medicina *intensiva*

EDITORIAL

Advanced data analysis and intensive care medicine

Analisis avanzado de datos y medicina intensiva

In this issue of our journal, Muñoz Lezcano et al.[1] present to us the results of an analysis of a database generated by a real-time clinical information system. The overall objective of this project is to identify the most significant risk factors in patients requiring non-invasive mechanical ventilation. Additionally, they apply models to study or determine the prognosis of patients with COVID-19 using machine learning techniques.

The authors not only highlight the results obtained, but also emphasize the utility of Artificial Intelligence (A.I.) techniques applied to fields such as medicine. Data analysis applied to critically ill patients can help, even in real-time, to obtain results to understand the specific characteristics of different patient groups, thus improving and personalizing care and treatment.

Several studies applying these techniques have recently been published in *Medicina Intensiva*.[2–4] Thanks to the technological advancements made, and the growing amount of data generated in clinical settings, the future of data analysis in critical care is promising and will likely improve the quality and outcomes of health care. Machine learning algorithms and A.I. are being used to analyze large volumes of clinical data, such as medical images, electronic health records, and laboratory test results. These algorithms can identify subtle patterns indicative of the presence of a disease or the development of complications in critically ill patients. This anticipation could make a difference in patient survival and recovery. Continuous and real-time monitoring is another area where data analysis has been improving. Medical devices are or should be more and more connected, allowing for immediate and secure data collection and transmission.

Considering all the advantages that technology has to offer to the field of medicine, we should envision and facilitate an approach to data collection and storage that should not compromise patient privacy while guaranteeing data quality and trustworthiness. This challenge is not easy and requires, at least, 3 critical steps:

1) Creation of reliable, collaborative, and accessible databases.
2) Integration of truly interconnected teams and systems that speak the same language and are capable of transferring information in real-time.
3) Addition of professional profiles enabling interdisciplinary work with A.I. systems and data.

Although the technological world, including Artificial Intelligence, moves fast, there is still much progress to be made in the application of these resources in fields such as medicine, particularly in critical cases. If we want to continue bringing these techniques to the medical field, we should reconsider workforce planning and the addition of new professional profiles (or signing of collaboration agreements) to allow for adequate progress in this type of research to unleash its full potential.

References

1. Muñoz Lezcano S. Predictors of mechanical ventilation and mortality in critically ill patients with COVID-19 pneumonia. Med Intensiva. 2023, http://dx.doi.org/10.1016/j.medin.2023.06.012.
2. Ocampo-Quintero N, Vidal-Cortés P, del Rio Carbajo L, Fernández-Riverola F, Reboiro-Jato M, González-Peña M. Enhancing sepsis management through machine learning techniques: a review. Med Intensiva. 2022;46:140–56, http://dx.doi.org/10.1016/j.medin.2020.04.003.
3. Lundon DJ, Kelly BD, Nair S, Bolton DM, Kyprianou N, Wiklund P, et al. Early mortality risk stratification after SARS-CoV-2 infection. Med Intensiva. 2021;45:e40–2, http://dx.doi.org/10.1016/j.medin.2020.06.011.

4. Grupo de Trabajo Gripe A Grave (GETGAG) de la Sociedad Española de Medicina Intensiva Crítica y Unidades Coronarias (SEMICYUC). Spanish Influenza Score (SIS): usefulness of machine learning in the development of an early mortality prediction score in severe influenza. Med Intensiva. 2021;45(2):69–79, http://dx.doi.org/10.1016/j.medin.2020.05.017.

Federico Gordo Vidal [a,b,*], Natalia Gordo Herrera [c]

[a] *Servicio de Medicina Intensiva, Hospital Universitario del Henares, Coslada, Madrid, Spain*
[b] *Grupo de Investigación en Patología Crítica, Grado de Medicina, Universidad Francisco de Vitoria, Pozuelo de Alarcón, Madrid, Spain*
[c] *Escuela Politécnica Superior, Universidad Francisco de Vitoria, Pozuelo de Alarcón, Madrid, Spain*

[*] Corresponding author.
E-mail address: fnatalio.gordo@salud.madrid.org
(F. Gordo Vidal).