



Optimal management of mobile cabin hospitals during the COVID-19 pandemic: experience from Shanghai, China

Yang-Xi Liu^{1#}, Cheng Zhu^{2#}, Qiong-Fang Zha³, Yue-Tian Yu⁴

¹Department of Pharmacy, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China; ²Department of Disease Prevention and Control, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China; ³Department of Respiratory and Critical Care Medicine, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China; ⁴Department of Critical Care Medicine, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

#These authors contributed equally to this work.

Correspondence to: Yue-Tian Yu, MD. Department of Critical Care Medicine, Renji Hospital, Shanghai Jiao Tong University School of Medicine, 145 Middle Shandong Road, Shanghai 200001, China. Email: fishyyt@sina.com; Qiong-Fang Zha, MD. Department of Respiratory and Critical Care Medicine, Renji Hospital, Shanghai Jiao Tong University School of Medicine, 145 Middle Shandong Road, Shanghai 200001, China. Email: drzhaqiongfang@sina.com.

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Coronavirus disease 2019 (COVID-19) outbreak caused by Omicron variant began in Shanghai in late February 2022 and has attracted huge concern. According to the latest figures from the Chinese government, more than 58,000 confirmed cases and 590,000 asymptomatic carriers had been identified by the end of June 2022 (<http://sh.bendibao.com/news/2020119/233243.shtm>). Thus, how to cope with the Omicron pandemic wave presented a challenge to the public health system. A total of 48 district medical institutions were temporarily converted into COVID-19-designated hospitals with 25,000 inpatient beds to treat the moderate or severe patients. Unlike infection with the Delta variant, patients infected with the Omicron variant had fewer clinical symptoms, and most were asymptomatic, identified only by viral nucleic acid detection. To overcome the shortage of inpatient beds and for the convenient centralized management of confirmed asymptomatic or mild cases, more than 100 mobile cabin hospitals (MCHs) were established in sports stadiums, exhibition centers, conference centers, and even large parking lots. Therefore, the number of temporary inpatient beds has been increased to approximately 160,000.

As members of the medical teams staffing these MCHs, we herein share our experiences in Shanghai in the hope that they will help manage MCHs throughout the COVID-19 pandemic in other countries.

Medical staff coordination

As the MCH is a stand-alone medical facility, a multidisciplinary team should be organized to ensure the implementation of daily medical work. Clarifying each person's responsibilities and ensuring a stable management team are prerequisites for the effective operation of an MCH. In addition to MCH headquarters, the whole medical team is divided into ten groups, including the medical group, the nursing group, the nosocomial infection control group, the security group and so on. The responsibilities of each of the ten groups are listed in *Table 1*. A daily scrum of each group is necessary, and a centralized conference of the whole medical team is held weekly.

Optimization of working procedures

Unlike the first wave at the beginning of 2020, the rapid transmission of Omicron variant presented a considerable challenge to the public health system, with more cases identified based on the detection of nucleic acid (1,2). The number of patients was enormous, and although most patients were asymptomatic, they were admitted to MCHs for medical observation. Therefore, emergency preparedness should be adjusted, and an optimized working procedure should be established to facilitate patient

Table 1 Medical staff and their responsibilities

Working team	Main responsibilities
MCH headquarters	1. Managing the work of different groups and medical teams
Medical group	1. Making rounds of wards in MCHs every 4 h 2. Prescribing medications for chronic diseases 3. Individualized TCM treatment, if necessary
Nursing group	1. Implementing patient care 2. Collect samples for nucleic acid testing
Pharmacy group	1. Drug deployment to different cabins 2. Drug distribution in different cabins
Laboratory group	1. Point-of-care testing (e.g., arterial blood gas analysis) 2. Transporting samples to a central laboratory for nucleic acid testing
Medical Imaging group	1. Performing, interpreting, and reporting results of chest radiography 2. Performing, interpreting, and reporting results of chest CT (if available)
Nosocomial infection control group	1. Participating in MCH design 2. Providing medical teams with specific COVID-19-related knowledge 3. PPE examination 4. Managing occupational exposure
Psychological counseling group	1. Psychological counseling for both medical staff and patients
Information group	1. Coordinating patient admission from the community 2. Coordinating MCH discharge or transporting patients to designated hospitals 3. Maintaining the medical information system 4. Daily data collection and reporting
Logistics group	1. Providing medical equipment and PPE 2. Providing food, drink, and other daily essentials 3. Cleaning MCHs and managing medical wastes
Security group	1. Ensuring medical safety in the MCH

MCH, mobile cabin hospital; TCM, traditional Chinese medicine; CT, computed tomography; COVID-19, coronavirus disease 2019; PPE, personal protective equipment.

management (3,4). Our six-step working process in the MCH is summarized in *Figure 1*. As COVID-19 is an acute respiratory infectious disease, the medical group is made up of many respiratory physicians and other physicians. Patients with asymptomatic or mild COVID-19 symptoms should be divided into two groups based on the presence of chronic diseases because it is an independent risk factor for COVID-19 progression. Those without chronic disease are prioritized for medical observation, expecting negative results on nucleic acid testing. For those with chronic

illness, standardized treatment should be provided, and more attention should be paid to changes in symptoms. Moreover, the MCH needs to be equipped with basic rescue facilities, and a rapid transfer process to designated hospitals should be maintained.

The establishment of MCHs is a practical approach to cope with the wave of Omicron variant infections, and appropriate coordination of medical staff and optimized working procedures are essential. We hope that our experience can be helpful to control the pandemic and

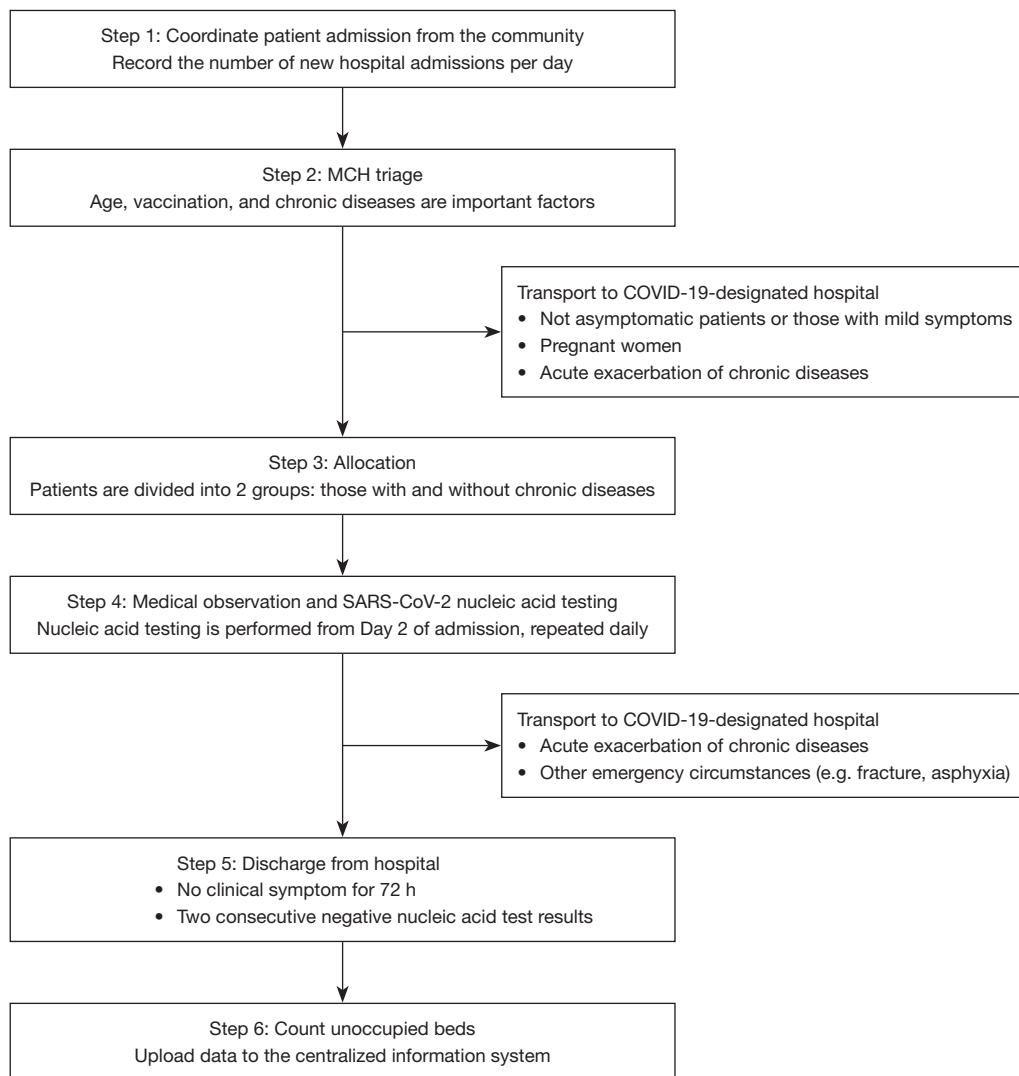


Figure 1 Optimization strategies of working procedure in MCH. COVID-19, coronavirus disease 2019; MCH, mobile cabin hospital; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

international consensus of MCHs management should be developed as soon as possible.

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Footnote

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References

1. Liu Y, Rocklöv J. The reproductive number of the Delta variant of SARS-CoV-2 is far higher compared to the ancestral SARS-CoV-2 virus. *J Travel Med* 2021;28:taab124.
2. Kumar S, Thambiraja TS, Karuppanan K, et al. Omicron and Delta variant of SARS-CoV-2: A comparative computational study of spike protein. *J Med Virol* 2022;94:1641-9.
3. Immovilli P, Morelli N, Antonucci E, et al. COVID-19 mortality and ICU admission: the Italian experience. *Crit Care* 2020;24:228.
4. Yu Y, Xu C, Zhu C, et al. Emergency preparedness for COVID-19: experience from one district general hospital in Wuhan. *J Emerg Crit Care Med* 2020;4:30.