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Home or Cabin

Community Care for Coronavirus Disease 2019

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To date, there have been >10 million cases and 500,000 deaths as a result of coronavirus disease 2019 (COVID-19).¹ The rapidity and severity of this pandemic has challenged, and in many cases completely overwhelmed, acute care hospital capacity.² Notably however, >80% of those affected by COVID-19 will have mild-to-moderate infection and will not require acute care hospitalization.³ As such, it is critical to develop novel and alternative models of care that allow for treatment of nonsevere cases outside of acute care settings. In Wuhan, China, the original epicenter of the pandemic, large sports and convention facilities were converted into “mobile cabin” hospitals to offload acute care by providing extra beds for patients with mild presentations of COVID-19. In this issue of CHEST, Xiong et al⁴ report on 421 patients who were treated in one section of Dongxihu Cabin Hospital, the largest mobile cabin hospital in Wuhan. These mobile cabin patients were required to have only mild-to-moderate symptoms, to be independent with activities of daily living, to have no psychiatric history, and to have a baseline oxygen saturation of >95%. A Zhongnan Hospital team provided medical supervision, with on-site access to devices for serial oxygen saturation monitoring, chest CT scanning, and nucleic acid testing. Patients remained in the facility for a median of 17 days and were provided with meals and recreational activities. A minority of patients (59/421; 14%) required transfer to acute care due to

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development of tachypnea, hypoxia, or progressive chest CT findings; the majority of patients (362/421; 86%) were directly discharged home based on resolution of fever, improvement in respiratory symptoms and CT lesions, and two consecutive negative throat swabs.⁴

The Dongxihu cabin hospital was one of 14 mobile cabin hospitals established within the first month of the outbreak in Wuhan, and at that time >12,000 patients were cared for in this fashion.⁵ Chinese physicians touted this approach as “worthy for promotion in other countries and regions in the world” to mitigate the COVID-19 pandemic.⁵ Indeed, some other countries have implemented similar facilities. In March 2020, 18 residential facilities were converted into “Life Treatment Centres” by the Korea Centres for Disease Control and Prevention.^{6,7} These centers have been credited as a core aspect of Korea’s success in rapidly curtailing COVID-19 cases and deaths.⁷ In North America and Europe, however, a more common approach to treating patients with mild-to-moderate COVID-19 has been home isolation, with remote physician monitoring by telephone or virtual care platforms.⁸⁻¹⁰ The advantages of remote virtual monitoring include ease and speed of implementation, lower costs, and allowing patients to stay in the comfort of their home.⁹ However, the incremental labor and costs associated with mobile cabin hospitals could be worthwhile if they can (1) provide safer oversight of at-risk patients and/or (2) decrease community transmission of COVID-19.

One major potential advantage of mobile cabin management over remote virtual care is intensive clinical monitoring. Initial reports indicate that 14% to 19% of those with COVID-19 will have severe illness and require acute and/or intensive care treatment.^{3,11} The major complications of infection, including dyspnea and acute respiratory distress syndrome, typically develop days 5 to 8 of illness.¹² Risk factors for severe infection have been identified and include increased age, medical comorbidities, and various laboratory parameters.¹³ These clinical indexes can guide risk stratification and intensity of follow up, either in a mobile cabin setting or in patients’ homes with virtual care assessments. However, a mobile cabin setting provides the ability for 24/7 patient oversight. For patients with subtle changes in clinical status, the ready

access to supplemental oxygen and pulmonary imaging permits some degree of care escalation to be done within the cabin, whereas for patients at home, this would typically necessitate an ED visit. Furthermore, precipitous deterioration in respiratory status, within a matter of hours, has been reported with COVID-19, and continuous cabin monitoring may allow for prompt recognition and action in the face of rapid decline.^{8,9} A mobile cabin setting provides the availability of objective measures of clinical status that include oxygen saturation, vital signs, and radiologic evidence. Remote virtual assessments are limited in this capacity and predominantly rely on surrogate markers of dyspnea and hypoxia, which may not correlate with true oxygen saturation.⁸ However, it is unclear if this enhanced monitoring translates to better outcomes. In the Dongxihu mobile cabins, 14% of patients required transfer to acute care,³ which is similar to the rate of hospital transfer that has been documented in a home virtual care assessment model.¹⁰ Further comparisons are required to determine if the mobile cabin model, with its additional oversight but higher resource utilization, reduces clinically relevant outcomes.

The second potential advantage of mobile cabin management is prevention of community transmission. Various studies have attempted to elucidate transmission within groups of contacts; household contacts have been shown consistently to be at highest risk, with secondary attack rates between 5% and 75%.^{14,15} The authors propose that, due to these transmission dynamics, home-based clinical management and quarantine will not be sufficient to curb the spread of severe acute respiratory syndrome coronavirus 2.³ However, individuals with COVID-19 appear to be most infectious early in the course of their illness, with peak infectivity occurring just prior to and at the onset of symptoms.^{14,16} Admission to a mobile cabin hospital requires a confirmed diagnosis of COVID-19; >50% of patients who were cared for in the Dongxihu cabin were ≥ 8 days from symptom onset at the time of admission.³ Therefore, effectiveness at reducing household transmission with this care model is unknown and must be evaluated against the risk of transmission to health care workers.

Acute care hospitalization is neither possible nor required for most patients with COVID-19. However, given the potential for clinical deterioration of patients with initially mild-to-moderate illness, alternative care models must be developed. In their article, Xiong et al⁴ describe one such possibility, outlining treatment of those with mild-to-moderate COVID-19 in mobile cabin hospitals.

Alternative options, including virtual care assessments while maintaining patients at home, have also been implemented at various centers around the world.^{9,10} Although there are potential advantages to the mobile cabin strategy, further comparative research is required to assess the (1) impact on clinical outcomes such as hospitalization, ICU admission, and death, (2) reduction in household transmission, (3) cost-effectiveness, and (4) potential unintended consequences such as transmission to health care workers, over-medicalization of those with mild-to-moderate viral infection, and psychologic distress of institutionalization.

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