

EDITORIAL

The difficult art of telephone triage: a middle ground between safety and efficacy

El difícil arte del triaje telefónico: entre la seguridad y la eficiencia

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Non-traumatic chest pain (NTCP) is one of the leading reasons for urgent medical consultation, both in hospital emergency departments and in emergency co-ordination centers. Although a large proportion of patients do not have life-threatening conditions, the true challenge lies in rapidly recognizing those at imminent risk.¹

In modern emergency systems, telephone triage has become an essential tool for managing access, optimizing resources, and reducing care pressure. Its purpose is to classify urgency and assign an appropriate priority level before face-to-face contact, ensuring a response proportionate to risk.² This function is especially relevant in time-dependent conditions such as acute coronary syndrome (ACS), where delays in activating resources can compromise prognosis.

Safe and effective telephone triage requires balance: minimizing undertriage to avoid potentially serious delays, while maintaining overtriage at acceptable levels to limit unnecessary deployment of advanced resources.³ Achieving this balance depends not only on structured protocols but also on solid scientific evidence capable of measuring performance in real-world practice. As a relatively new field, telephone triage still lacks consolidated evidence supporting the development of standardized, validated, and effective methods.^{4,5} Most systems also lack common performance indicators—such as sensitivity and specificity—that would allow comparison of results and assessment of their impact on safety and operational efficiency.²

The clinical presentation of NTCP is highly variable and often nonspecific; its assessment depends largely on how the patient describes the symptoms and on the communication context. In telephone triage, these factors become even more relevant because the evaluation relies exclusively on verbal description. As a result, symptom interpretation is influenced by the patient's subjectivity and by the cognitive biases of the professional interpreting them.⁶

In this context, the study by Romero-Olóriz *et al.*,⁷ published in this issue of EMERGENCIAS, provides a valuable contribution to the field by examining the diag-

nostic performance of telephone triage in patients with NTCP. Based on nearly 98,000 care demands, it offers the first description in Spain of how telephone triage is applied to NTCP and evaluates its performance using objective indicators.

The analysis distinguishes between calls managed with structured triage using a computerized guide and those in which priority was assigned directly without decision-support tools. Structured triage—similar to computerized clinical decision systems such as the Netherlands Triage System (NTS)⁸—demonstrated a greater ability to rule out non-urgent cases thanks to its rule-based design, though with lower sensitivity for detecting true emergencies. This pattern mirrors findings in other European systems, where algorithm rigidity contributes to undertriage, particularly in less typical presentations of ACS.^{5,9} Conversely, triage based on operator judgment, though slightly less specific, detected a greater number of emergencies and exhibited a more sensitive and conservative profile from a patient-safety perspective.

One of the most notable findings of the study is the identification of a sex-related bias opposite to that traditionally described:^{10,11} women showed greater diagnostic accuracy and specificity, with lower undertriage but higher overtriage. This result suggests increased clinical awareness regarding cardiovascular risk in women, possibly helping correct the historical underdiagnosis of ACS in women. However, it raises new questions: while differential overtriage may enhance individual safety, it poses operational challenges for system efficiency. Beyond its specific direction, this finding reinforces the need to integrate sex—and especially gender—perspectives into triage validation and algorithm calibration to ensure equitable and context-appropriate assessment for every patient.

In recent years, various symptom-based prediction rules¹² have been developed using statistical models that weigh clinical variables such as age, sex, pain type and onset, radiation, diaphoresis, and time of call. These models show high sensitivity and generally higher negative predictive values than structured protocols,

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approximating the performance of operator clinical judgment. However, this increased safety comes at the expense of marked reductions in specificity (around 40–50%) and, therefore, substantial overtriage.

The incorporation of artificial intelligence (AI) into telephone triage represents the next stage in the evolution of prioritization systems.¹³ AI tools have shown high capability to safely identify high-risk NTCP patients and optimize resource allocation, operating with a more conservative safety-focused profile than human decision-making and reducing missed severe emergencies.¹⁴ Nonetheless, their performance remains dependent on the care context and cohort characteristics. Most available studies are retrospective and heterogeneous, and systematic reviews consistently call for prospective validation before large-scale implementation.¹⁵

Telephone triage for NTCP remains in an early stage of maturity, where structured models, prediction rules, and expert clinical assessment coexist. Each approach offers advantages and limitations, but none achieves the optimal balance between safety, efficiency, and equity on its own. The challenge ahead lies in integrating these components into hybrid systems that combine the analytical power of technology with clinical sensitivity and professional judgment—while incorporating gender perspectives and continuous performance evaluation. The goal is not to build a perfect model but to advance toward telephone triage that is safer, more consistent, and more useful in clinical practice.

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