li>• Contact with confirmed cases.</li> </ul> <p>Suspended bed in a negative-pressure isolation ward for suspected severe special infectious pneumonia.</p> <p>Suspected of being infected with new coronavirus.</p> <p>Confirmed or suspected patients placed in respiratory isolation, such as tuberculosis chickenpox, etc.</p> <p>History of travel abroad within 14 d/ confirmed case contact history/foreign worker, but hospitalized for nonrespiratory reasons.</p> | <ul style="list-style-type: none"> <li>• Second negative coronavirus tests. <ul style="list-style-type: none"> <li>◦ No need for hospitalization, subjects can be discharged.</li> <li>◦ Transfer to the general isolation ward if there is a need for hospitalization.</li> </ul> </li> <li>• Second negative coronavirus tests. <ul style="list-style-type: none"> <li>◦ No need for hospitalization, subjects can be discharged.</li> <li>◦ Transfer to the general isolation ward if there is a need for hospitalization.</li> </ul> </li> <li>• First negative coronavirus tests. <ul style="list-style-type: none"> <li>◦ No need for hospitalization, subjects can be discharged.</li> <li>◦ Transfer to the general isolation ward if there is a need for hospitalization.</li> </ul> </li> <li>• As the reason for hospitalization disappears, subjects can be discharged.</li> <li>• No respiratory symptoms within 5 d of hospitalization. <ul style="list-style-type: none"> <li>◦ Transfer to a disease-related ward.</li> </ul> </li> </ul>                            |
| General isolation ward           | <ol style="list-style-type: none"> <li>1. Release from quarantine if the second coronavirus test is negative, but hospitalization is still required.</li> <li>2. General patients with respiratory tract infections or unexplained fever.</li> </ol>   | <ul style="list-style-type: none"> <li>• Subjects with respiratory tract infections or unexplained fever persisting for 3 d without improvement should be reported as suspected of having severe special infectious pneumonia, and transferred to a negative-pressure isolation ward or special quarantine ward.</li> <li>• There is no need for hospitalization and subjects can be discharged.</li> <li>• Transfer to a disease-related ward if there is a need for hospitalization.</li> </ul>  |

The special quarantine ward has a smooth traffic flow. Specialists (infection/chest department), residents, and nurses are designated to take care of the ward.

- b. Prohibition of bed transfer: In principle, bed transfer is prohibited, except in cases where medical treatment is needed.
- c. Initiate a manpower mobility control process in response to medical service load reduction.
- d. Reduce unnecessary and nonemergency hospitalizations.
- e. Close the psychiatric day ward service.

Szu-Chia Chen<sup>1,2</sup>   
Chao-Hung Kuo<sup>1,2</sup> 

<sup>1</sup>Department of Internal Medicine, Kaohsiung Municipal Siaogang Hospital, Kaohsiung, Taiwan

<sup>2</sup>Faculty of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

#### Correspondence

Szu-Chia Chen, Department of Internal Medicine, Kaohsiung Municipal Siaogang Hospital, 482, Shan-Ming Road, Siaogang District, 812 Kaohsiung, Taiwan.  
Email: scarchenone@yahoo.com.tw

## 2 | IMPLEMENT PROPER PATIENT PLACEMENT

According to the configuration and setting area of the isolation wards, the "Standards and Principles of Admission and Treatment of Isolation Beds" (Table 1) have been established, and the isolation rooms have been divided into three categories: negative-pressure isolation wards, special quarantine wards, and general isolation wards. The conditions for the priority of admission and treatment of patients have been established according to these categories to facilitate appropriate patient placement. We hope that sharing our experience can help all medical service providers.

#### CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

Ko Chang<sup>1,2</sup>  
Huang-Chi Chen<sup>1</sup>

#### ORCID

Szu-Chia Chen  <https://orcid.org/0000-0002-1610-4184>

Chao-Hung Kuo  <https://orcid.org/0000-0003-1847-395X>

#### REFERENCES

1. Cheng SC, Chang YC, Fan Chiang YL, Chien YC, Cheng M, Yang CH, et al. First case of Coronavirus Disease 2019 (COVID-19) pneumonia in Taiwan. *J Formos Med Assoc.* 2020;119:747–751.
2. Lai CC, Liu YH, Wang CY, Wang YH, Hsueh SC, Yen MY, et al. Asymptomatic carrier state, acute respiratory disease, and pneumonia due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Facts and myths. *J Microbiol Immunol Infect.* 2020;53:404–412.
3. Lee PI, Hsueh PR. Emerging threats from zoonotic coronaviruses—from SARS and MERS to 2019-nCoV. *J Microbiol Immunol Infect.* 2020;53:365–367.