

Artificial intelligence in the emergency department: from implementation to demonstrating value

Inteligencia artificial en urgencias: de la implementación a la demostración de valor

To the Editor,

Ramos-Casals, regarding the studies on real-time prediction of hospital admission and bacteremia risk stratification,¹⁻³ appropriately places the debate on artificial intelligence (AI) in emergency medicine within the transition from expectation to clinical implementation. We fully agree that AI should act as a “cognitive exoskeleton” for clinicians rather than as a substitute for professional judgment. Precisely for that reason, we believe that the next step no longer consists solely of deploying models, but rather of demonstrating net clinical value and rigorously guiding their incorporation into clinical and management processes.

The 2 studies discussed represent relevant and methodologically sound advances. However, in clinical AI, excellence cannot be measured solely by discrimination. A high area under the curve, even an extraordinary one, does not by itself guarantee adequate calibration, external robustness, or safety when the algorithm is integrated into the clinical workflow.

In emergency medicine, moreover, many predicted outcomes are not “natural” phenomena, but rather clinical and organizational decisions. In the case of admission prediction, for example, the target variable also depends on medical judgment and system pressure; therefore, when the model moves from observing practice to influencing it, there is a risk of reinforcing previous patterns rather than correcting them.

The same logic applies to bacteremia models. The true benchmark should not be limited to better risk classification, but rather to translating that classification into more appropriate therapeutic decisions. In this context, the value of the algorithm should be judged by its ability to reduce inadequate empirical treatment, limit unnecessary exposure to broad-spectrum antibiotics, and maintain the safety of febrile onco-hematologic patients. In other words, the relevant outcome is not only to predict better, but to decide better.

Along these lines, AI applications aimed at triage and resource optimization in high-demand scenarios are currently being explored, demonstrating that the true value of these tools lies not only in their statistical performance, but also in their ability to support more consistent decisions, improve prioritization, and allocate resources more efficiently.⁴ From this perspective, we believe that the next stage of AI maturity in emergency medicine must be grounded in three requirements: multicenter validation with local recalibration, prospective evaluation in real-world practice, and explicit measurement of impact on clinical and operational variables, together with deployment governance and effective human oversight.⁵ In this regard, the editorial by Ramos-Casals arrives at a particularly timely moment.¹ It may nevertheless be appropriate to go one step further: the decisive question will no longer be which model discriminates better in a historical cohort, but rather which tool demonstrates, in a prospective, auditable, and clinically integrated manner, that it improves decision-making without uncritically displacing professional responsibility. That is where AI will cease to be merely promising and become truly valuable in emergency medicine.

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