

The future of COVID-19: A pivotal role for intensivists

Babivigasan Gunasegaran¹, Ann Mary Behanan¹, Joseph Varon²

As the world continues to grapple with the ongoing coronavirus disease 2019 (COVID-19) pandemic, healthcare professionals, particularly intensivists, find themselves at the forefront of the battle against this relentless virus. Their unwavering dedication, expertise, and resilience have been instrumental in saving lives and shaping the course of patient care throughout this crisis. Looking ahead, it is evident that intensivists will play a pivotal role in shaping the future of COVID-19 management as new challenges and opportunities emerge in our fight against the virus.

One of the critical challenges that intensivists face in the future is the evolution of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) variants. The virus has already demonstrated its ability to mutate, leading to the emergence of more transmissible and potentially more virulent strains. Intensivists must stay at the forefront of research and collaborate with other healthcare professionals to monitor and understand these variants' impact on disease severity, transmissibility, and response to therapeutics. An example of such collaboration is when COVID-19 first started spreading throughout Amer-

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¹ Dorrington Medical Associates, PA, Caribbean Medical University, Houston, Texas, USA

² University of Houston, Caribbean Medical University, Houston, Texas, USA

Address for correspondence:

Joseph Varon
Professor, University of Houston
Caribbean Medical University
2219 Dorrington Street, Houston, Texas 77030, USA
Tel: +1-713-669-1670
Fax: +1-713-669-1671
Email: jvaron@uh.edu

ica; healthcare professionals quickly collaborated with one another to share what medications were working well for patients, leading to the development of the MATH+ protocol. (1)

Vigilance and ongoing genomic surveillance will be essential to identify new variants early and determine their implications for patient care. Intensivists should actively participate in research efforts to evaluate the efficacy of current treatments and adapt strategies to combat evolving strains. This may involve modifying current ventilatory support techniques, exploring new therapeutic options, and optimizing critical care management protocols based on the evolving knowledge about these variants.

The COVID-19 pandemic exposed the vulnerability of healthcare systems worldwide, particularly concerning intensive care unit (ICU) capacity. Intensivists have been at the forefront of managing the surge in critically ill patients, often working tirelessly to ensure the provision of optimal care despite limited resources.

Looking ahead, it is crucial to strengthen healthcare systems' preparedness to respond effectively to future waves of the pandemic or other similar crises. Intensivists should actively advocate for improved ICU capacity, including increased staffing, equipment availability, and streamlined processes for patient admission and discharge. Collaborative efforts between healthcare institutions and governments will be paramount in building resilient healthcare systems capable of withstanding future challenges. As the pandemic progresses, intensivists encounter a growing number of individuals who have recovered from acute COVID-19 but continue to experience persistent symptoms. This condition, known as post-acute COVID-19 syndrome or "long COVID," presents unique challenges for intensivists, as it encompasses a range of debilitating symptoms such as fatigue, dyspnea, cognitive impairment, and mental health disorders. (2)

Intensivists must take an active role in understanding and managing the long-term effects of COVID-19. This may involve establishing specialized clinics or multidisciplinary teams to provide comprehensive care for individuals experiencing prolonged

symptoms. Research endeavors focused on the underlying mechanisms, risk factors, and effective treatments for post-acute COVID-19 syndrome should be a priority for intensivists to improve patient outcomes and quality of life. There are currently many studies in place to see how post-acute COVID-19 can be treated; some are studying the use of multivitamins to improve symptoms (3,4) while others are studying the effects of using anti-inflammatory medications, (5) since it is believed that the pathogenesis for fever and respiratory distress are caused by inflammatory cytokines. (6) Vaccination remains controversial to control the COVID-19 pandemic. Some studies on COVID-19 vaccinations have shown a decreased number of hospitalizations among the vaccinated. (7) However, several significant side effects have been reported, ranging from myalgias to cardiovascular arrhythmias (8) and concerns about immunity continue to evolve. Additionally, intensivists should continue emphasizing the importance of public health measures such as hand hygiene. While vaccination is still being addressed, a comprehensive approach that combines immunization with preventive measures will be instrumental in minimizing the impact of future outbreaks.

The COVID-19 pandemic has accelerated the adoption of telemedicine and digital healthcare solutions. Intensivists should embrace these advancements to enhance patient care, optimize resource allocation, and facilitate remote monitoring of individuals recovering from COVID-19. Telemedicine can provide a platform for virtual consultations, follow-up care, and patient education, reducing the need for in-person visits and minimizing the risk of viral transmission. With the drastic increase in smartphone

ownership globally, telemedicine is now more accessible than ever. Telemedicine helps provide access to a medical professional in rural areas while also helping keep healthcare costs low. (9) This and various other benefits help explain why the usage of telemedicine in hospitals throughout the USA has gone up from 35% to 76%. (10) Moreover, emerging technologies, such as artificial intelligence and machine learning, hold promise for early identification of severe COVID-19 cases, predictive analytics, and personalized treatment strategies. (11) Using artificial intelligence to help diagnose and provide treatment options for COVID-19 could help lessen the burden on doctors, especially during increased demand times such as pandemics. Intensivists should actively engage with technology developers, researchers, and data scientists to harness the potential of these innovations and incorporate them into clinical practice.

The future of COVID-19 management lies in the hands of intensivists who have demonstrated immense dedication and resilience throughout the pandemic. As new challenges and opportunities emerge, intensivists must remain at the forefront of research, adapt to evolving variants, strengthen healthcare systems' capacity, and address the long-term effects of the virus.

Collaboration, knowledge-sharing, and an unwavering commitment to patient care will be vital as we navigate the path forward. With their expertise and experience, intensivists will continue to play a pivotal role in shaping the future of COVID-19 management, ensuring the best possible outcomes for patients, and strengthening healthcare systems to withstand any future crises.

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