

Canarian diabetic population had higher mortality in the whole patient sample (ST-segment elevation and non-ST-segment elevation infarctions): 8.3% of in-hospital mortality in the diabetic population vs 3.5% in the nondiabetic population ( $P = .021$ ). Patients who received mechanical revascularization (primary, delayed, or rescue) had lower mortality vs nonrevascularized patients (7.1% vs 3.3%,  $P = .037$ ). This difference was even more pronounced upon analysis of the STEMI population because those who did not receive primary revascularization had higher mortality (17.9% vs 4.5%,  $P = .002$ ), whether diabetic or not. However, patients with STEMI who were diabetic showed slightly but nonsignificantly higher mortality vs nondiabetics (12.5% vs 6%,  $P = .055$ ).<sup>8</sup>

Regardless of the implementation of health policies aimed at the primary prevention of cardiovascular disease through lifestyle modifications and control of risk factors, particularly diabetes, a new analysis would be appropriate to determine the changes wrought in the Canarian population by implementation of a “Canarian infarction code”.

Marta María Martín Cabeza,\* Pablo Jorge Pérez,  
and Martín Jesús García González

Servicio de Cardiología, Complejo Hospitalario Universitario de Canarias, La Laguna, Tenerife, Spain

\* Corresponding author:

E-mail address: [martamariamc@gmail.com](mailto:martamariamc@gmail.com) (M.M. Martín Cabeza).

Available online 15 November 2018

## REFERENCES

1. Mate Redondo C, Rodríguez-Pérez MC, Domínguez Coello S, et al. Hospital mortality in 415 798 AMI patients: 4 years earlier in the Canary Islands than in the rest of Spain. *Rev Esp Cardiol*. 2019;72:466–472.
2. Instituto Nacional de Estadística (INE). Datos de 2015. Available at: <http://www.ine.es/jaxi/Datos.htm?path=/t15/p417/a2015/10/&file=02006.px>. Accessed 18 Sep 2018.
3. Instituto Nacional de Estadística (INE). Defunciones según la causa de muerte. Año 2015. Available at: [http://www.ine.es/prensa/edcm\\_2015.pdf](http://www.ine.es/prensa/edcm_2015.pdf). Accessed 27 Aug 2018.
4. Fundación Española del Corazón. La mortalidad cardiovascular en 2015. Available at: <https://fundaciondelcorazon.com/corazon-facil/recursos-didacticos/infografias.html?download=47:la-mortalidad-cardiovascular-en-2015>. Accessed 18 Sep 2018.
5. Bertomeu V, Cequier Aue, Bernal JL, et al. In-hospital mortality due to acute myocardial infarction. Relevance of type of hospital and care provided. RECALCAR Study. *Rev Esp Cardiol*. 2013;66:935–942.
6. Cordero A, López-Palop R, Carrillo P, et al. Changes in acute coronary syndrome treatment and prognosis after implementation of the infarction code in a hospital with a cardiac catheterization unit. *Rev Esp Cardiol*. 2016;69:754–759.
7. Cequier Aue, Ariza-Solé A, Elola FJ, et al. Impact on mortality of different network systems in the treatment of ST-segment elevation acute myocardial infarction. The Spanish experience. *Rev Esp Cardiol*. 2017;70:155–161.
8. García-González MJ, Jorge Perez P, Gomez-Guindal JA, et al. Acute coronary syndrome registry in an ultra-peripheral region of the European Union. The cornerstone to learn and improve. Congress on Acute Cardiovascular Care; 2016 Oct 15-17; Lisboa, Portugal. Available at: <https://esc365.escardio.org/Congress/Acute-Cardiovascular-Care-2016/Poster-Session-3-Acute-aortic-syndrome/143353-acute-coronary-syndrome-registry-in-an-ultra-peripheral-region-of-the-european-union-the-cornerstone-to-learn-and-improve>. Accessed 18 Sep 2018.

### SEE RELATED CONTENT:

<http://dx.doi.org/10.1016/j.rec.2018.10.006>

<http://dx.doi.org/10.1016/j.rec.2018.06.023>

<https://doi.org/10.1016/j.rec.2018.08.025>

1885-5857/

© 2018 Sociedad Española de Cardiología. Published by Elsevier España, S.L.U. All rights reserved.

## In-hospital Mortality Due to Acute Myocardial Infarction in the Canary Islands. Response



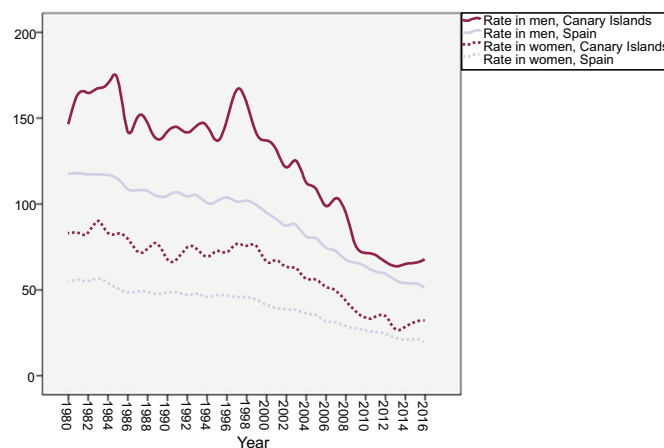
### Mortalidad hospitalaria por infarto agudo de miocardio en Canarias. Respuesta

#### To the Editor,

We appreciate the kind interest shown by Martín Cabeza et al. in our article.<sup>1</sup> Mortality rates due to cardiac ischemia have exhibited a downward trend during the last 4 decades in the Canary Islands and in Spain as a whole (Figure 1), although the decline in the Canary Islands stopped in 2010.<sup>2</sup> Accordingly, the mortality ratio of the Canary Islands to Spain has since increased, reaching almost significant values in 2016: men, 1.33 (95% confidence interval, 0.93–1.93); women, 1.68 (95% confidence interval, 0.96–3.02). This mortality rate is mainly influenced by the living conditions of the population, with the health system a further determinant.

However, the focus of our article was not the mortality of the general population, but that of patients hospitalized for acute myocardial infarction during the years 2007 to 2014. These data represent in-hospital mortality, which is closely related to health care quality. This rate was adjusted for the main risk factors and revealed large inequalities among the different regions. Therefore, we stress that care processes should be reviewed by those responsible for the health system,<sup>1</sup> particularly in the communities with the worst results: the Canary Islands, Andalusia, Aragon, the Valencian Community, and Extremadura.

In the Canary Islands, factors that should be analyzed include the time of transfer from regional hospitals (smaller islands of the archipelago) to third-level centers (capital islands) for the performance of primary angioplasty. We agree with our correspondents and have said before that the excess hospital mortality may be related to the late implementation of the Canarian Infarction Code. If so, the coming years should show a marked improvement in the mortality of patients admitted for acute



**Figure 1.** Changes over time in deaths due to cardiac ischemia in the Canary Islands and Spain. Rates per 100 000 population, adjusted by age.

myocardial infarction. Indeed, the implementation of reperfusion networks for acute myocardial infarction has help to reduce mortality in Spain.<sup>3</sup>

María del Cristo Rodríguez-Pérez,<sup>a</sup> Itahisa Marcelino Rodríguez,<sup>a</sup> Arturo J. Pedrero García,<sup>a</sup> and Antonio Cabrera de León<sup>a,b,\*</sup>

<sup>a</sup>Unidad de Investigación de Atención Primaria, Hospital Universitario Nuestra Señora de Candelaria, Santa Cruz de Tenerife, Spain

<sup>b</sup>Área de Medicina Preventiva y Salud Pública, Universidad de La Laguna, San Cristóbal de La Laguna, Santa Cruz de Tenerife, Spain

\* Corresponding author:

E-mail address: [acableon@gmail.com](mailto:acableon@gmail.com) (A. Cabrera de León).

Available online 15 November 2018

## REFERENCES

1. Mate Redondo C, Rodríguez-Pérez MC, Domínguez Coello S, et al. Hospital mortality in 415 798 AMI patients: 4 years earlier in the Canary Islands than in the rest of Spain. *Rev Esp Cardiol.* 2018. <http://dx.doi.org/10.1016/j.rec.2018.06.023>.
2. Instituto de Salud Carlos III. Centro Nacional de Epidemiología. Área de Análisis Epidemiológico y Situación de Salud. Mortalidad por todas las causas. Disponible en: <http://raziel.cne.isciii.es/raziel.php>. Consultado 28 Ago 2018.
3. Cequier Áaue, Ariza-Solé A, Erola FJ, et al. Impact on mortality of different network systems in the treatment of ST segment elevation acute myocardial infarction. The Spanish experience. *Rev Esp Cardiol.* 2017;70:155–161.

SEE RELATED CONTENT:

<http://dx.doi.org/10.1016/j.rec.2018.08.025>

<https://doi.org/10.1016/j.rec.2018.10.006>  
1885-5857/

© 2018 Sociedad Española de Cardiología. Published by Elsevier España, S.L.U. All rights reserved.

## Estimated Percentage of Patients With Stable Coronary Heart Disease Candidates for PCSK9 Inhibitors



### Estimación del porcentaje de pacientes con enfermedad coronaria estable candidatos a recibir inhibidores de la PCSK9

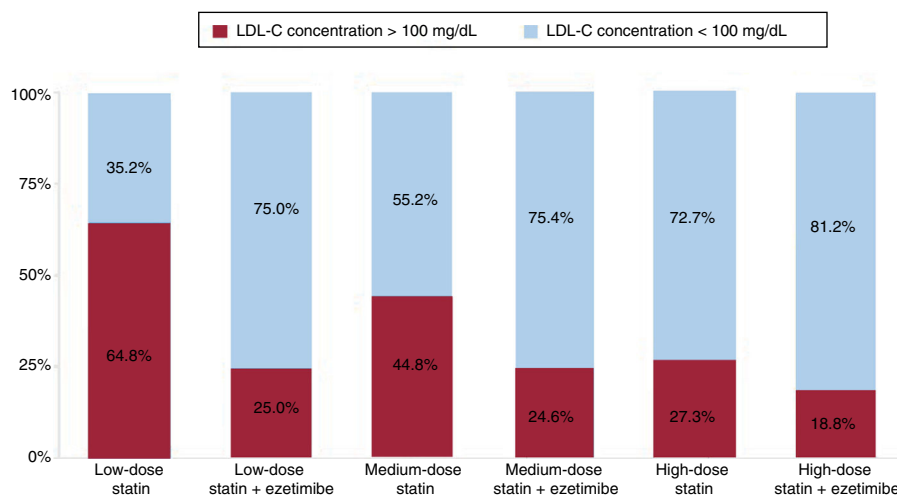
To the Editor,

We read with great interest the article by Zamora et al.,<sup>1</sup> in which they estimated the number of patients eligible for proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors. We thought it particularly interesting that, although they found a relatively low percentage of patients with cardiovascular disease to be eligible for these drugs, this patient group had the highest absolute number of eligible patients. We consider these results to be highly relevant to clinical practice, as they show that 19.8% of patients with cardiovascular disease met the criteria to receive PCSK9 inhibitors based on a low-density-lipoprotein cholesterol (LDL-C) level > 100 mg/dL despite maximal lipid-lowering therapy.

We estimated the percentage of patients that would be eligible for PCSK9 inhibitors based on LDL-C levels > 100 mg/dL despite maximal lipid-lowering therapy in the 1281 patients with cardiovascular disease in the REPAR Study (*Registro Paciente de*

*Alto Riesgo Cardiovascular*; in English, the High-Cardiovascular-Risk Patient Registry). This registry previously demonstrated that treatment with high-dose statins was associated with improved LDL-C control,<sup>2</sup> although this was only achieved in less than 40% of patients. In the group of patients with established cardiovascular disease (91% of whom had ischemic heart disease), 33.6% of patients were receiving high-dose statins and 5.4% were receiving high-dose statins plus ezetimibe. As can be seen in [Figure 1](#), the percentage of patients with LDL-C > 100 mg/dL despite taking high-dose statins with or without ezetimibe was 27.3% and 18.8%, respectively; this percentage was 44.8% and 24.6% in patients who were receiving medium-dose statins with or without ezetimibe, respectively.

Dyslipidemia remains one of the most poorly-controlled factors in patients with established cardiovascular disease.<sup>3,4</sup> Treatment with high-dose statins has been demonstrated to be effective in controlling LDL-C and reducing the incidence of cardiovascular complications<sup>5</sup>; combined treatment with ezetimibe also improves LDL-C control and prognosis.<sup>5</sup> However, a large percentage of patients do not meet LDL-C treatment target levels despite maximum-dose treatment.<sup>2–4</sup> Poor control may also be attributed to additional factors such as low treatment adherence, an effect that cannot be excluded in our analysis. PCSK9 inhibitors are a new treatment option that has been demonstrated to be safe



**Figure 1.** Percentage of patients with LDL-C values greater than or less than 100 mg/dL according to the lipid-lowering therapy received. LDL-C, low-density-lipoprotein cholesterol.