



EDITORIAL

Two years of the COVID-19 pandemic: an anesthesiology perspective



In a previous editorial approximately two years ago, we wrote about how the COVID-19 pandemic was unfolding worldwide and significantly impacting the routine of anesthesiologists around the world.¹ In the beginning of 2020, little was known about the potential consequences of the widespread dissemination of the SARS-CoV-2 virus in the population and how far this pandemic could reach. Today, approximately two years after the pandemic commencement, and following plenty of contamination waves, according to the Johns Hopkins Coronavirus Resource Center,² almost 6 million lives were lost worldwide, more than 600,000 souls only in Brazil. At the time we are writing this editorial, more than 400 million people have been officially infected around the world, a number that is vastly underestimated. Unfortunately, these records continue to rise and it is quite difficult to predict what is going to happen next in this pandemic.

The impact of COVID-19 pandemic has been unique, stressing our healthcare system far beyond its limits. During this pandemic, we have received unprecedented large amounts of data regarding the strengths and weaknesses of the healthcare system worldwide, highlighting the outstanding relevance of the scientific research, the application of protective measures, the benefits of extensive vaccination, and investigation of potential new anti-viral drugs. In spite of all scientific advances, mortality rates have been quite high and, for many patients, there has been a notable limitation of resources, especially in the developing world. Nevertheless, from our perspective, it is noteworthy to ask: how has the daily practice of anesthesiologists been affected, and which lessons have been learned in two years of pandemic?

Anesthesiologists have displayed a pivotal role in the COVID-19 pandemic. Considering that we are experts in airway and hemodynamic management, it is not surprising that anesthesiologists have been on the frontline of the treatment of patients with COVID-19. Additionally, in many countries, there is a significant educational crossover in the fields of anesthesiology, emergency medicine, intensive care, and

perioperative medicine. Particularly during the most critical phases of the pandemic, anesthesiologists have contributed considerably to the management of COVID-19 cases in both clinical and surgical intensive care units (ICU), actively participating in airway management teams, developing sedation and mechanical ventilation protocols, performing ultrasound-guided procedures, providing regional or systemic analgesia, and joining fast response resuscitations teams.³ Particularly during the periods of medication and equipment shortage, anesthesiologists offered significant support to develop alternatives of sedation and mechanical ventilation in critically ill patients.

Thus, particularly in the initial response to the pandemic, there was a rapid proliferation of guidelines, recommendations, and checklists for the airway management and perioperative care of patients with COVID-19. Considering the lack of solid scientific evidence, anesthesiologists have been recommended to change their routine practices according to pragmatic recommendations. Most of those suggestions have not been developed based on a scientifically rigorous methodology. Although this was an appropriate reaction in response to an urgent public health concern, the publication of a large number of recommendations may be somewhat confusing to healthcare professionals, and potentially make it more difficult to adopt specific protocols. More recently, systematic identification of the beneficial and detrimental strategies to manage COVID-19 patients will ultimately lead to some standardization of care as we prepare for the endemic phase of the disease.⁴

Although some heterogeneity remains, there is still substantial agreement between professionals and societies on numerous aspects of COVID-19 perioperative and clinical care, especially in terms of anesthetic and airway management.⁴⁻⁶ The choice of anesthetic technique should be based on patient factors and the planned procedure.⁶ Regional anesthesia is not contraindicated by COVID-19, although the coagulation status may affect the timing or decision to use regional techniques.⁷ Most guidelines and protocols provide similar personal protective equipment recommendations

<https://doi.org/10.1016/j.bjane.2022.02.004>

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and approaches to airway management, including reduced personnel exposure and suggesting the most experienced airway specialist to perform tracheal intubation.⁸ There is also substantial agreement regarding specific tracheal intubation techniques, with most publications recommending a rapid sequence induction with the use of videolaryngoscopy.⁸ Goals for tracheal intubation are to secure the airway rapidly, on the first attempt, providing immediate oxygenation. Although there are still some uncertainties and knowledge gaps, according to the present evidence, a protective mechanical ventilation strategy based on low tidal volume and low plateau pressures has been indicated in the management of COVID-19 patients displaying Acute Respiratory Distress Syndrome (ARDS).^{9,10} Notably, consistent and congruent recommendations provided to anesthesiologists are essential to ease clinical decision-making and increase adherence to the best safety practices in the COVID-19 pandemic and afterwards.

Nonetheless, there is some concern regarding the lack of updates on the majority of recommendations on the anesthetic care of patients with COVID-19. As new SARS-CoV-2 variants emerge, and understanding about COVID-19 continues to grow rapidly, it is necessary to keep in touch with the pandemic evolution. For instance, in the beginning of the pandemic, concerns were raised about the risk of SARS-CoV-2 aerosolization during tracheal intubation. However, recent evidence has suggested that tracheal intubation in paralyzed patients may not be a highly aerosol-generating procedure.¹¹ Additionally, the usage of negative pressure rooms has been debated, with significant concerns regarding the risk of developing secondary infectious diseases.¹² Considering the endless growing evidence on the disease, it is not surprising that outdated recommendations remain easily accessible to the public and healthcare providers. This definitely contributes to ongoing misunderstanding and lack of adherence to the most up-to-date practices. In this context, medical societies and organizations might play a key role in the process of summarizing the plethora of accessible information about the paramount care of our patients, constantly updating their recommendations and achieving consensus on the light of the best evidence available.

In fact, the dissemination of knowledge was extraordinary during this rapidly evolving pandemic, especially considering factors such as rapid scientific publishing and the impact of social media in our lives. Recent advances in technology have enabled stable and wide-ranging global connectivity, allowing almost instantaneous access to COVID-19-related topics, fueling the dissemination of information and protocols. An enormous diffusion of preprints and open-access articles addressing COVID-19 topics have been witnessed, easing the access to information on the disease, even for ordinary citizens. Clearly, this movement should be celebrated and hopefully will continue to thrive.

Conversely, the dissemination of flawed information and poor quality of data is also present and may be related to deleterious consequences, including wrong clinical decisions and worse outcomes. A systematic review comparing COVID-19 versus non-COVID-19 studies published in the three highest ranked medical journals has demonstrated that COVID-19 articles were 18-fold more likely to be of lower evidence than the non-COVID-19 articles.¹³ Interestingly, despite the lower quality, COVID-19 manuscripts were more likely to be

cited earlier. Although the quality of anesthesia papers during the pandemic has not been formally assessed, the bias may be similar. Therefore, it is of extreme importance that anesthesiologists and healthcare providers carefully analyze the most accurate data, always aiming to achieve the best evidence available in a specific topic. Since the knowledge is so dynamic in recent times, it is essential that professionals seek for constant updating on their fields of study.

For all the reasons above, in this issue of the *Brazilian Journal of Anesthesiology*, we invite readers to access several interesting studies providing new insights into the role of the anesthesiologist in the COVID-19 pandemic.¹⁴⁻²⁰ These studies have addressed a myriad of COVID-19-related topics, including the risk for environmental exposure to the SARS-CoV-2, potential protective measures to reduce contamination during airway management, mental health of healthcare providers and education concerns during the pandemic, a new technique for percutaneous tracheostomy in COVID-19 patients, and potential benefits of early awake prone positioning in patients displaying COVID-19-related ARDS.

Among these studies, it is tempting to highlight the alarming infection rates of anesthesiologists in Brazil.¹⁴ Similarly to other countries, Brazilian anesthesiologists were often elected to perform orotracheal intubation in COVID-19 patients due to their airway management skills. In this study, Costa et al. have demonstrated that the prevalence of coronavirus infection among anesthesiologists was 5.57 times higher as compared with the overall infection rate of the Brazilian population, reflecting the high occupational exposure and risk of infection. These findings offer a relevant contribution to understanding the actual environmental risks during the assistance of our patients and establish strategies to estimate and reduce contamination rates among our workers.

Importantly, an issue that demands our attention is related to the potential consequences of the COVID-19 pandemic to the management of other diseases, as the pandemic has placed a significant strain on the worldwide healthcare system since the first wave of cases in 2020. The initial spread of COVID-19 and mortality rates were mostly affected by patterns of socioeconomic vulnerability, especially in low- and middle-income countries. In Brazil, the unequal distribution of economic resources and deep social gaps customarily affect the population access to the healthcare system. Unfortunately, the COVID-19 pandemic wreaked havoc on national medical institutions, turning a bad situation even worse. For instance, there is a pronounced uneven distribution of intensive care physicians and ICU beds among wealthier and poorer states in Brazil. These inequalities led to higher COVID-19 death rates in the most socioeconomically vulnerable regions.²¹

The disruption of equipment and pharmacological supply chain, interruption of routine therapies, shortage and rearrangement of staff have also produced an excess in morbidity and mortality related to other diseases. Although consequences of COVID-19 have been devastating also in high-income countries, with a huge impact on hospitals and ICUs, this situation is of substantial concern in places with limited resources. Initial recommendations included postponing elective surgeries as a way of increasing total hospital capacity, in addition of preserving the workforce of

healthcare providers.¹ However, the abrupt cessation of surgeries may have short- and long-term consequences that can be catastrophic, especially for cancer patients. Although most procedures are described as “elective”, these interventions are frequently time-sensitive. With much attention being diverted to COVID-19 management, it is important to be aware of the urgency of treating cancer patients, maintaining oncological and time-sensitive surgery and avoiding treatment delay during the pandemic.

The appropriate time to schedule elective surgery after COVID-19 is unclear. In a multicenter database study, major surgery in the first four weeks after COVID-19 diagnosis was associated with higher risks of postoperative pulmonary complications and sepsis.²² These findings are consistent with a prior international study that found an increased 30-day mortality rate after surgery performed within seven weeks of COVID-19 diagnosis.²³ Therefore, the decision to schedule elective surgery should consider the severity of COVID-19, the risks of complications, and the risks of delaying surgery.

Of note, the COVID-19 pandemic has exacerbated healthcare disparities and will leave a significant residual impact on the surgical services, highlighting the need to adopt strategies that support the surgical caseload reopening to save lives. In the COVID-19 era, rapid and accurate presurgical testing for SARS-CoV-2 will probably continue to be critical to ensure quality and safety, along with sufficient availability of protective measures for staff and patients.²⁴

The ICU mortality during the first pandemic wave ranged from 40% to 85% around the peak of the surge.²⁵ Nevertheless, those ICU survivors are frequently faced with persisting physical, cognitive and mental impairments, a type of post-intensive care syndrome that may vary in severity and duration. In general, long-COVID-19 is defined as four weeks of persisting symptoms after the acute illness, being estimated to occur in approximately 10% of infected patients.²⁶ Post-COVID-19 syndrome and chronic COVID-19 are the proposed terms to describe continued symptomatology for more than 12 weeks and its prevalence is still unknown.²⁶ The symptoms and the clinical manifestations are heterogeneous and suggest multi-organ involvement, including the cardiovascular and respiratory systems. Patients exhibiting COVID-19 sequelae or long-COVID-19 symptoms may require surgical and anesthetic care. The open question for anesthesiologists is what kind of perioperative care is going to be offered, protecting those patients at risk of unexpected events and worse outcomes.

Finally, we may reiterate some of our previous words, stated two years ago:¹ adequate communication and quality of information are still essential throughout the pandemic. COVID-19 will have both short- and long-term consequences on societies, healthcare systems, professionals, and individuals. In this scenario, inaccurate information is quite dangerous and must be fought intensively with solid scientific data, which is constantly changing and advancing. The COVID-19 pandemic should lead to transformative changes in how we provide critical and anesthetic care to our patients. Accordingly, anesthesiologists still display a crucial role to guide the correct management of COVID-19 patients and are challenged to build a better place to live by the end of this pandemic.

Conflicts of interest

The authors declare no conflicts of interest.

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 Received 9 February 2022; Accepted 16 February 2022
 Available online 19 February 2022
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