Machine Learning Methodology Identifies Predictors of a Cardiovascular Composite Measure Among Severe Peripheral Artery Disease Patients

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Introduction

• Patients with severe PAD who undergo a 20%-80% greater risk of death and/or amputation within 1 year of severe PAD diagnosis, compared with treated severe PAD patients, by age, sex, race, and comorbidities, increase their hard clinical outcomes.

• Despite significant strides in the risk of mortality and morbidity in severe PAD patients,1,2 little progress has been made with accurate, independent identification.

• Machine learning has been typically used as a tool for diagnosis, yet limited usefulness of its role for diagnostic accuracy for severe PAD patients has been demonstrated.3

• This study established a novel machine learning methodology, including a multidisciplinary team of medical experts, to foster meaningful clinical improvements in severe PAD patients.

• This paper evaluated the use of a machine learning methodology to identify factors associated with hard clinical outcomes in severe PAD patients.

Objectives

• The objective of this study was to identify risk factors for major adverse cardiac events (MACE) among severe PAD patients with diabetes.

• To identify risk factors for cardiovascular events in severe PAD patients using data from a prospective observational study.

• To further understand the association of diabetes with cardiovascular events.

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Data Sources

• The retrospective study included a large, integrative database derived from Electronic Health Records at diabetes care centers and health plans (January 1, 2007 - September 30, 2012) for severe PAD patients and diabetes mellitus (diabetes mellitus).

• This database included comprehensive data on severe PAD patients across all 50 states.

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Results

• This study established a novel machine learning methodology, including a multidisciplinary team of medical experts, to foster meaningful clinical improvements in severe PAD patients.

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• The results of this study were presented at the American Heart Association Scientific Sessions; November 12-16, 2016, New Orleans, LA USA.

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Conclusions

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