



A novel strategy for predicting critical illness in hospital-acquired COVID-19

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Coronavirus disease 2019 (COVID-19) had a marked effect on healthcare systems and daily practice of care in hospitals [1,2]. Many people died from COVID-19 during the pandemic [3]. Mortality due to COVID-19 was associated with demographic factors, comorbidities, and the initial laboratory findings [4]. Social distancing and meticulous precautions were the only preventive methods in the early part of the pandemic. However, nosocomial spread occurred from healthcare providers to patients, as well as from patient to patient [5]. Given the high prevalence of comorbidities in hospitalized patients, nosocomial transmission could be a secondary factor leading to overwhelming outbreaks in hospitals. Critically ill COVID-19 patients require enormous healthcare resources, including manpower, isolation facilities, and critical care equipment, such as monitoring facilities, oxygen supply devices, and mechanical ventilators. The locoregional spread of the outbreak led to severe congestion in critical care systems and was ultimately associated with high mortality [6-8].

A recent study on the risk factors for progression to critical illness in hospital-acquired COVID-19 shed light on a crucial aspect of patient management during the pandemic. The findings underscore the importance of early identification and intervention in patients at the highest risk of severe outcomes, offering a stark reminder of the vulnerabilities within healthcare systems. In that study, 18.1% of hospital-acquired COVID-19 cases progressed to a critically ill condition, defined as acute respiratory distress syndrome, septic shock, or the need for life-sustaining therapy. Given that 5–10% of community-acquired COVID-19 cases progress to critical illness [9,10], those with hospital-acquired

COVID-19 comprise a highly vulnerable cohort with respect to progression to critical illness. Moreover, 54.1% of the study cohort that progressed to a critically ill condition died in hospital. Once progression to a critical illness occurs, the likelihood of a hospital stay increases by two-fold, ultimately placing a significant burden on the healthcare system due to the requirement for life-sustaining therapies.

Lee et al. [11] presented background data and perspectives on risk stratification for hospital-acquired COVID-19 cases that will likely progress to a critical condition. They also discussed the management of nosocomial COVID-19 transmission. Baseline organ function, pre-existing frailty, and specific comorbidities including an immunocompromised state and cardiovascular disease were found to be risk factors for critical illness in nosocomial transmission. Based on these findings, preemptive treatment, surveillance, and quarantine could alleviate the strain on hospital resources by potentially reducing the number of patients who require critical care.

Throughout the pandemic, many healthcare workers developed psychological burnout and fear of infection, and suffered from the physical burden imposed by caring for critically ill COVID-19 patients. This study reminds us that our healthcare systems must be dynamic, responsive, and ever-vigilant. As we continue to navigate the challenges posed by COVID-19, we should use the insights from such research to refine our approaches, protect our most vulnerable populations, and strive for better outcomes for all patients.

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