



# Review Article

## Assessment of Cardiovascular Risk Profile in Clinical Practice

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### Abstract

The burden of cardiovascular disease continues to be high and heavy. There is some encouraging declining trend emerging in the west, but it is on the increase in our country. Prevention, in general, and primordial and primary prevention, in particular, are important in dealing with cardiovascular disease in resource-constrained countries. Risk assessment of atherosclerotic cardiovascular disease is necessary to decide the intensity of preventive measures. There are a number of risk assessment tools available, and one that suits our practice and population should be utilized.

**Key words:** Cardiovascular risk, Atherosclerotic cardiovascular disease, Risk assessment tools.

### Introduction

Atherosclerotic cardiovascular disease (ASCVD) is taking a heavy toll of socioeconomics of our country. ASCVD has been shown to affect our population about a decade earlier, is more serious, and carries a higher mortality as compared to the western population. This has been explained by the fact that ASCVD risk factors are operative much earlier in the lives of our population.<sup>[1,2]</sup>

On a global scene, deaths from non-communicable diseases (NCD) have increased by 8 million between 1990 and 2010, and it means two of every three deaths are due to NCD.

Ischemic heart disease and stroke accounted for 12.9 million deaths in 2010 or one in four deaths worldwide. Years of life lost due to ischemic heart disease and stroke have increased by 17–28%.<sup>[3]</sup>

Looking at our objective of achieving 25% reduction in cardiovascular mortality by 2025 globally, South Asian countries are lagging far behind, and there is an urgent need to address aggressively the risk factor reduction.<sup>[4]</sup>

The Indian scenario is quite depressing. From 1990 to 2015, there is a significant increase in mortality rates from CVD (40.7% increase) and ischemic heart disease (IHD) (33.7% increase) while stroke mortality rates have stabilized (around 7.0%), and it is heartening to see that stroke mortality has decreased in women by 2%.<sup>[5]</sup> The increase in CVD and IHD mortality in

India is in contrast to developed countries showing decline in CVD mortality in the past 50 years.

Access to health care not being optimal and secondary prevention strategies being expensive emphasizes the need to focus on primordial (health behavior) and primary preventive (risk factor reduction) measures.<sup>[6]</sup>

### Risk Assessment

When it comes to secondary prevention of ASCVD, there is not much of a discussion or controversy on aggressive treatment with lipid-modifying drugs along with lifestyle changes and other risk factor modification. However, in primary prevention, the situation is different and risk assessment is necessary so that the intensity of treatment is proportional to the risk. It also helps to avoid unnecessary lifelong medication in low-risk subjects, allowing appropriate resource utilization. Risk assessment at baseline and during follow-up would also motivate the person to adopt health-related behavior.

Assessment of ASCVD risk is usually challenging due to various factors such as contemporary nature of the data, a delay in acquiring data on clinical events, confounders, and validation of the risk assessment tools. There is always a possibility of overestimation and underestimation of the risk, depending on the

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population. Risk assessment is a probabilistic exercise. Risk factors are dynamic and assessment tools need to change with time.

With all the limitations that risk assessment has, it is still logical and appropriate to employ risk-based prevention with proven therapies in people who are likely to benefit.

A very important aspect of risk assessment is that it is the starting point for a discussion with the patient/subject. An exchange of ideas and information will help in taking a decision on preventive drug therapy.

Ideally, risk assessment and advise on health behavior should start early in childhood. It is well known that it is not only the severity of risk factor, but the duration of exposure to the risk factor also matters. Consensus statements from India recommend ASCVD screening at age 30 years<sup>[7]</sup> and 20 years.<sup>[8]</sup> Universal screening of all Indians for ASCVD risk factors at 20 years of age or at the time of college entry or at the earliest opportunity is recommended for early detection of high-risk individuals. It should be global risk assessment. All efforts

should be made to rule out secondary causes of hypertension and dyslipidemia and to optimize management of all other modifiable CVD risk factors.<sup>[8]</sup>

### Risk Assessment Tools

There are a number of risk assessment calculators available and most estimate 10-year risk of cardiovascular events for primary prevention. The predictive accuracy of these tools has not been adequately evaluated in Indians. A study showed that the Risk-JBS3 calculator proposed by Joint British Society 3<sup>rd</sup> Iteration provided the most accurate risk prediction in Indians.<sup>[9]</sup> Another option may be to recalibrate the estimated 10-year Framingham risk score by multiplying it with a calibration factor. The second Indo-US Health summit<sup>[10]</sup> task force suggested a calibration factor of two for Indians, whereas the recent UK lipid-lowering guidelines have recommended a multiplication factor of 1.4 for men of South Asian origin. In comparison, the International Atherosclerosis Society

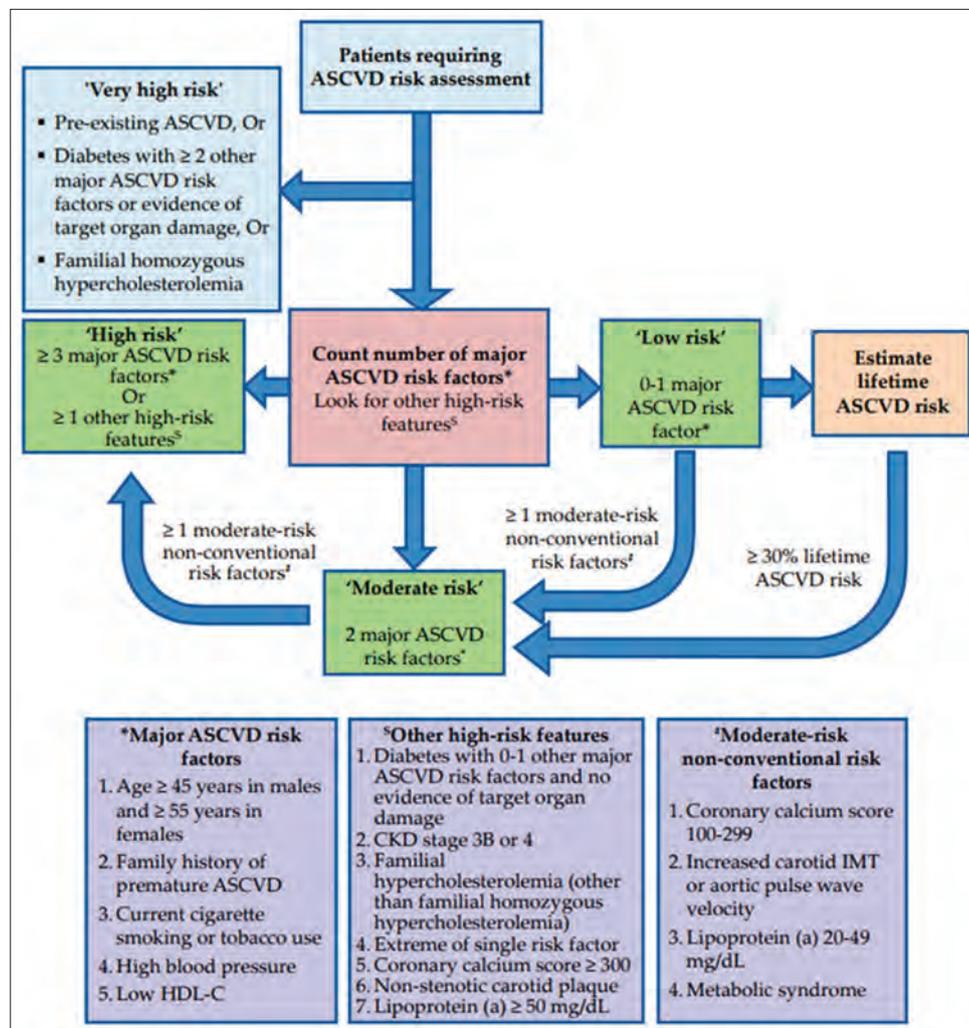


Figure 1: Recommended approach to atherosclerotic cardiovascular disease risk stratification in Indians<sup>[8]</sup>

has proposed calibration factors of 1.81 and 1.54 for urban men and women and 1.0 and 0.8 for rural men and women, respectively.<sup>[11]</sup>

In 2014, Cardiological Society of India brought out a consensus document on management of dyslipidemia in Indian subjects.<sup>[7]</sup> This statement integrated global information with local requirement. The statement recommended the use of the WHO/ISH risk prediction chart or JBS 3 risk score since these two have some Indian element. Screening for ASCVD risk factors was recommended to be carried out at age 30 years. Non-conventional risk factors could be used to refine the risk further in intermediate risk group.

In 2016, lipid association of India published a consensus document.<sup>[8]</sup> The screening age for risk factors was recommended to be 20 years or at college entry or the earliest opportunity. Risk assessment avoided scoring system and computers and was based on risk factors - conventional and non-conventional [Figure 1]. It also encourages the use of lifetime risk assessment in low-risk individuals. The importance of primordial prevention was emphasized.

Both the statements have incorporated international information with the local data and suitable recommendations have been made. Both highlight the necessity of global risk assessment, primary prevention, appropriate secondary preventive measures, and participation of patients/subjects in decision-making.

Any one risk scoring system could be followed. The clinician should choose the one he is familiar and comfortable with, use the same score during follow-up, and keep in mind the dynamic nature of the scoring systems.

New factors which impart increased cardiovascular risk are emerging. Subjects with erectile dysfunction, women with a history of preeclampsia or eclampsia, gestational hypertension or diabetes, and children born with assisted reproductive technology have to be followed up carefully for cardiovascular risk assessment.<sup>[12,13]</sup>

## Conclusion

Assessment of cardiovascular risk profile is an important step in the primary prevention strategy. The intensity of preventive therapies should match ASCVD risk. The clinician should use ASCVD risk tool that suits our population and should engage the subject in discussion and involve in the management.

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