

# Assessing Mortality Risks in Coronary Artery Disease (CAD) and Peripheral Arterial Disease (PAD)

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## Background

Coronary artery disease and peripheral arterial disease account for significant mortality and morbidity in the industrialized world. Risk factor modification is the cornerstone of CAD and PAD therapies. We report a novel method of identifying risks amongst these patients to identify groups at risk and use a guideline driven approach to modify risk factors.

## Methods

A list of 2,705 patients with histories of myocardial infarction was abstracted from an electronic medical record of a large multi-specialty practice in Central Florida. Dates of past stress tests amongst these patients were noted and a list of those who did not have stress tests in the last 16 months was compiled. Low density lipoprotein (LDL) levels were also compiled for these patients.

## Results

The standard deviation of seven consecutive systolic blood pressure readings amongst a random sample of 150 patients from this list identified those at 1.5 times greater risk for mortality. Body mass index (BMI) and calf circumference measurements were available on 1,130 patients with PAD symptoms. Using random forest machine learning and data from the CDC NHANES dataset, a model predicting death at two years was created. This model was applied to the patients to predict 287 specific patients at risk of death within the next two years. Risk factor profiles of these patients were compiled.

## Conclusion

LDL levels were not at guideline levels (70) in 63% of patients identified as being high risk amongst the sample of 150 CAD patients. Similarly, 52% of the PAD patients predicted to die in two years had LDL levels not at guideline goals. Electronic medical records and data science techniques can identify specific patients at increased mortality risk. Thus, healthcare professionals can use this model to pinpoint high-risk patients with high mortality chances in order to implement rigorous treatment.

## Other Information

### Author Disclosures:

Isbah Barlas: This author has nothing to disclose

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