

# International Differences in 30-day Mortality following Acute Myocardial Infarction: Statistical Analysis of Site Level Data from the HERO-2 Trial

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## Abstract

The Hirulog and Early Reperfusion or Occlusion (HERO-2) trial was a multi-centre, multi-nation trial using as endpoint 30 day mortality following hospital admission with acute myocardial infarction (AMI). Data from this trial provides the opportunity to examine regional variations in 30-day mortality following admission with AMI in patient level or aggregated data, or through investigation using multi-level model analyses. This paper analyses the variation in risk at different sites participating in HERO-2, and studies and compares these results on aggregated data with those of a previous analysis of international differences conducted using individual patient data. Generalized linear models (GLMs), including Binomial regression and Poisson regression are developed. The presence of heterogeneity within and between sites after adjustment for risk factors is considered through examining over-dispersion in these models and the use of generalized linear mixed models (GLMMs). A discussion of ecological bias is presented with comparison of our findings based on site level data and those of the previous individual level data analysis.

*Key words:* 30-day mortality; AMI; HERO-2; site-level aggregation

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