

[Eng] Plenary Lecture 2

ABSTRACT FOR TALK TITLED: Cardiovascular Health Across the Life Course: A New Prevention

Paradigm

Donald M. Lloyd-Jones MD ScM

In 2010, the American Heart Association (AHA) formally defined a novel construct of “cardiovascular health” (CVH) in order to be able to measure it in individuals and populations, monitor it over time, and modify it through science, programs, and advocacy. The definition of CVH was based on principles of health promotion and disease prevention across the life course and the emerging concept of primordial prevention. The original CVH construct included 7 health behaviors and health factors, termed “Life’s Simple 7,” which served as metrics: diet, physical activity, cigarette smoking, body mass index, blood pressure, blood glucose, and blood cholesterol levels. Since 2010, there have been numerous scientific papers that have evaluated the CVH construct and evaluated its strengths and limitations. As a result of these findings and new opportunities, in 2022 the AHA updated the CVH construct to incorporate more granular scoring of CVH metrics and overall CVH, and expanded the metrics to include healthy sleep. In this talk, Dr. Lloyd-Jones reviews the genesis of the CVH construct and its links to upstream determinants (social determinants, maternal health), cross sectional correlates (biomarkers of CVH), potential mechanisms (epigenetics), and downstream health outcomes (chronic diseases of aging, healthcare costs, compression of morbidity) across the life course. The associations between midlife CVH and health outcomes will be highlighted. Next, the progression from healthy young adulthood to loss of CVH and its consequences will be explored, with an eye to strategies that preserve CVH as long as possible. Finally, early life strategies that launch children into healthier trajectories of CVH for lifelong health benefits will be reviewed. Underlying these observations is intriguing data suggesting specific molecular and pathophysiologic mechanisms for preservation of CVH at different life stages. Implementation of the CCVH construct in clinical practice and public health strategies is the current frontier in individual and population health promotion.

[Eng] Epidemiology 1

ABSTRACT FOR TALK TITLED: Implementing cardiovascular risk prediction in clinical practice

Donald M. Lloyd-Jones, MD ScM

The current paradigm for primary prevention of cardiovascular diseases (CVD) in contemporary clinical practice guidelines involves matching the intensity of prevention efforts to the absolute risk of the patient. In order to do so, 10-year risk prediction equations are used to quantify absolute risk. Recent guidelines recommend use of the risk estimate as part of a clinician-patient discussion in which the clinician and patient personalize the 10-year risk estimate through consideration of “risk-enhancing factors,” and address patient preferences. If there is clinical uncertainty or patient indecision after this process, then further testing, such as measurement of coronary artery calcium, can be used to reclassify risk and refine the risk scenario. This current approach, termed “Prevention CPR” (for Calculate-Personalize-Reclassify) can lead to smarter decision making for use of preventive drug therapies, and help lead to greater patient satisfaction and adherence. In this talk, Dr. Lloyd-Jones will review the CPR approach and how it can be implemented in clinical practice. He will review currently available risk equations and their strengths and limitations. He will also review risk-enhancing factors and tools to supplement the clinician-patient discussion. In addition, Dr. Lloyd-Jones will discuss the value of further testing, including imaging tests (CAC, CIMT, etc) and biomarkers. The future of cardiovascular risk prediction will be explored, including efforts to include heart failure risk prediction and possibly polygenic risk scores or machine learning/artificial intelligence algorithms in risk assessment. The focus of the talk will be on clinicians using risk assessment strategies in practice to improve the primary prevention of cardiovascular diseases.