Category: Clinical Cardiology/Imaging

Clinical Guidelines and Preventative Strategies for Atherosclerotic Cardiovascular Disease in Asian Indians: Implications for India versus the Western World

Authors: Vraj Patel MD[1], Vinay Mehta MD[1], Navin C. Nanda MD, DSc(Hon)[2]

Affiliations:
Tinsley Harrison Internal Medicine Residency Program, University of Alabama at Birmingham, Birmingham, AL[1]
Division of Cardiology, University of Alabama at Birmingham, Birmingham, AL[2]

Background: Asian Indians carry a disproportionate and premature burden of atherosclerotic cardiovascular disease (ASCVD) and this risk persists whether they reside in South Asia or in the Western diaspora. Despite this shared genetic susceptibility, prevention is shaped by differently structured health systems, resources, and barriers in the two settings. Screening and prevention strategies should be tailored accordingly, however this still remains an open and clinically actionable question.

Methods: We conducted a structured comparative review of primary cohort data (MASALA, DILWALE, UK Biobank, ICMR-INDIAB, PURE) and the latest society guidelines (ACC/AHA/Multisociety, ESC/EAS, Lipid Association of India). We also compared risk factor profiles, risk-stratification tools, risk equations and finally preventative strategies between Asian Indians in India and the diaspora.

Results: Both populations share a common atherogenic base, namely lipid profile, insulin resistance with central adiposity at lower BMIs (thin-fat phenotype), and a lipoprotein(a) elevation (Lp(a)) in roughly 25% of individuals. This genetic susceptibility is amplified to varying degrees depending on environment, resources, and acculturation. The premature and high burden of disease in these populations is well studied. The first myocardial infarction occurs at a median age of 53 years in South Asians vs 59 years in individuals from other countries (INTERHEART). Subclinical atherosclerosis is also disproportionately prevalent in South Asian populations: 11% of South Asians have carotid plaque vs 5% in Europeans and 2% in Chinese adults (SHARE). South Asians in the diaspora experience greater than twice the amount of incident ASCVD compared to European individuals (UK Biobank) at equivalent calculated 10-year risk which underscores the widespread underestimation of ASCVD risk by Western risk calculators (PREVENT in the US, QRISK3 in the UK, and SCORE2 in Europe). With the abundance of infrastructure, the diaspora emphasizes refinement of strategies that are well-resourced, although no specific interventions have been targeted toward South Asians. With coronary artery calcium scores following a sex gradient (any CAC 55.9% in men vs 22.7% in women, with women lagging by roughly 10-15 years), sex-specific screening with coronary imaging along with biomarkers should be a focus in the diaspora. In India, imported ASCVD risk tools poorly calibrate, and furthermore, significant structural barriers including cost, infrastructure, and unequal medication access exist. Here, the most fruitful strategies expand access in the form of community and family-based healthcare, non-laboratory screening by frontline workers, and policy measures. Treatment targets also vary between the settings as the Lipid Association of India sets more aggressive LDL-C goals than the ACC/AHA or ESC/EAS justified by more aggressive ASCVD courses and the low cost of statins in India.

Conclusions: Asian Indians in both settings share similar genetic susceptibility to ASCVD but not health systems, resources, and cultural immersion. Risk stratification tools do not accurately calibrate true ASCVD risk for all South Asians which is one area of focus for the future. In the diaspora, reducing this cardiovascular burden should focus on using PREVENT as a starting point, utilizing coronary imaging (CAC/CCTA) as well as apoB, Lp(a) and hsCRP to supplement risk stratification, and education and access improvement. In India, the short-term focus should be on non-laboratory screening for risk stratification, and building up infrastructure with feasible screening along with community initiatives in the long-term. To help reduce the shared cardiovascular burden, setting-specific solutions, as opposed to a uniform solution, will be of utmost priority.

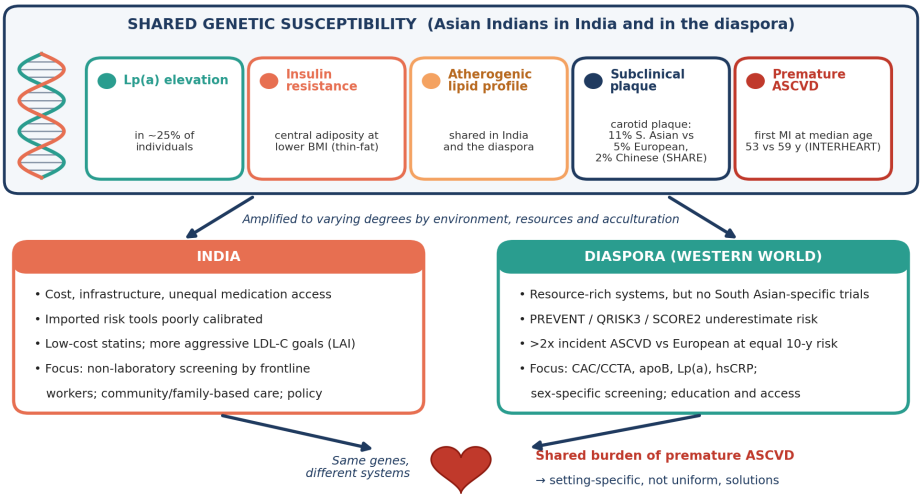


Figure 1. Asian Indians share a common genetic and metabolic susceptibility to ASCVD in India and in the diaspora; health systems, resources and acculturation shape how it is expressed and how prevention should be tailored.

Table 1. Risk factor profile and guideline LDL-C targets: Asian Indians in India vs the diaspora

Domain	India	Diaspora (Western world)
Risk factor profile		
Shared atherogenic base	Atherogenic lipid profile; insulin resistance with central adiposity at lower BMI (thin-fat phenotype); Lp(a) elevation in ~25% of individuals.	
Premature / subclinical disease	First MI at median age 53 y in South Asians vs 59 y in other populations (INTERHEART); carotid plaque in 11% of South Asians vs 5% of Europeans and 2% of Chinese adults (SHARE).	
Cardiometabolic burden	ICMR-INDIAB: diabetes 11.4%, hypertension 35.5%, abdominal obesity 39.5%, dyslipidemia 81.2% of adults.	MASALA vs MESA: adjusted diabetes prevalence 23% in South Asians vs 6% in Whites, 13% in Chinese and 18% in Black Americans.
Risk estimation	Imported ASCVD risk tools calibrate poorly.	More than 2x incident ASCVD vs Europeans at equal calculated 10-y risk (UK Biobank): PREVENT, QRISK3 and SCORE2 underestimate risk.
Coronary calcium	Imaging-based screening constrained by cost and infrastructure.	Any CAC in 55.9% of men vs 22.7% of women; women lag by ~10-15 y.
Guideline LDL-C targets (India: Lipid Association of India; diaspora: ACC/AHA/Multisociety 2026, ESC/EAS)		
Very high risk / secondary prevention	<50 mg/dL; optional ≤30 mg/dL in extreme-risk category A (e.g., CAD + familial hypercholesterolemia).	<55 mg/dL (ACC/AHA non-HDL-C <85 mg/dL; ESC/EAS also ≥50% reduction).
Rationale	More aggressive goals justified by a more aggressive ASCVD course and low statin cost.	Goals largely converge across ACC/AHA and ESC/EAS and are less aggressive than LAI.
Goal attainment	LAI-LCARE: only 27% of 9,658 patients with CAD on stable lipid-lowering therapy reached <50 mg/dL (median LDL-C 66.1 mg/dL).	Incomplete goal attainment and therapeutic inertia are also reported outside India.

Table 2. Preventive and risk stratification strategies: India vs the diaspora

Domain	India	Diaspora (Western world)
Risk stratification	Locally suitable, non-laboratory screening by frontline health workers, given poor calibration of imported tools.	PREVENT as the starting point, then personalize: South Asian ancestry is a risk-enhancing factor in the 2026 ACC/AHA guideline; no South Asian-specific interventions yet.
Adjunct testing	Feasible, low-cost screening; imaging and biomarkers as resources allow.	CAC/CCTA plus apoB, hsCRP and one-time Lp(a) in adults (Class I, 2026 ACC/AHA); sex-specific screening given the CAC sex gradient.
Delivery of prevention	Community- and family-based healthcare; policy measures to expand access.	Patient education and improved access within well-resourced systems.
Main barriers	Cost, infrastructure and unequal medication access, despite low-cost statins.	Acculturation; lack of South Asian-targeted trials and tools.
Priority horizon	Short term: non-laboratory risk stratification. Long term: build infrastructure and community initiatives.	Refine and tailor existing well-resourced strategies to South Asians.

Abbreviations: apoB, apolipoprotein B; CAC, coronary artery calcium; CCTA, coronary CT angiography; hsCRP, high-sensitivity C-reactive protein; LAI, Lipid Association of India; Lp(a), lipoprotein(a); MI, myocardial infarction.