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Multimodality Cardiac Imaging for Precision Diagnosis and Personalized Cardiovascular Care

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Advanced cardiac imaging has revolutionized the diagnosis and management of cardiovascular diseases by providing detailed structural, functional, and molecular information about the heart. This presentation explores recent developments in echocardiography, cardiac magnetic resonance imaging (CMR), computed tomography coronary angiography (CTCA), and nuclear cardiology for diagnosing coronary artery disease, heart failure, valvular disorders, and cardiomyopathies.

The integration of artificial intelligence and machine learning into cardiovascular imaging has enhanced image interpretation, automated risk stratification, and improved clinical decision-making. Recent technological innovations allow earlier detection of myocardial fibrosis, ischemia, and ventricular dysfunction before irreversible cardiac damage occurs.

The presentation also reviews the role of multimodality imaging in guiding structural heart interventions, monitoring treatment response, and supporting personalized therapeutic strategies. Future directions include quantitative imaging biomarkers, digital cardiology, and precision imaging techniques that will further improve cardiovascular outcomes.

Biography

Jeroen J. Bax is a leading cardiologist at Leiden University Medical Center, Netherlands. His research focuses on cardiovascular imaging, heart failure, and ischemic heart disease. He has contributed extensively to international guidelines on multimodality cardiac imaging and clinical cardiology.