Overarching goal: Do vascular risk factors contribute to the development of PD-related cognitive impairment?

Cohort: The National Institute of Neurological Disease (NINDS) established the Parkinson’s Disease Biomarker Program (PDBP) approximately 5 years ago as a longitudinal, observational study to identify biomarkers for Parkinson’s disease (PD). The cohort includes individuals with PD and controls, and some sites also recruit patients with atypical parkinsonism syndromes including Multiple System Atrophy and Progressive Supranuclear Palsy. This analysis will include/focus on the PD and control patients only. Over the 5 years, a few sites have been added and there are approximately 6 sites, all of which obtain the same core assessments—looking at severity of motor impairment (MDS-UPDRS) and cognitive functioning (MoCA). In addition, there are some sites that were added to the PDBP with slightly different assessments but are still included in the database. (For example, most sites do the Hamilton Depression Scale to look at depression symptomatology but the Univ of FL site uses the Beck Depression scale). Most sites see patients every 6 months, though a few sites only see patients twice, one year apart.

Brief background: About 80% of individuals with PD will develop dementia with 15 years of disease onset but the rate of progression to dementia is very heterogeneous and this still leaves 20% without dementia at 15 years. Determining modifiable risk factors to dementia development would improve clinical care and provide better counseling to patients. Significant research has shown that vascular risk factors contribute to dementia in non-PD populations.

Definitions: Vascular risk factors include smoking status, hypertension, hyperlipidemia, obesity, diabetes. Cardiac arrhythmias including atrial fibrillation should be treated differently. We can come up with a summary of modifiable vascular risk factors using the Framingham Score. Individuals with **low risk** have 10% or less CHD risk at 10 years, with **intermediate risk** 10-20%, and with **high risk** 20% or more. However it should be remembered that **these categorisations are arbitrary**.

Cognitive impairment: Normal MoCA score is anything > or = 26. Mild Cognitive Impairment is more controversial but generally > or = 20. Dementia is 19 or less.

Specific Aim 1: Do individuals with high Framingham Scores have greater cognitive impairment (cross sectional)? Does Framingham score predict conversion from PD-normal cognition to PD-MCI or conversion from PD-MCI to PDD over a 3-5 year follow up time? Can look at controls too as part of the analysis to see the increased impact of PD.

Specific Aim 2: Do individuals with hypertension (or obesity, or smokers~~, or high cholesterol~~ or DM) have greater cognitive impairment? Does hypertension (or obesity, etc) predict conversion from PD-normal cognition to PD-MCI to PDD over a 3-5 year follow up time? Can look at controls too as part of the analysis to see the increased impact of PD.