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Erica M Rutter* (erutter@ncsu.edu) and **Adam Mahdi**. *Influence of Non-Physiological Blood Pressure Artifacts on Cerebral Autoregulation*. Preliminary report.

Cerebral Auto-regulation (CA) is the mechanism by which cerebral blood flow velocity (CBFV) remains constant despite an abrupt change in arterial blood pressure (ABP). The cerebral autoregulation index (ARI), which is a common assessment tool, uses ABP data as an input to the Tiecks' model [1] to generate a value between 0 (poor autoregulation) and 9 (best autoregulation). ARI are used by physicians to assess patient health.

However, there are many types of non-physiological blood pressure artifacts that can arise during measurement of ABP, such as crimping of the tube measuring ABP or a thrombus in the arterial line. We explore inserting these artifacts into patient ABP measurements and observing the resulting change in ARI values. For each type of artifact, we gradually increase the severity of the artifact and quantify when measured ARI is no longer reliable. We rank the artifacts in terms of their sensitivity to ARI. Lastly, we propose methods to detect and remove these artifacts in ABP.

[1] FP Tiecks, AM Lam, R Aaslid, and DW Newell. Comparison of static and dynamic cerebral autoregulation measurements. *Stroke.*, 26:1014—1019, 1995. (Received September 11, 2016)