JHS manuscript proposal content

## Context

Guidelines recommend using blood pressure (BP) and cardiovascular disease (CVD) risk to guide the decision to initiate antihypertensive medication. In the 2017 ACC/AHA BP guideline, adults with stage 1 hypertension and 10-year atherosclerotic CVD risk ≥ 10% were recommended to initiate antihypertensive medication. The AHA recently introduced equations for estimating 30-year risk of total CVD for adults 30 to 60 years of age. A high percentage of adults 30 to <60 years of age without hypertension have low (<10%) 10-year total CVD risk and high (≥30%) 30-year total CVD risk. It is unclear whether adults without hypertension with low 10-year predicted total CVD risk but high 30-year predicted total CVD risk should initiate antihypertensive medication. We hypothesize that the incidence of hypertension will be higher among black adults with high 30-year predicted total CVD risk and that there will be evidence of sub-clinical CVD among adults with high 30-year predicted total CVD risk when they develop hypertension. This may support the decision to initiate antihypertensive medication among adults with high 30-year predicted total CVD risk before they develop hypertension.

## Aims

1. Describe the distribution of adults without hypertension according to 10-year and 30-year total cardiovascular disease risk.
   1. Sub-aim: Describe the distribution of these groups by blood pressure categories.
2. Estimate the association between total CVD risk and incident hypertension.
3. Estimate the association between total CVD risk and incident cardiovascular disease.
   1. Estimate the incidence of CVD between visit 1 and visit 3.
   2. Among participants who did not develop CVD between visit 1 and visit 3, estimate the incidence of sub-clinical CVD based on left-ventricular hypertrophy (LVH)
   3. Compare left-ventricular mass index (LVMI) and LVH among people who developed and did not develop hypertension.

## Questions and options

Do we need to consider LVMI and LVH at Visit 1? Should we just focus on this at a follow-up assessment?

We have the option of including additional cohorts:

1. Use JHS only (JHS has Echo @ V1 and MRI @ V3)
2. Use JHS + REGARDS (JHS has ECG @ V1 and V3, REGARDS has ECG @ V1 and V2)
3. Use JHS + CARDIA (CARDIA has Echo @ Y25 and Y30)

Why not all three cohorts? We may not have enough time to prepare all three, but it’s worth discussing.

Table 1: Jackson Heart Study participants included in the current analysis.

| **Inclusion criteria** | **No. of participants** |
| --- | --- |
| JHS participants | 5,306 |
| Age 30 to < 60 years at visit 1 | 3,067 |
| Consented to CVD follow-up at visit 1 | 2,953 |
| No history of CVD at visit 1 | 2,943 |
| Have information on self-reported antihypertensive medication use and blood pressure at visit 1 | 2,882 |
| Have information on other variables in the PCEs and PREVENT equations at visit 1 | 2,608 |
| All variables in range for PREVENT equations at visit 1 | 2,489 |
| Without hypertension at visit 1 | 1,388 |
| With hypertension status known at visit 2 or visit 3 | 1,230 |

Table 2: Number of Jackson Heart Study participants in groups defined by blood pressure and total cardiovascular disease risk.

| **PREVENT CVD risk equation** | **Overall (n = 1,230)** | **Normal blood pressure (n = 613)** | **Elevated blood pressure (n = 225)** | **Stage 1 hypertension (n = 392)** |
| --- | --- | --- | --- | --- |
| 10-year total CVD risk | | | | |
| < 10% | 1,215 | 611 | 221 | 383 |
| ≥ 10% | 15 | 2 | 4 | 9 |
| 30-year total CVD risk | | | | |
| <10% | 457 | 316 | 58 | 83 |
| 10% to <15% | 288 | 141 | 60 | 87 |
| 15% to <20% | 207 | 72 | 50 | 85 |
| 20% to <25% | 155 | 61 | 28 | 66 |
| 25% to <30% | 69 | 13 | 16 | 40 |
| ≥30% | 54 | 10 | 13 | 31 |
| 30-year total CVD risk among those with 10- year total CVD risk <10% | | | | |
| <10% | 457 | 316 | 58 | 83 |
| 10% to <15% | 288 | 141 | 60 | 87 |
| 15% to <20% | 207 | 72 | 50 | 85 |
| 20% to <25% | 155 | 61 | 28 | 66 |
| 25% to <30% | 69 | 13 | 16 | 40 |
| ≥30% | 39 | 8 | 9 | 22 |