

UC Davis

Reports for the California Office of Statewide Health Planning and Development

Title

Second Report of the California Hospital Outcomes Project (1996): Acute Myocardial Infarction Volume Two: Technical Appendix-Chapter001

Permalink

<https://escholarship.org/uc/item/0dn332c8>

Authors

Romano, Patrick S
Remy, Linda L
Luft, Harold S

Publication Date

1996-03-21

CHAPTER ONE: TECHNICAL APPENDIX OVERVIEW

This volume of the California Hospital Outcomes Project provides background information about the risk-adjustment models used to derive hospital-specific results for acute myocardial infarction (AMI). These risk-adjustment models were developed using a multi-step process. This involved reviewing the scientific literature, convening a panel of experts, developing criteria for including and excluding cases, identifying adverse outcomes, selecting risk factors, estimating statistical models, refining and testing these models, and calculating risk-adjusted outcome measures. The details of this process are described to allow others to replicate the results or apply the methods to other regions. While the research team believes the models developed and used in the California Hospital Outcomes Project are as good as possible given the available time, resources, and data, suggestions for improvement are welcome.

A summary of the literature relating to risk factors for short-term mortality after AMI is presented in Chapter Two.

Chapter Three describes the criteria used to select a relatively homogeneous group of patients for the study. Patients with very unusual or serious associated diagnoses were excluded to improve the validity of outcome comparisons across hospitals.

Chapter Four describes the record linkage procedures used in studying AMIs. Record linkage was required because 19.5% of all AMI patients were transferred from their initial hospital to another acute care facility, often for sophisticated tests or procedures. To treat all hospitals fairly, irrespective of the availability of specialized services, records of transferred patients were linked.

Chapter Five defines the outcome variable: inpatient death within 30 days of admission for AMI. This outcome variable was carefully selected with the assistance of an expert advisory panel that includes cardiologists, nurses, health services researchers, and health information management professionals.

Chapter Six describes the data limitations due to variations in hospital reporting policies and the consequences of these variations for the analysis. These variations occur despite extensive coding guidelines published by the

American Hospital Association, and despite OSHPD's efforts to verify data accuracy using detailed editing procedures. The specific hospitals excluded because of these data limitations are listed in Chapter Six.

Chapter Seven describes the creation and selection of risk factors for risk adjustment models. The literature review and advisory panel meetings resulted in long lists of potential risk factors. These were tested statistically to determine whether they were, in fact, related to the outcome variable. Chapter Seven identifies both factors included in the final models and factors that were tested but subsequently excluded.

Chapter Eight describes the procedure used to develop risk adjustment models. Estimating these models involved integrating statistical methods with clinical judgment. Various combinations of risk factors and interactions were tested. Preliminary results were examined and the models were refined.

Chapter Nine includes the final risk models, with the estimated effect of each independent variable on the outcome variable. It also describes how these models should be interpreted. The process of validating the models using various measures of predictive power and goodness-of-fit is described in Chapter Ten.

Chapter Eleven describes how the risk adjustment models presented in Chapter Nine were used to evaluate hospital outcome rates statewide. The process began with computing observed and predicted adverse death rates for each hospital, risk-adjusted death rates, and confidence intervals for those rates. A special technique was used to compute the probability that each hospital experienced the observed number of deaths.

Chapters Twelve through Fifteen, describe the AMI validation study, detail its methodology, describe the results, and draw conclusions from those results.