

## Modern Day Cardiology: Expectations and Limitations

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### Editorial

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It gives me great pleasure to write this editorial for the Journal of Cardiology as we have been working on issues related to coronary artery disease (CAD) for over three decades. I just returned from a Cardiac Pathology Update-2018. Much of the presentation at this meeting was limited to the discussion on the morphology of atherosclerotic plaque, which was based on the data generated by various imaging techniques. There was very little discussion on the pathogenesis of this plaque on the vessel walls or about the ways and means for prevention of this process. Whereas, my presentation was on the role of emerging technologies for the early diagnosis of the risks for development of CAD and robust management of cardio metabolic diseases [1]. In view of the fast advances in emerging technologies and their role in the diagnosis and management of diseases, all subspecialties of health care have become multi-disciplinary [2]. With this in mind, three decades ago, I started a professional society, "South Asian Society on Atherosclerosis and Thrombosis (SASAT)" at the University of Minnesota, to provide a common platform to all the researchers working on various aspects of this topic of great public interest [3]. What risk factors contribute to ultimate cardiac pathology? To a large extent, alterations in the physiology and function of the vessel wall as well as blood components including, circulating blood cells, play a very important role in the development of vasculopathies leading to acute vascular events such as heart attack and stroke. What are some of the novel approaches in the management of these chronic metabolic diseases? Currently, management of the known risk factors seems to be the best choice worldwide.

A new debate is creeping through the cardiology community, dividing those in favour of risk-factor screening and management of the risks on one side from those who advocate early screening for the disease itself. Fortunately, in the current era of modern cardiology,

clinicians have the tools at their disposal to truly personalize care, and detect cardiovascular disease at its earliest stages. Indeed, Prof Jay N. Cohn says, "in recent years it has become apparent that dysfunction of the biological action of the endothelium is a necessary prerequisite to the atherosclerotic process" [4]. Therefore, computing and incorporating "this risk" becomes an essential part of the cardiac risk assessment and risk prediction algorithms. Researchers at the University of Minnesota have developed a device to detect endothelial dysfunction(ED) resulting in the stiffening of the artery [5]. Independent of this invention, we also have developed and described a method for monitoring ED and used these measurements in developing cardio metabolic risk scores [6]. Having said that, I would like to elaborate on the effectiveness or otherwise of various risk score methodologies. Professor Cohn the Director of the Rasmussen Centre for the prevention of Cardiovascular Disease, University of Minnesota has developed a ten-point scoring system for monitoring the progression or the regression of the vascular disease [7]. The debate on this issue is justified because no risk score or risk prediction algorithm is perfect in predicting the occurrence of acute vascular events (heart attacks and stroke).

Expectations of policy makers as well as the public in preventing or reducing the incidence of this epidemic is great. Although the United Nations developed the Millennium Development Goals, studies by various task forces have concluded that reaching those goals is a far cry. No country has prevented the increase in the incidence of the diseases such as excess weight, obesity and type-2 diabetes, which contribute significantly to the cardiovascular disease burden. Again this limitation needs further debate, as there is no definite answer to the question why no country has been able to reverse or arrest the trends in the increase of these diseases? In view

of this fact, the only choice we are left with currently is to develop robust diagnostic techniques for the early detection of these diseases and provide customized or personalized management of these diseases. In spite of the fact that there is an ongoing debate about the efficacy of treating the disease over the treatment of the risk factors, there is no consensus as to how to go about it. From the time Framingham risk score was developed for the prediction of acute vascular events, there are constant changes in the risk prediction algorithms and in the guidelines developed by various professional organizations.

Hypertension, excess weight, obesity, metabolic syndrome, and type-2 diabetes, promote progress of atherosclerosis and vascular disease. In view of these observations modern-day clinicians have to manage this disease with heavy emphasis on prevention of the risks or early detection of the risks and then focus on effective management of the risks. Professor Braunwald of the Harvard University lists the following as the ten major advances in modern cardiology: diagnostic electrocardiography, cholesterol-induced development of atherosclerosis, cardiac catheterization, cardiovascular surgery, coronary angiography and percutaneous coronary angioplasty, the coronary care unit, the development of new cardiovascular drugs, preventive cardiology, cardiac imaging, and implanted cardiac pacemakers/defibrillators [8]. Looking at this list of advances in modern cardiology one gets the feeling that there is great emphasis on intervention than prevention. This is true worldwide and should be a debatable issue? How do we develop strategies for prevention or reduction of cardio metabolic disease? How do we implement such public health preventive projects?

Epidemiologists, public health workers and policy makers do not have any clear cut idea as to how to stop the twin epidemics of obesity and diabetes, which contribute significantly to the global burden of vascular diseases. As we have mentioned in the earlier paragraphs the prevention strategies should start at the earliest stage of disease development. However, the real growth of modern cardiology which is intervention oriented has a minimum role in the prevention or reduction of vascular diseases. Keeping this in mind our professional society

(SASAT) promotes early detection and prevention strategies over intervention. Our society with the help of the Department of Cardiology at Medanta Hospital, New Delhi, India, is actively promoting clinical and preventive cardiology. In this editorial, I have expressed my personal opinion on the prevention or reduction of cardiac diseases. I sincerely hope that this new Journal of Cardiology will invite articles from various affiliated fields and encourage an open debate for the development of novel strategies for the prevention or reduction of vascular diseases.

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