**BACKGROUND**

- Atherosclerosis is associated with increased arterial stiffness\(^1\) and carotid artery intima-media thickness (CIMT)\(^2\).
- CIMT varies during the cardiac cycle with it being thicker at end diastole (measured with the electrocardiogram gated at "QRS") when the lumen is smallest\(^3\).

**AIM**

- The aim of the study was to assess if CIMT change during the cardiac cycle can be used as a marker of arterial stiffness in addition.
- If so, CIMT assessment alone can serve as a marker of both vessel function (stiffness) and structure (atherosclerosis)\(^4\).

**METHODS**

- Common carotid artery lumen diameter was measured using electronic calipers. A total of 50 lumen measurements were taken at "QRS*" and 50 at "Non-QRS*" for each child.
- CIMT with cursor at "QRS" on the EKG
- CIMT with cursor at "non-QRS" on the EKG
- Arterial Lumen Diameter with cursor at "QRS" on the EKG
- Arterial Lumen Diameter with cursor at "non-QRS" on the EKG

**RESULTS**

- "QRS CIMT" was thicker than "Non-QRS CIMT" \(0.50 \pm 0.01\) (mm) vs. \(0.45 \pm 0.01\) (mm), \(p < 0.01\).
- "Non-QRS" lumen diameter was larger than the "QRS" lumen diameter \(6.56 \pm 0.03\) (mm) vs. \(5.64 \pm 0.03\) (mm), \(p < 0.01\).
- There was a strong correlation between change in CIMT and change in lumen diameter during the cardiac cycle \((R^2=0.72)\) suggesting that a larger change in CIMT during the cardiac cycle correlated to a less stiff artery (see figure below).

**CONCLUSIONS**

- Change in CIMT during the cardiac cycle is a measure of arterial stiffness in children.
- CIMT assessment alone can serve as a marker of vessel function (stiffness) and structure (atherosclerosis).

**REFERENCES**