

being limited in number, have been criticized for being based on administrative information and not on the clinical characteristics of the patients.⁶ This model failed in New York and led to a suspension of audits until the current model based on individual risk was implemented.⁴ Finally, a reduced presence of the clinician in the decision-making process, in combination with loss of confidence in surgery and a lack of consequences if guidelines are not applied, means that the decision power of the interventionist is high and that patients who arrive in the catheterization laboratory are highly selected.

Although a complete solution to these problems would appear a utopic ideal, we believe it is possible to try more flexible models, as the structure is, to a large extent, responsible for the current situation.

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Heart Team Decision-making in Spain: Is There Room for Improvement? Response



Toma de decisiones por el equipo cardiaco en España: ¿hay margen de mejora? Respuesta

To the Editor,

We truly appreciate the interest shown by Lozano et al in our article¹ and we would like to make some remarks about their comments.

Despite the inherent limitations of the concept of a heart team,¹ collective decision making in cardiology is of central importance. This decision-making is influenced by the specific characteristics and preferences of each patient and by the availability of resources. The decision-making can be modified both by the internal heart-team dynamics and by oversight of outcomes by the health authorities.

One of the most noteworthy care models is that of New York State in the United States.² There, the health authority audits and assesses the care processes based on standard and mandatory reporting derived from individual patient data. The results are available in the public domain and posted yearly. They contain data on percutaneous coronary intervention, heart surgery, and pediatric heart surgery and are adjusted by clinical risk factors. Publication of outcomes has led to homogenization of cardiovascular disease management and heart team actions in New York State. This has all contributed to a substantial reduction in mortality.

We agree with Lozano et al¹ that the difficulty in referring patients to other centers, the lack of transparency in the waiting lists, audits based on administrative data, and the progressive loss of influence of clinical cardiologists in decision making are aspects that could be improved in the Spanish health system.

However, our previous criticism of the limitations of the heart team would remain purely a mental exercise if the assessment of a given decision-making system was not backed up by hard data.¹

This is why the initiatives to assess the health outcomes for cardiovascular disease, such as INCARDIO,³ are very important for determining whether the actions of a given group are in line with the required quality objectives for care.

In view of the above, in addition to practical clinical guidelines for the treatment of specific diseases, scientific societies should draft action protocols for heart teams. Centers should attach the minutes of heart-team meetings to the patient documentation, and the health authorities should then assess the centers according to adherence these protocols.

In conclusion, standardization and protocolization of the actions of heart teams and subsequent assessment of their outcomes are essential for clinical decision-making in Spain.

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Neprilysin Plasma Concentrations: A New Prognostic Marker in Heart Failure



Concentraciones plasmáticas de neprilisina: un nuevo marcador pronóstico en la insuficiencia cardiaca

To the Editor,

We have read with great interest, and no little admiration, the editorial by A.M. Richards "Plasma neprilysin concentrations: a new prognostic marker in heart failure?",¹ which addresses our article "Multimarker strategy for heart failure prognostication. Value of neurohormonal biomarkers: Neprilysin vs NT-proBNP"² published in the same issue of the journal. We would like to reply to his comments.

We fully agree with the author¹ that it remains unknown whether there is a systematic change in plasma neprilysin concentrations in heart failure (HF) compared with the normal state of health. As far as we know, there are no studies on the biological variability of neprilysin that compare concentrations in healthy people and HF patients, and so this should be a key step in increasing our knowledge of this biomarker.

The author states in his editorial that Vodovar et al³ recently reported higher plasma neprilysin concentrations in patients with chronic HF than in those with acute decompensated HF, whereas N-terminal pro-B-type natriuretic peptide (NT-proBNP) concentrations were at their most elevated in decompensated HF. In contrast, we found that neprilysin concentrations were higher in patients with acute HF than in those with chronic HF and that the concentrations tended to decrease with the treatment administered during hospital admission.⁴

It should be noted that that the authors³ found no correlation between the soluble neprilysin concentrations measured and

neprilysin activity. Again, conflicting results have been obtained. In a small series of 98 patients, we found a low but significant correlation ($\rho = 0.50$, $P < .001$) between soluble neprilysin concentrations and neprilysin activity, which suggests that soluble neprilysin retains some of its catalytic activity.⁵

In a direct reference to our article,² the author suggests that the lack of correlation between neprilysin and NT-proBNP may due to 12% of values appearing below the detection limit, which would confer a flat or "squashed" distribution on a part of the study population. We eliminated all these patients from the analysis and again documented the lack of correlation between neprilysin and NT-proBNP ($\rho = -0.02$, $P = .68$, log-transformed $r = -0.3$, $P = .47$; Figure). We agree with the author¹ that it is hard to understand this finding or its clinical significance.

Finally, we would like to respond to the author's question regarding the noninclusion of neprilysin and NT-proBNP together in the same model, "Are the data presented like this because both markers" fall out "of the model when both are included?"¹ The direct answer is no. Firstly, in the article published in *Revista Española de Cardiología*, our intention was to conduct a head-to-head comparison of neprilysin and NT-proBNP within a multibiomarker strategy, rather than to demonstrate the contribution of neprilysin and NT-proBNP in combination. Secondly, the model that included both biomarkers had been published in our first article on neprilysin,⁶ in which neprilysin improved reclassification and the hazard ratio of the primary endpoint (cardiovascular death or HF hospitalization) and cardiovascular death when added to a model that already included NT-proBNP.⁶ We also stated that when the biomarkers ST2 and high-sensitivity troponin T were added to the multibiomarker strategy, neprilysin remained significantly associated with the composite endpoint (hazard ratio = 1.15; 95% confidence interval, 1.03-1.28; $P = .02$) and with cardiovascular death (hazard ratio = 1.17, confidence interval 95%, 1.03-1.32; $P = .02$) in combination with ST2 and troponin T. We also found improvements in the hazard ratio of both endpoints ($P = .02$ and $P = .04$, respectively) within the multibiomarker strategy.⁶ In contrast, NT-proBNP did not do this.

CONFLICTS OF INTEREST

J. Lupón and A. Bayes-Genis have applied for an international patent for the use of soluble neprilysin as a prognostic marker in patients with HF.

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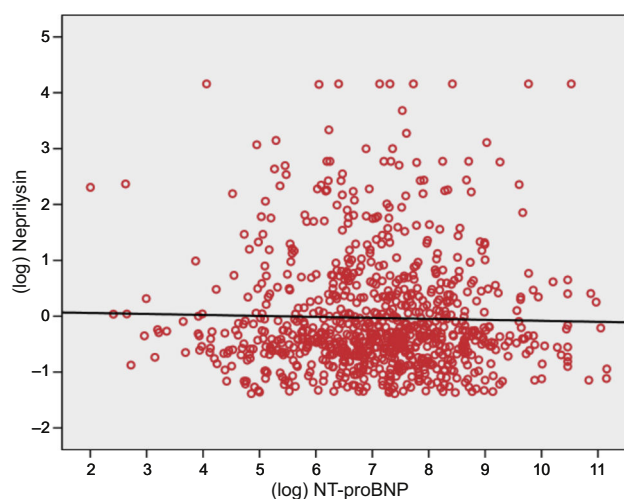


Figure. Scatterplot of NT-proBNP (x-axis) and neprilysin (y-axis) values (log transformed). The black line represents total adjustment. NT-proBNP, N-terminal pro-B-type natriuretic peptide.