



Defining Atherosclerotic Cardiovascular Disease (ASCVD) in Real-World Research: An Analysis of Conceptual and Operational Definition Variability

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DISCLOSURES & ACKNOWLEDGMENTS

A Kamaau, J Kamaau, M Buck & C Parker: Employees of Navidence Inc. A Kamaau, C Parker: Co-Founders of Navidence Inc. A. Harrison: Employee of Navidence Inc during this work. S DuVall: Employee of PurpleLab
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So
What?

There is significant variation in definitions of ASCVD and therefore understanding the variance is important to consistent interpretation of results in RWR.

BACKGROUND

Context

In real-world research (RWR), complex clinical concepts, composed of multiple composite conditions, are often used to define cohort phenotypes. Meaningful results depend on consistent conceptual and computable operational definitions (CODEfs).

The Gap / Problem

Variance in CODEfs and code lists used in published studies may exist for some clinical concepts. Follow-on work looks at the impact of these differences in definitions on cohorts in RWD.

See companion posters **B-271, B257 & B-256**

PRIMARY OBJECTIVE

To describe variations in CODEfs from reputable sources and RWR publications on patients with Atherosclerotic Cardiovascular Disease (ASCVD).

Computable Operational Definitions (CODEfs™)

Study elements — exposures, outcomes, and covariates — were defined using Navidence CODEfs™: rigorous, data source-agnostic algorithms that ensure precision and reproducibility across RWR.

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METHODS

Study Design & Data Source

We reviewed literature and clinical references (e.g., American Heart Association) to identify clinical definitions of ASCVD. We extracted and analyzed multiple medical conditions used in ASCVD definitions, including peripheral artery disease (PAD) and myocardial infarction (MI). Our analysis included assessment of combinations of these conditions. When available, code lists were also compared.

Study Population

11 references were analyzed including 6 of the references that published detailed CODEfs with code lists.

RESULTS

- From the 11 references analyzed, there were 22 different medical conditions identified as part of an ASCVD definition, representing 10 different combinations.
- Figure 2 shows the 6 most common medical conditions identified and the number of references they were found in.
 - PAD was the most common medical conditions being included in 10/11 references.
 - Renal Artery Stenosis, Vertebral Artery Disease, Mesenteric Artery Ischemia, Claudication were the least common medical conditions being included in 1/10 references.

- The 6 references that published detailed CODEfs had code lists for 10 conditions.
 - 3 conditions showed significant code list variation (min. pairwise Jaccard < 0.4).
 - 4 showed minimal variation (min. pairwise Jaccard > 0.8).
 - 3 showed moderately significant code list variation (min. pairwise Jaccard 0.40–0.84)
- Figure 3 shows the variation in mean pairwise Jaccard value for all 10 of the conditions across the references.
- The variation shown in the published code lists shows a clear potential for cohort impact based on what ASCVD definition is used.

Figure 1: Reference Selection

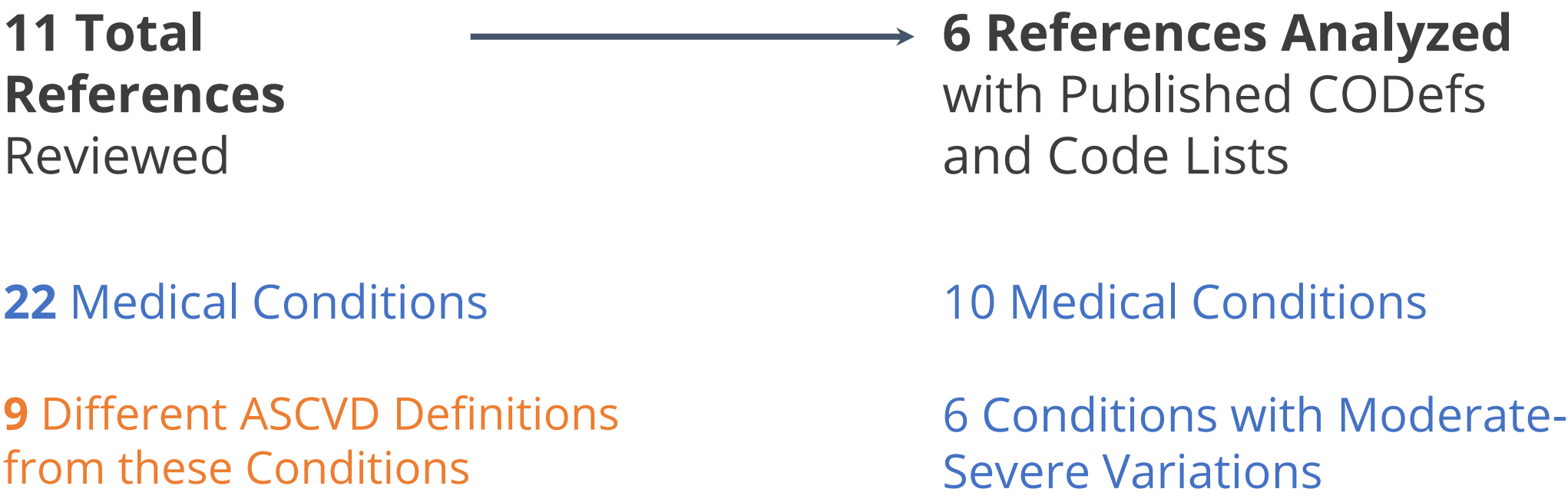


Figure 2: # of References Including Major Conditions

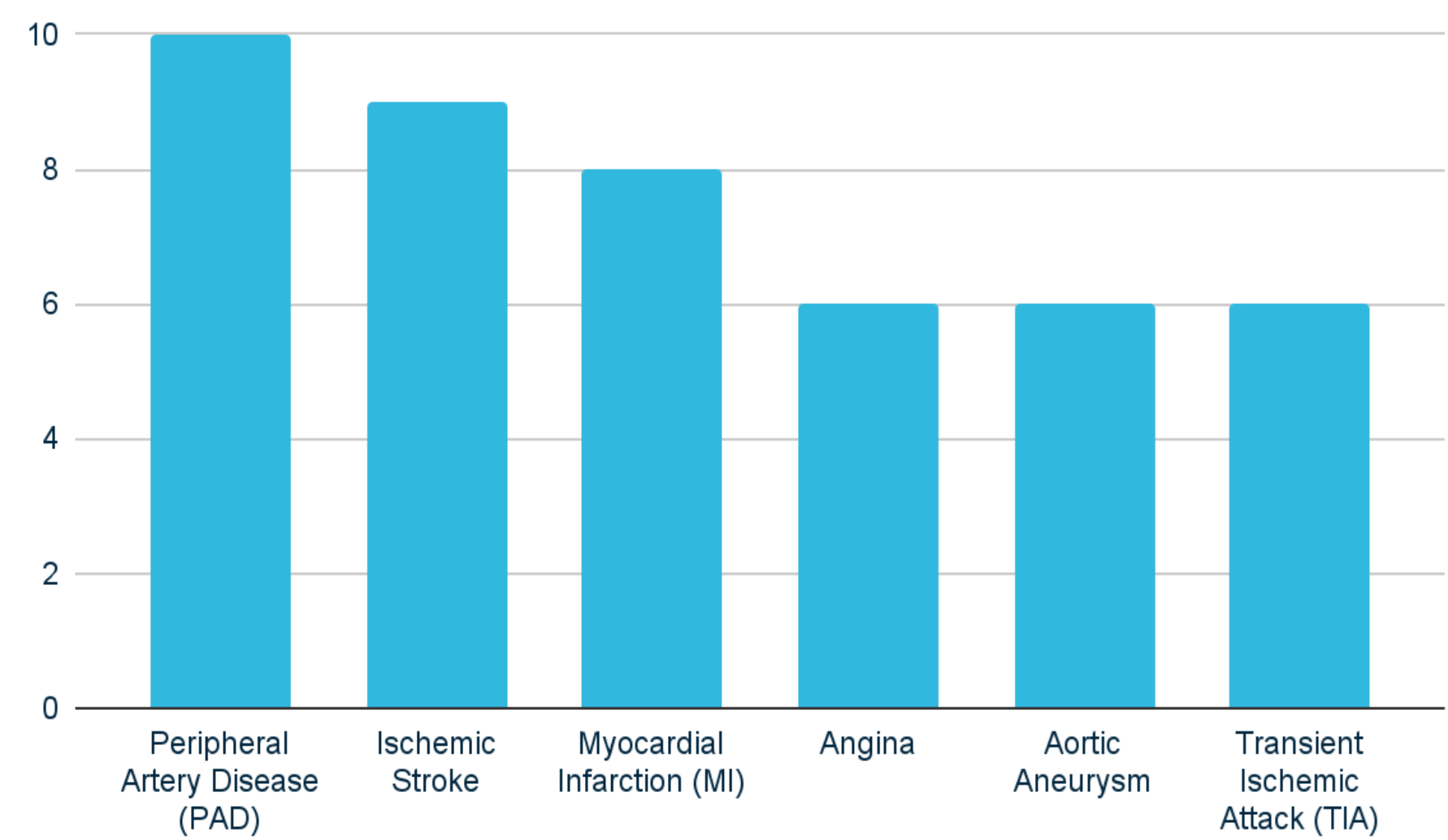
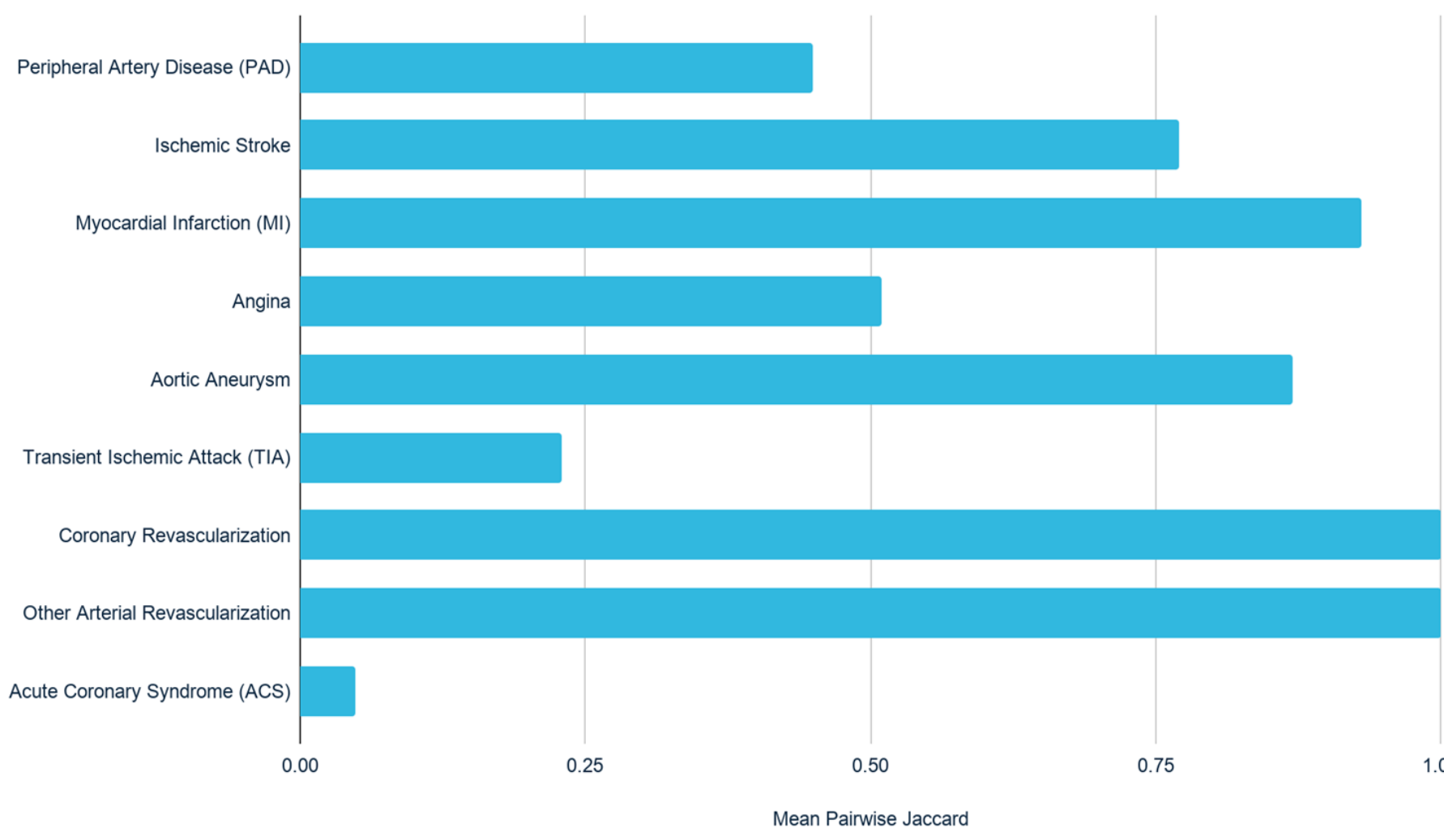


Figure 3: Code List Variation



CONCLUSIONS

Key Findings

- ASCVD is a common concept studied in RWR. However, the variance in conceptual and operational definitions introduces challenges for consistent interpretation and extrapolation of results.
- Understanding the variance is essential in RWR as “small difference in the choice of operational definition ... may have a large impact on study results.” [FDA 2023]

Clinical & Policy Implications

Going forward it is recommended that researchers publish specific and complete CODEfs and code lists for definitions of ASCVD so that clinical interpretation can be more accurate.

ASCVD in RWR

Significant variation in definitions and code lists

Interpretation of results is challenging

Publish CODEfs and complete code lists

Understanding variance creating more accurate interpretation