Reviewer’s report

Title: Quality of care of patients with acute myocardial infarction in Bulgaria: a cross-sectional study

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Reviewer: Edward Havranek

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Ganova-Iolovska, Kalinov, and Geraedts present descriptive data on processes of care and mortality for acute myocardial infarction in a region of Bulgaria serving approximately 5% of the country’s population. The time frame of the study is the last four months of 2004. The paper is useful in two regards. First, it offers a look at medical care in a health care system about which many (including me) outside the country know very little. Second, it represents a hopeful first step toward improved quality in a health care system carrying significant burdens of history and of limited resources.

Measurement of quality of care for acute myocardial infarction is typically performed in two domains: processes and outcomes. With regard to processes, typical measures are the proportion of patients properly receiving reperfusion (thrombolytic therapy or primary coronary intervention), the proportions of patients properly receiving early medical therapy (aspirin and beta blockers) and the proportion of patients properly receiving medical therapy at discharge (aspirin, beta blockers, ACE inhibitors, and statins). Counseling regarding smoking cessation is often added to this list.

Comparing rates in the current study to rates obtained in other countries using similar methodology is fraught with difficulty, especially since the number of patients in the current study is relatively small; presenting 95% confidence intervals for the point estimates of performance rates might have been helpful in this regard. However, the authors report rates of performance only slightly below that shown in prior studies. Primary coronary intervention was not an option for patients in this region of Bulgaria, but thrombolytic therapy was. The authors found that 35% of candidates received the therapy, slightly less than the 40% found in a nationwide study in the United States (Jencks SF et al. JAMA 2000; 284: 1670-76). The authors report (in the abstract but unfortunately not in the body of the paper) aspirin use at 80%, beta blocker use at 71%, ACE inhibitor use at 49%, and statin use at 48%. Since we do not know if the aspirin and beta blocker rates refer to use within 24 hours or use at discharge it is difficult to make comparison with other reported rates. In the Jencks paper, aspirin use within 24 hours of admission was 84% and beta blocker use within 24 hours of admission was 64%. Clarifying what these rates represent, especially the size of and inclusion criteria for the denominator, might be useful to readers.

The time delays in seeking care likewise seem to be somewhat longer than has
been previously reported, and likely represent a significant challenge for the Bulgarian health care system. Although the paper reports that time delay is not influenced by other factors, it is not clear if variables shown previously to have associations with delay in presentation hold in the current data set, for two reasons. First, the relatively small number of patients studied limits power to detect small differences. Second, there is some ambiguity about how the multivariable analysis was performed. Logistic regression is typically performed when outcomes are binary and sometimes performed when there are three or more levels of outcome, yet the outcome of time delay is continuous – clarification of how the models were constructed would be helpful.

In addition to reporting process measures, the paper reports in-hospital mortality. At 7.5%, mortality appears to be not much higher than is reported in contemporary data from other countries. Given the small number of events and without having the data necessary to perform risk-adjustment, more precise comparison is not possible.

Despite these criticisms, the paper has an important message for all of us. Taking quality seriously in a country with seriously constrained health care resources tells providers in countries whose resources are far less constrained how important quality really is.

In summary, I consider addition of the medication data to the Results section, along with clarification of the time frame (within 24 hrs or at discharge) and information about the denominator to be essential (minor essential revisions). Likewise, I consider clarification of the "Logit models" to be essential. Addition of 95% confidence intervals around the point estimates of rates should be considered discretionary.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests