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Associations of Muscle Density and Area with Coronary Artery Plaque and Physical Function

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Background

As people with HIV (PWH) age, maintaining muscle is very important for physical function. Studies have shown that when fatty tissue makes its way into or around skeletal muscle (the muscles that allow us to move our bodies), muscle function gets worse. One way to visualize this process is through computed tomography (CT) scans. With CT scans, we can look at how much fat is within the muscle by the density of the muscle, and we can look at the amount or area of the muscle.

Goals of the Study

In this analysis of REPRIEVE substudy participants, we measured both the density and area of muscles around the spine from the cardiac CT scan. We also measured markers of inflammation, immune activation, and other cardiovascular and metabolic markers. Our goal was to determine whether muscle density and area were associated with cardiovascular health and physical function. The REPRIEVE Trial is a global clinical research study testing whether treatment with a statin medication (cholesterol-lowering medication) helps prevent heart disease among PWH. U.S. REPRIEVE participants in the substudy undergo all REPRIEVE trial procedures, as well as CT scans of the blood vessels surrounding the heart and blood tests to measure levels of markers of inflammation.

- **The participants:**
  - 708 participants (590 male)
  - Median age at enrollment: 51 years
- **The findings:**
  - Lower muscle density around the spine was associated with blood markers that signal worse plaque (fatty buildup) in the vessels that supply blood to the heart.
  - Lower muscle area was not associated with these blood markers.
  - Lower muscle density and area were associated with higher markers of inflammation.
  - Older age and female sex were associated with lower muscle density and area; Black race was associated with greater muscle area.
  - There was a slight association between muscle area and measures of physical function and frailty, but fewer people had this data measured at baseline and could be included. .

In Summary: Our analysis supports the importance of muscle density and area measured from cardiac CT scans and their relationships with measures of cardiovascular disease, inflammation, and physical function. Using these simple measures from cardiac CT scans can provide helpful information on how people are aging with HIV.

REPRIEVE Trial Website: reprievetrial.org