Polygenic risk score testing in cardiovascular care: Clinical case review & insights from Dr. Justin Fox of Hamilton Cardiology Associates

~30% of heart attacks occur in patients without any standard modifiable risk factors[1].

Polygenic risk score (PRS) testing for coronary artery disease (CAD) empowers healthcare providers to identify these patients early and make changes to their care to reduce their risk of a heart attack. PRS also serves as a powerful tool for providers to explain the cause of heart disease to patients in the absence of traditional risk factors.

This document covers real clinical cases from Hamilton Cardiology to provide guidance on how PRS testing is being integrated into clinical decision-making for patients.

Hamilton Cardiology ASSOCIATES

"PRS testing helps guide decisions in uncertain cases, brings clarity to patients with unexplained events, and facilitates more personalized, thoughtful discussions about risk."

Dr. Justin Fox,
Hamilton Cardiology Associates

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1. Figtree et al., *The Lancet* (2021)

Case 1: PRS as a reassuring factor in a patient with family history of death due to premature heart attack

Clinical context	Patient is a 54-year-old Caucasian male whose brother died of a heart attack suddenly at age 57 under unclear circumstances. As a result, the patient has strong anxiety regarding familial risk and his personal risk of premature death so he opts to undergo PRS testing to determine if his genetics put him at increased risk.
Traditional risk profile	• LDL-C: 120 mg/dL | HDL-C: 57 mg/dL • Triglycerides: 45 mg/dL • Blood Pressure: 111/72 mmHg • BMI: 26.1 • Calcium Score: 0 • Non-smoker, moderate exercise, no diabetes or hypertension • No current medications
PRS results	Not elevated PRS PRS in the **3rd percentile**
Impact on clinical management	PRS helped contextualize the patient's low overall risk despite his family history. Statin therapy was deferred—without PRS, both physician and patient likely would have initiated treatment based on family history alone. Patient reported significant relief and greater confidence in lifestyle-based prevention.

Takeaway for clinicians:
PRS provides reassurance and helps avoid unnecessary therapeutic intervention in low-risk patients with ambiguous family histories.

Case 2: PRS as an explanatory factor in a low-risk patient with early-onset ASCVD

Clinical context	Patient is a 58-year-old Caucasian female with NSTEMI and PCI (proximal LAD) at age 57. Patient had no traditional risk factors at the age of premature event, so Dr. Fox recommends PRS testing to help identify a possible cause of the event.
Traditional risk profile	• Baseline LDL-C: 130 mg/dL | HDL-C: 91 mg/dL • Triglycerides: 61 mg/dL • Controlled hypertension • BMI: 23 • No diabetes, non-smoker • Regular exercise, heart-healthy diet
PRS results	Borderline PRS PRS in the **79th percentile**, putting her at increased risk compared to the average population
Impact on clinical management	PRS helped explain why a cardiovascular event occurred in the absence of traditional risk factors. Provided a genetic framework that helped address the patient's repeated question: "Why did this happen to me?" Family cascade testing (daughter) now being considered

Takeaway for clinicians
PRS helps to explain early-onset events in patients with optimal traditional risk profiles, offering both clinical insight and psychological reassurance.

Contact us to start ordering PRS testing for your patients today:

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