



## EDITORIAL

# COVID-19 Pandemic: the greatest challenge in the history of critical care<sup>☆</sup>



## Pandemia por COVID-19: el mayor reto de la historia del intensivismo

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In December 2019 a series of cases were reported, describing patients admitted to hospital with a new disease characterized by pneumonia and respiratory failure caused by a novel coronavirus (SARS-CoV-2), in the province of Hubei (China). On 11 February 2020, the World Health Organization (WHO) termed this etiological agent as COVID-19 (Coronavirus Disease, 2019). Posteriorly, and despite the adoption of extensive containment measures, the disease continued to spread, affecting the rest of Asian countries, the Middle East and Europe. On 11 March, COVID-19 was declared a pandemic at a world press conference held by Tedros Adhanom Ghebreyesus, General Director of the WHO.

The first official case of COVID-19 in Spain was recorded on 31 January 2020. It corresponded to a mild and imported infection in a German patient admitted to hospital on the island of La Gomera (Canary Islands). Nine days later a new and likewise imported case was detected in Palma de Mallorca (Balearic Islands). The first cases on the Spanish mainland were identified on 24 February, followed by exponential expansion of the virus, affecting mainly the Community of Madrid, the Basque Country and Catalonia.

According to the latest information from the Spanish Ministry of Health, on 5 April 2020 there were 135,032 confirmed cases in Spain, with 59,662 patients in hospital, 6931 in intensive care, and 13,055 deaths associated to COVID-19 infection.<sup>1</sup> Most of the cases were concentrated in the Community of Madrid, with 38,723 confirmed cases, and in Catalonia, with 26,824 confirmed cases. However, a recent study by the Imperial College (London) estimated the actual number of infected individuals in Spain to be 7 million.<sup>2</sup> The state of alarm, with confinement of the population, was declared on 14 March. As a consequence, there has been a gradual decrease in the basic reproductive number of the pathogen ( $R_0$ ), which is the average number of secondary COVID-19 cases caused by a single primary case, from  $> 2.0$  to 0.98 on 4 April. In turn, the contagion rate has been reduced from 40% (prior to confinement) to 3.2% on 6 April.

The Spanish Society of Intensive and Critical Care Medicine and Coronary Units (Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias [SEMICYUC]) has adopted a series of measures with the purpose of reducing the impact of the pandemic upon the Spanish Intensive Care Units (ICUs) and healthcare system. The Contingency Plan for the Departments of Intensive Care Medicine<sup>3</sup> has been very useful in allowing the ICUs to know the increase in healthcare burden they would have to face and how to adjust to the situation in a planned and organized manner. "Hope for the best but prepare for the worst" has

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been the guiding principle in many Spanish ICUs. The ethical recommendations on decision making in such exceptional circumstances have been the basis of the protocols in most hospitals. Likewise, the SEMICYUC has developed a series of recommendations, both of its own and in combination with other scientific societies, for the management of COVID-19 pneumonia in the critically ill – including airway management, noninvasive mechanical ventilation,<sup>4</sup> sedoanalgesia and inter-hospital patient transfer, among other aspects. All this material is available in a specific section of the SEMICYUC website.<sup>5</sup> The Steering Committee of the SEMICYUC has remained in contact through weekly teleconferences with the Heads of Department to directly know the situation in each ICU in the country, and to share information.

The management of critical patients with COVID-19 pneumonia during the pandemic has been the greatest challenge faced by Intensive Care Medicine in all its history. Intensivists, in collaboration with many other professionals, have habilitated up to 300% more critical patient beds in hospitals – this representing an unprecedented care and logistic challenge. However, there have also been many other difficulties. The evidence on the management of COVID-19 pneumonia is very limited,<sup>6</sup> since this is a new disease, requiring permanent updating of the care protocols. Likewise, the worldwide increase in the consumption of many drugs commonly used in Intensive Care Medicine, such as those used for sedoanalgesia, has made it necessary to resort to other less optimum alternatives. The assignment of resources in situations of scarcity<sup>7</sup> has resulted in moral distress added to the existing work overload. Although personal protection equipment (PPE) is essential for the safety of the healthcare staff, the huge demand for such equipment has made it necessary to greatly rationalize its use.<sup>8</sup> It should be underscored that an important percentage of the healthcare professionals in Spain (about 14%) have become infected with COVID-19.<sup>1</sup> On the other hand, the acquisition of medical equipment – fundamentally respirators – has been very limited due to the great worldwide demand and the scarce local production of such equipment. It has been necessary to resort to old equipment, together with operating room respirators, patient transfer respirators, adaptations of noninvasive ventilation devices, and even (anecdotally) to mechanized bag valve masks (Ambu bags). At present we are still concerned about different situations, in view of the current saturation of the ICUs. The end of population confinement may give rise to an increase in the number of cases, and although serious diseases other than COVID-10 infection

have temporarily decreased, it will be necessary to deal with them again, and our capacity to face new catastrophes is at least temporarily practically zero.

In sum, Spanish intensivists have shown that despite the adverse circumstances, they have been able to organize, collaborate with other specialists and adapt with resilience to manage all critical patients with COVID-19 pneumonia. We must prepare ourselves to bring the hospitals back to normal once again. The process will be neither easy nor rapid, but should contemplate the need to secure enough equipment to deal with other catastrophes in future.

## References

1. Ministerio de Sanidad. <https://covid19.isciii.es/>; 2020 [accessed 6 Apr 2020].
2. Imperial College London. Report 13 - Estimating the number of infections and the impact of non-pharmaceutical interventions on COVID-19 in 11 European countries. <https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-Europe-estimates-and-NPI-impact-30-03-2020.pdf>; 2020 [accessed 6 Apr 2020].
3. Rascado Sedes P, Ballesteros Sanz MA, Bodí Saera MA, Carrasco Rodríguez-Rey LF, Castellanos Ortega A, Catalán Gonzalez C, et al. Plan de contingencia para los servicios de medicina intensiva frente a la pandemia COVID-19. *Med Intensiva*. 2020;44:363–70.
4. Cinesi Gómez C, Peñuelas Rodríguez O, Luján Torné M, Egea Santaolalla C, Masa Jimenez JF, García Fernandez J, et al. Recomendaciones de consenso respecto al soporte respiratorio no invasivo en el paciente adulto con insuficiencia respiratoria aguda secundaria a infección por SARS-CoV-2. *Med Intensiva*. 2020;44:371–88.
5. SEMICYUC. <https://semicyuc.org/covid-19/>; 2020 [accessed 6 Apr 2020].
6. Alhazzani W, Moller MH, Arabi YM, Loeb M, Gong MN, Fan E, et al. Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19). *Intensive Care Med*. 2020, <http://dx.doi.org/10.1007/s00134-020-06022-5>.
7. Emanuel EJ, Persad G, Upshur R, Thome B, Parker M, Glickman A, et al. Fair Allocation of Scarce Medical Resources in the Time of Covid-19. *N Engl J Med*. 2020, <http://dx.doi.org/10.1056/NEJMs2005114>.
8. Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19), WHO. [https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-\]\[IPCPE.use-2020.1-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-][IPCPE.use-2020.1-eng.pdf); 2020 [accessed 6 Apr 2020].