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**Anthony Bonifonte\*** (abonifon@gatech.edu), **Turgay Ayer**, **Benjamin Haaland** and **Peter Wilson**. *A Continuous Time Stochastic Model to Optimize Blood Pressure Treatment Decisions.*

Antihypertensive drug treatment can control elevated blood pressure and reduce the risk of future cardiovascular outcomes. We develop a data-driven stochastic model of blood pressure progression that generalizes Brownian motion by modeling the change in blood pressure per unit time as a Gaussian mixture distribution. This model addresses the question of what thresholds at which to initiate antihypertensive treatment and the optimal intensity. Our main finding is initiation and intensity decisions depend jointly on systolic and diastolic pressure. The methods are generalizable to other chronic diseases with continuous valued measurements. (Received September 16, 2016)