

## Designs and methods for impact evaluation of interventions. Response

*Diseños y metodologías para evaluar el impacto de las intervenciones. Respuesta*

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To the Editor,

We would like to thank Antonio Sarria-Santamera for the interest shown in our article<sup>1</sup>. In his letter, he raises 2 different issues.

First, he mentions limitations in interpreting the hazard ratio. However, these limitations are inherent in the estimator and do not depend on whether the study is experimental or not and, consequently, would not be mitigated by a different study design<sup>2</sup>.

Second, he mentions the causal relationship between implementation of the PROGALIAM program and the decrease in mortality. The ideal context for this kind of inference is a clinical trial, but conducting a trial would not have been ethical in view of the nature of the study. As he points out, the alternative is to find a comparable group around the same timeframe. In the case of the IPHENAMIC program, this was not possible because the PROGALIAM network was established simultaneously throughout the geographical area, which precluded application of some of the methods proposed. Other alternatives, such as propensity score matching, are not desirable because they start with the effect that the intervention could influence the profile of patients arriving at the hospital alive, and this effect should not be cancelled out. The plausibility of causal effects between PROGALIAM implementation and reduced mortality is supported by the survival analysis and by observations such as the fact that 30-day gross mortality before PROGALIAM was almost unchanged and began to decline after implementation, as shown in figure 2 of our article<sup>1</sup>. Likewise, figure 1 of the additional material shows that 30-day mortality in the total population and in each of the areas dropped significantly, particularly in areas where access improved to a greater extent. Although not impossible, it is highly unlikely that there are any variables not included in our study that coincided with PROGALIAM implementation and had sufficient impact on mortality to explain these findings.

Despite the limitations of observational studies, we believe that they are essential in certain settings and, as expressed by the European Union and by the author himself in his references, are very useful for collecting real-world information, identifying outcomes, and ensuring responsible use of public funds<sup>3,4</sup>.

## References

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