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Cardiovascular Risk Prediction for Improved Maternal Health

Abstract

Preeclampsia is a common cause of pregnancy complications and maternal death and complicates 2-12% of pregnancies. Preeclampsia is a risk factor for short and long-term cardiovascular disease. There remains a clinical challenge in identifying women with preeclampsia who are at risk for short-term cardiovascular events. The objective of this project is to create a risk model to predict short-term cardiovascular events in women with preeclampsia. We will leverage the Premier dataset and a Duke and University of North Carolina dataset to create and validate a cardiovascular event risk score in women with preeclampsia using both traditional and machine learning methods. We will then prospectively add laboratory markers to improve model performance. The significance of this project is that improved risk prediction could help prevent cardiovascular complications by identifying women with preeclampsia at significant risk of acute cardiovascular events and enhancing cardiovascular surveillance, treatment and interventions to reduce cardiovascular risk factors.