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BACKGROUND

- Skeletal muscle quality and mass are critically important for maintaining physical function during advancing age.
- CT muscle density provides an estimate of fatty infiltration of muscle, with lower density indicating greater fatty infiltration.
- We leveraged baseline data from REPRIEVE to characterize paraspinal muscle density (MD) and muscle area (MA), and evaluate whether they are associated with cardiac or physical function outcomes in people with HIV (PWH).

METHODS

- REPRIEVE is a double-blind randomized trial evaluating the effect of pitavastatin for primary prevention of coronary artery disease (CAD) in PWH. This cross-sectional analysis focuses on participants who underwent coronary CT at baseline.
- Lower thoracic paraspinal MD (Hounsfield units, HU) and MA (cm²) were assessed on non-contrast CT image (Figure 1). MA was divided by height (MA/HT) to allow examination of associations across various body sizes.
- Associations were evaluated using log-binomial regression (binary outcome measures) and linear regression models (continuous outcome measures). Unless specified otherwise, models were adjusted for age, natal sex and BMI.
- Parameter estimates are shown per 1 SD shift in covariate: 17.74 HU for MD and 4.95 cm²/m for MA/HT, and are plotted in the log scale for visual purposes (for binary measures).

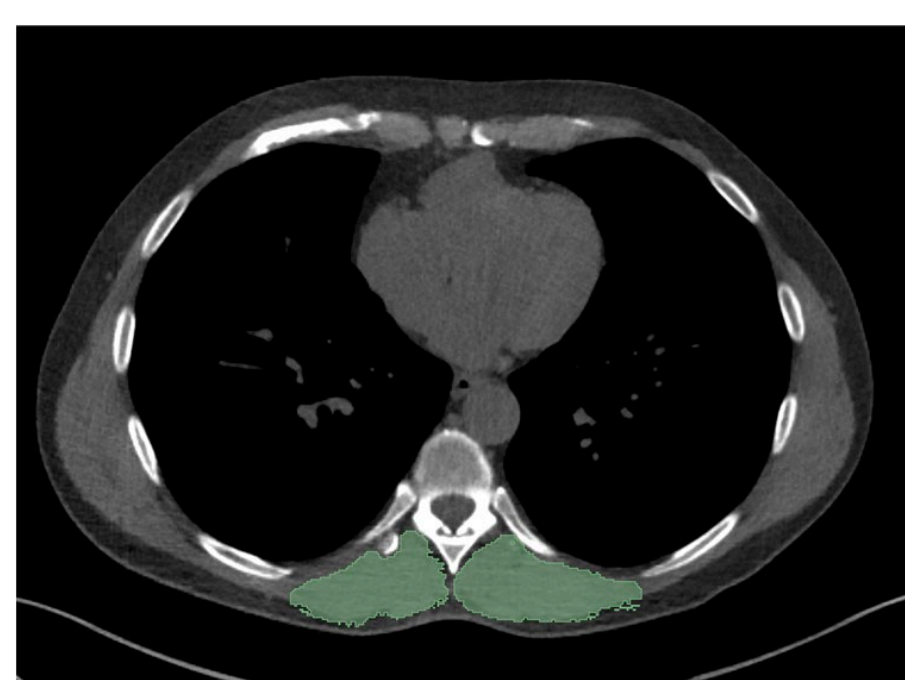


Figure 1. Paraspinal Muscle on Non-Contrast CT Scan, in green

RESULTS

- Of 805 PWH, 708 had paraspinal measurements (139 had physical function measures)
- Median age was 51 (Q1, Q3: 46, 55) years; 17% were natal female, 53% White, 36% Black, and 25% Hispanic.

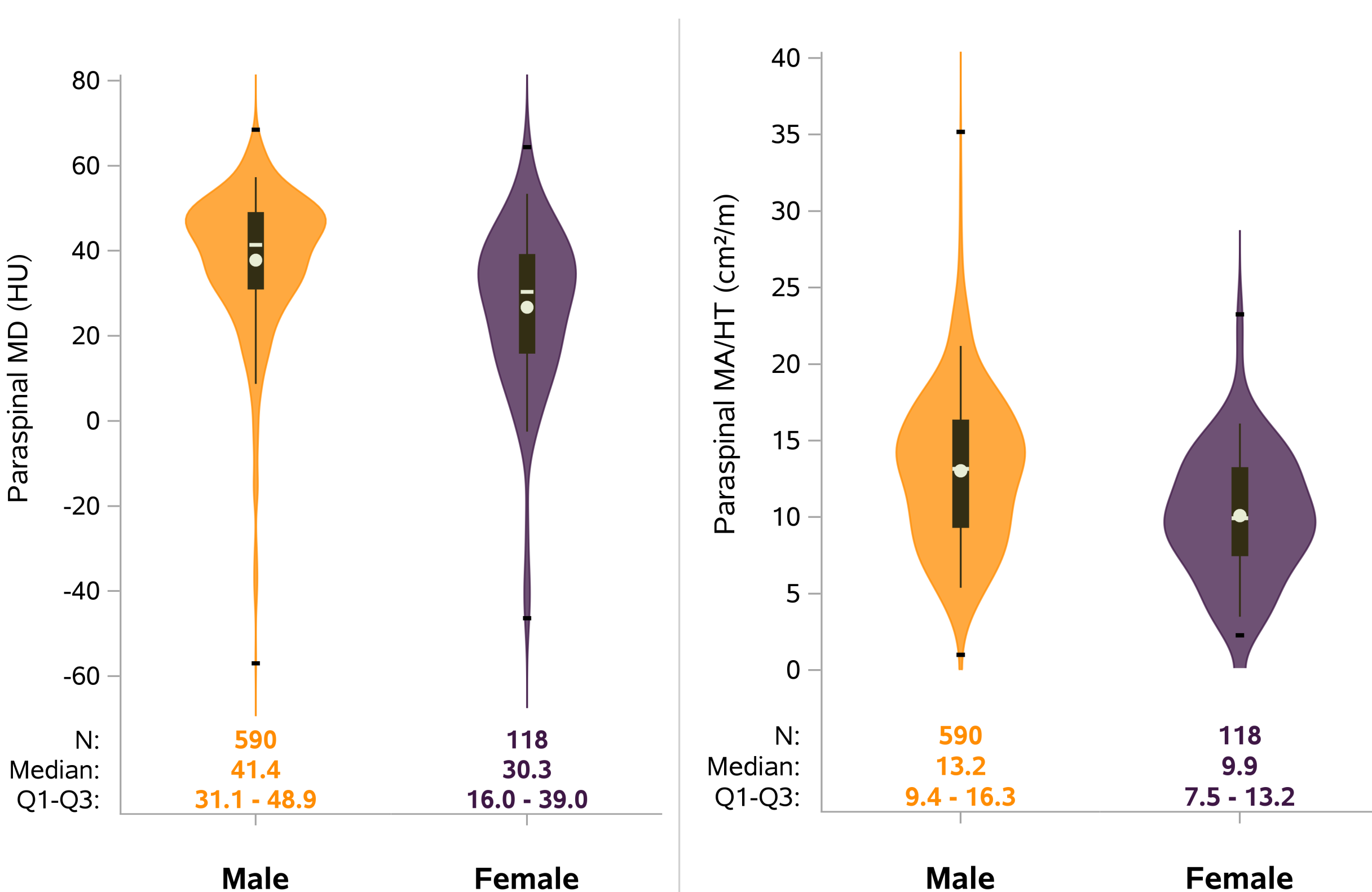


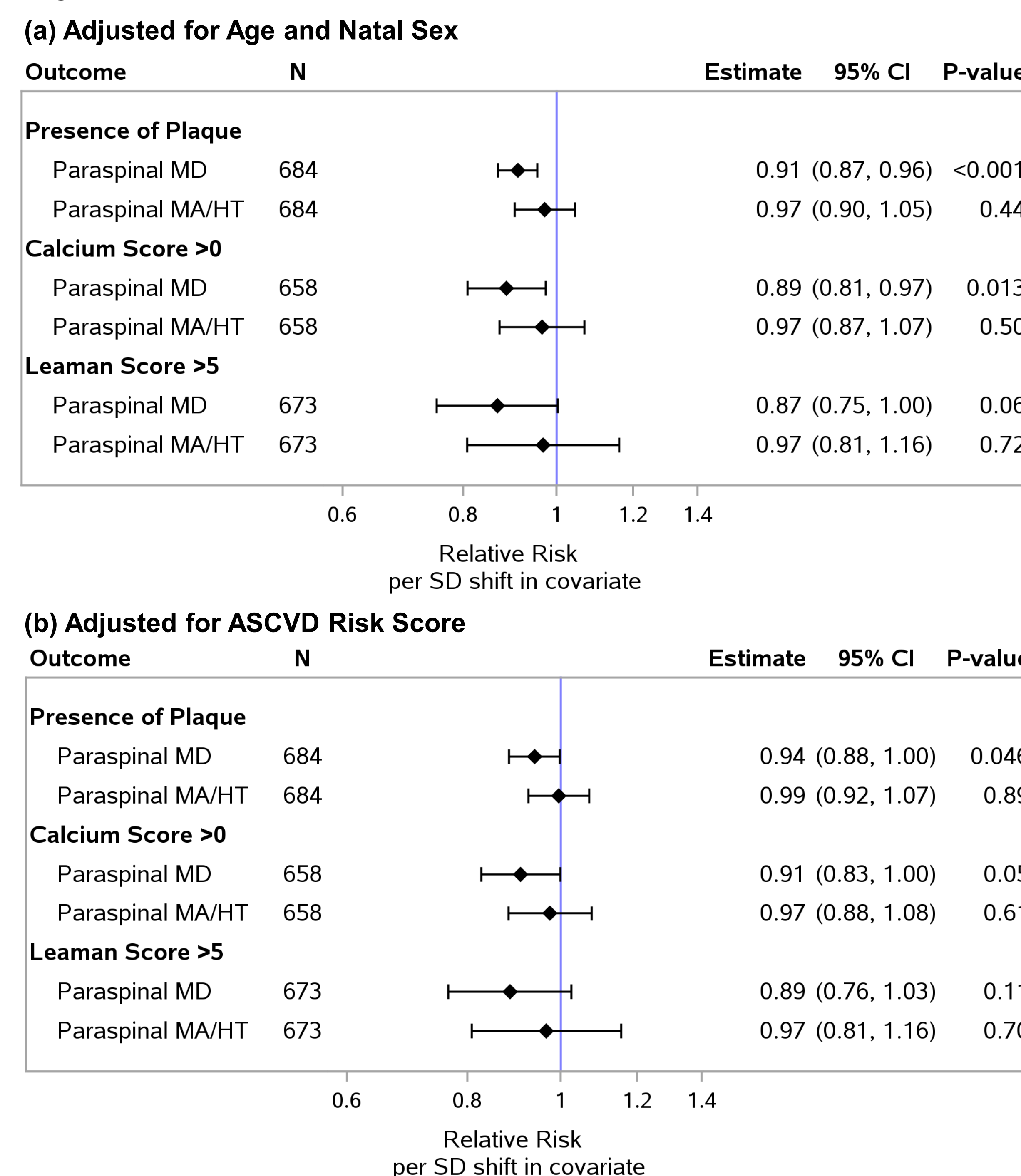
Figure 2. Paraspinal MD and MA/HT among males and females (baseline)

Among PWH, greater paraspinal muscle density was associated with lower prevalence of coronary artery disease and higher muscle area was associated with better physical performance.

RESULTS (continued)

- Lower MD (as outcome) was associated with older age, female sex, thymidine analogue exposure, greater BMI and waist circumference, and hsCRP, MCP-1, sTNFR-1, and the inflammatory index score (data not shown).
- Smaller MA/HT (as outcome) was associated with older age, female sex, non-Black race, greater ASCVD risk, and MCP-1 (data not shown).

Figure 3. Associations between paraspinal MD and MA/HT with CT-based plaque measures.



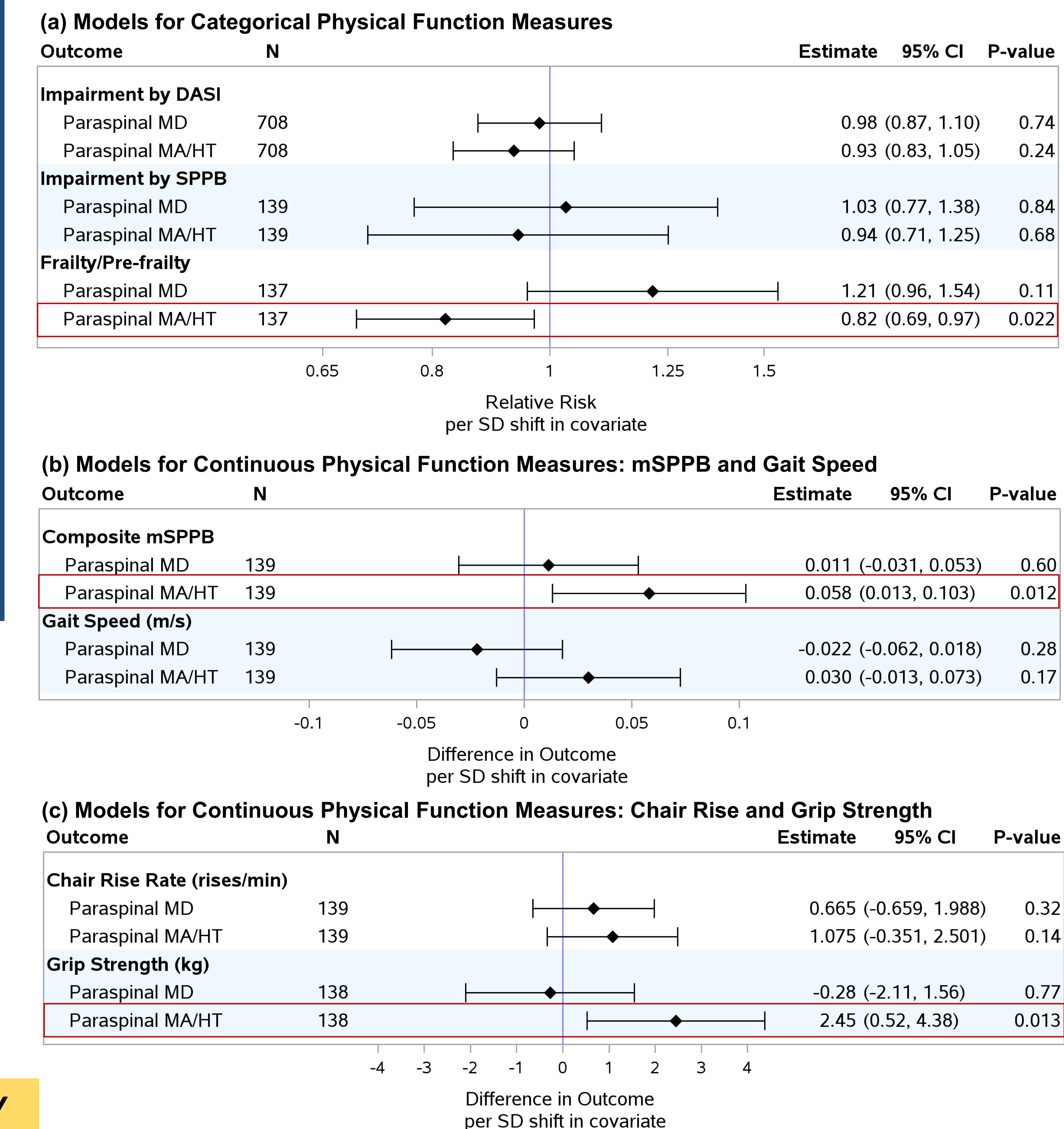
Muscle **density** but not muscle area was associated with the presence of coronary plaque and calcium score >0 in analyses adjusted for age and natal sex (Figure 3a).

These associations were attenuated in models adjusted for ASCVD risk (Figure 3b).

RESULTS (continued)

DASI = Duke Activity Status Index
SPPB = Short Physical Performance Battery
mSPPB = modified SPPB
MD = muscle density
MA/HT = muscle area, adjusted for height

Figure 4. Associations between paraspinal MD and MA/HT with physical function.



Muscle **area** but not muscle density was associated with some (not all) measures of physical function.

SUMMARY

- We present the first data on associations of cardiac CT-based muscle measures with coronary artery plaque and physical function.
- Lower paraspinal MD was associated with several markers of greater plaque burden, while no associations with MA were apparent.
- We also found associations of lower paraspinal MD or MA with greater inflammatory markers.
- Lastly, we found modest associations between thoracic MA and measures of physical function and frailty, although these assessments were limited by a small sample size.
- Overall, these findings provide novel evidence of a link between MD and CVD among PWH.
- Whether incorporating measures of MD, MA, or muscle function into cardiovascular risk models may improve prediction among PWH can be further evaluated within the REPRIEVE longitudinal trial, in addition to better understanding the cause or effect of associations identified here.