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## Systematic review

# Current evidence shows no reduction in mortality or re-infarction rate with early mobilisation following myocardial infarction

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Commentary on: **Cortes OL**, Villar JC, Devereaux PJ, et al. Early mobilisation for patients following acute myocardial infarction: a systematic review and meta-analysis of experimental studies. *Int J Nurs Stud* 2009;**46**:1496–504.

Cardiovascular disease remains the leading cause of death, despite advances in treatment.<sup>1</sup> In their systematic review, Cortes and colleagues examined the effect of an appealing intervention, early mobilisation, on mortality and re-infarction rates after acute myocardial infarction (AMI). The review is significant given the negative effects of bed rest and its continued prolonged use following AMI in many settings. The authors analysed data using relative risk with a 95% confidence interval. Their meta-analysis of 14 studies showed a 15% lower mortality risk in patients prescribed early mobilisation compared with the controls but no difference in re-infarction rates within 1 year of AMI. The authors concluded that there is a trend towards reduced mortality with early mobilisation and recommended more rigorous studies in light of new treatment developments.

The authors clearly articulated the purpose of their review and defined the intervention. They are to be commended for their comprehensive review strategy, which was not limited to published studies, randomised trials or English-language papers. Two independent reviewers identified eligible studies and used rigorous criteria for evaluating their quality; no study was rated as high quality. The symmetrical funnel plot reflected minimal publication bias, so the data were rightfully pooled. Despite a non-significant heterogeneity test, the authors used the rather conservative random effects model for the analysis and weighted the effect sizes according to the sample size of individual studies, which were between 48 and 742; this approach is appropriate because effect sizes varied between studies (RR 0.16 to 4.00) and the confidence intervals did not overlap. Analyses were also made by time of start of mobilisation (within 5 days of AMI vs after 5 days) and by study quality (intermediate vs low).

The results indicate that the authors did not consider some points in drawing their conclusions. First, only the study by Schumann had statistically significant results. Similarly, the overall relative risk and those obtained in subgroup analyses were non-significant. Second, despite similarity in their mobilisation protocols, studies varied greatly in how soon mobilisation was started after AMI, from 2 to 10 days in the experimental groups. Third, the follow-up period was less than 1 year in half the studies reviewed, including two with in-hospital follow-up. These variations and the low quality of the studies where only half were randomised might explain the minor difference in effect sizes between intermediate- and low-quality

studies, and the larger effect size of studies with intermediate quality compared with low-quality studies (RR 0.78 vs 0.85). An overestimation of effect size can be expected in studies with weak designs. Another unexpected finding was the lower mortality risk in studies where mobilisation was started after more than 5 days than in those where it was started earlier (RR 0.75 vs 0.93). The relative risk in the former group was probably skewed by three small studies. This finding goes counter to the conclusion of lower mortality when early mobilisation is used.

The authors concluded that there is a trend towards reduced mortality. However, it is questionable how much one can conclude from the findings of this review, even if a 15% reduction in mortality sounds clinically significant. More importantly, how soon mobilisation should begin cannot be answered from this review, as the studies included were conducted before the introduction of reperfusion therapy. Starting mobilisation 5 days after admission is no longer relevant given the short length of hospital stay of AMI patients these days. Although the latest guidelines on physical activity recommend bed rest for no longer than 12–24 h for patients with uncomplicated AMI, depending on haemodynamic status,<sup>2</sup> the authors stated that practices still vary among countries. So, is the problem the question of how early we need to start mobilisation, or is it the lack of consistency in following clinical guidelines? If the current recommendation is to initiate mobilisation 12–24 h after AMI, would it be reasonable to expect an even earlier mobilisation?

The results of this systematic review are barely relevant in light of current treatment guidelines and are unlikely to inform practice. Randomised trials are needed to answer the question that Cortes and colleagues asked in their review, with early mobilisation after AMI clearly defined not only in terms of how but also in terms of when in light of current practice.

Competing interests: None.

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