


COVID-19 Control in Community Hospitals: Experience From Four Community Hospitals in Beijing, China

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Abstract

By September 20, 2021, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been pandemic in 237 countries and regions, resulting in 228,506,698 confirmed cases and 4,692,361 deaths. At the same time, a total of 1123 cases of COVID-19 had been confirmed in Beijing, China. Peking University Shougang Hospital has 4 community hospitals with 174 staff members, covering 230,000 residents in Shijingshan district, Beijing. The community hospitals were the basic units of China's healthcare system for public health services, as the main battlefield for screening and controlling of COVID-19. We reported our experience about the prevention of SARS-CoV-2. We suggest that community hospitals should change their process for admitting patients. While the screening of suspected cases of COVID-19 is vital, patients with suspected infections should be isolated immediately.

Keywords

community hospitals, screening flow, COVID-19, control, SARS-CoV-2

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What do we already know about this topic?

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread to 237 countries and regions, resulting in 228,506,698 confirmed cases and 4,692,361 deaths as of September 20, 2021.

How does your research contribute to the field?

Here, we reported our experience about the prevention of SARS-CoV-2 to help community hospitals treat patients and control the spread of COVID-19 more efficiently.

What are your research's implications towards theory, practice, or policy?

We suggest that in the face of the COVID-19 pandemic, community hospitals should change their process for admitting patients. Screening of suspected cases of COVID-19 is vital. Patients with suspected infections should be isolated immediately.

In December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, Hubei Province, China, causing coronavirus disease 2019 (COVID-19) which was characterized by symptoms such as fever, cough, fatigue, and dyspnea.^{1,2} The first confirmed COVID-19 case was reported in Beijing on January 20, 2020; as the COVID-19 pandemic accelerated, the number of newly confirmed cases in Beijing increased rapidly, resulting in the overload of tertiary hospitals. Because community hospitals were the basic units of China's healthcare system for public health services and providing basic medical services to residents, community hospitals became the main battlefield for screening and controlling of COVID-19. However, as of September 20, 2021, a total of 1123 cases of COVID-19 had been confirmed in Beijing, with 837 local confirmed cases and 286 imported confirmed cases.

Peking University Shougang Hospital has 4 community hospitals with 174 staff members, covering 230,000 residents in Shijingshan district, Beijing. We reviewed the number of patients who visited the 4 community hospitals during the COVID-19 pandemic and found that there was no significant fluctuation in the number of patients who visited the community hospitals. The lowest number of patient visits coincided with the Chinese Lunar New Year. From January 20, 2020, to September 20, 2021, a total of 946,259 patients visited the 4 community hospitals affiliated with Peking University Shougang Hospital, and 124 patients with fever were referred in COVID-19 designated hospitals. There were no infections of healthcare workers in the 4 community hospitals. The purpose of this paper was to share our work experience, management experience, and suggestions for improvement of community hospitals' operations during the COVID-19 pandemic to enable the medical staff of community hospitals in other countries and regions to operate their facilities with the lowest possible exposure risk.

The COVID-19 pandemic in China could be divided into 3 periods: the rapid growth period of the outbreak (from the first confirmed case report to the peak of the local incidence), the stable decline period (from the statistical inflection point to the period of zero new reports), and the recovery period (after

the reporting of zero new cases). The most serious difficulties faced by the community hospitals staff at the rapid growth period were (1) fear and anxiety among staff, (2) an extreme shortage of protective supplies, (3) lack of experience and official guidance in the prevention and control of COVID-19, and (4) usage of excessive protection beyond what was referred to in the Technical Guidelines on the Prevention and Control of COVID-19 in medical institutions, such as wearing double pairs of masks and gloves. These problems caused the community hospitals to come to a standstill.

The most prominent problems we encountered were the shortage of supplies and lack of knowledge of how to develop a scientific protection process. With the help of the local center for disease control (CDC) and the department of hospital-acquired infection control of Peking University Shougang Hospital, the 4 community hospitals returned to functional operation and the number of patient visits returned to normal about 10 days after the outbreak of COVID-19.

According to our experience, the first and most important step should be to standardize the procedure of receiving patients in COVID-19 pandemic. We developed the following screening procedure: temperature measurement, epidemiological history investigation (to find out whether there was a history of travel or residence in Wuhan within 14 days, whether a patient was exposed to patients from Wuhan with fever and respiratory symptoms within 14 days, or whether a patient was present in an infection cluster location). A patient with fever or epidemiological history was quarantined immediately and then transferred to the designated hospital for further confirmation by a dedicated ambulance through a fixed channel. Non-febrile patients used normal channels to enter the community hospitals for diagnosis and treatment (see Figure 1).

According to different diagnosis and treatment scenarios, a corresponding protection level was formulated for medical staff.³ The routine protective equipment for treating general patients were hats, surgical masks, work clothes, and gloves. The medical working environment should be well-ventilated, and public areas should be thoroughly disinfected.

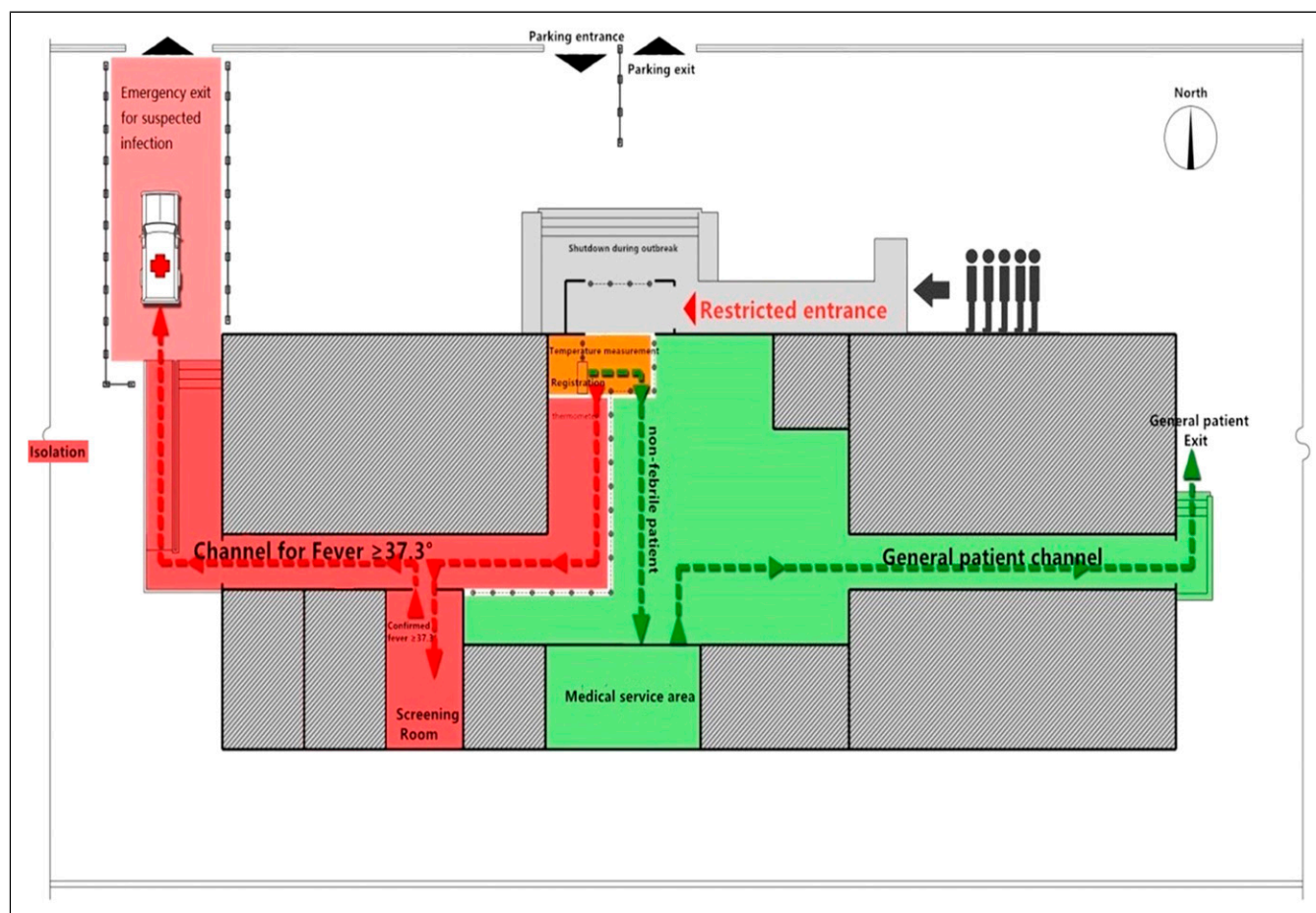


Figure 1. Screening flow diagram of community hospitals.

At the front door, healthcare workers check the patients' travel history by their mobile application software. Temperature measurement before admission and treatment should be strictly implemented. The distance between medical staff and patients should be more than 1 m, restrictions to control of the flow of people should be implemented, and the publicity and education for personal protection awareness should be enhanced. All patients should be required to provide their epidemiological history, register their electronic information, and sign a "patient commitment" which stands for ensuring the truth of data. It was necessary to strengthen the management of medical staff inside and outside the hospital, reduce social gathering activities such as dinner parties, and monitor and report body temperature on a daily basis. Work meetings should be conducted by telephone or internet.

While the telehealth solution to detect deterioration of the health status during the COVID-19 pandemic was useful in reducing the visit and contact times between the doctors and patients, the patients' health status could be remotely monitored through ambulatory blood pressure monitoring, resting or ambulatory electrocardiogram, spirometry, sleep oximetry,

and cardiorespiratory polysomnography performed in community hospitals. Patients also monitored their blood pressure, heart rate, blood oxygen saturation, body temperature, body weight, waist circumference, blood glucose, and lipids at home through a dedicated smartphone app. All data conveyed to the web-based telehealth platform were used by doctors to promptly manage critical patients.⁴

The staff training of community hospitals during the COVID-19 outbreak should emphasize on the professional knowledge, and prevention and control of COVID-19 for staff in medical institutions (medical/non-medical). Training contents included diagnostic and treatment procedures, guidance on prevention and control, protective techniques for medical staff, and producing community pandemic information bulletins. Training could be centralized, online, on the spot, or simulation-based, and training effect assessments should be carried out. Attach importance to the deployment of protective materials and the clearance and transportation of medical waste. The doctors from Singapore also found that evolving information necessitated rapid and regular communications with large, disparate groups of clinicians, which was very important.⁵

As of September 20, 2021, COVID-19 has spread to 237 countries and regions, resulting in 228,506,698 confirmed cases and 4,692,361 deaths.³ Numerous community hospitals will encounter what we experienced. To help community hospitals treat patients and control the spread of COVID-19 more efficiently, we suggest that in the face of the COVID-19 pandemic, community hospitals should change their process for admitting patients. Screening of suspected cases of COVID-19 is vital. Patients with suspected infections should be isolated immediately.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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