

Precision cardiology: Genetic insights for personalized heart failure management

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Heart failure remains a leading global health challenge, characterized by high morbidity, mortality, and healthcare expenditure. Recent advancements in cardiovascular genomics have opened new opportunities for personalized care, enabling clinicians to tailor interventions based on individual genetic profiles. This presentation focuses on the role of genetic variants in heart-muscle function, drug metabolism, and disease progression, highlighting how precision cardiology is reshaping heart failure management. Key topics include gene-based risk assessment, identification of inherited cardiomyopathies, and pharmacogenomic influences on response to beta-blockers, ACE inhibitors, and emerging therapies. By integrating genomic data with clinical parameters, healthcare providers can more accurately classify heart failure subtypes and predict patient trajectories. The session will also cover the relevance of polygenic risk scores and whole-exome sequencing in detecting high-risk families.

Case studies will demonstrate how personalized treatment plans—guided by genetic testing—have improved patient outcomes, reduced adverse events, and enhanced long-term survival. The lecture will also discuss barriers to clinical adoption, such as cost, accessibility, ethical implications, and the need for specialized training. With growing global interest in precision medicine, understanding the genetic foundations of heart failure is critical for advancing therapeutic innovation and improving patient care.

Biography

Michael Andersen is a leading cardiovascular geneticist at the University of Copenhagen. His research focuses on inherited cardiomyopathies, genetic risk prediction, and precision cardiology. Over two decades, he has published extensively and contributed to major European guidelines on genomic applications in heart disease. Prof. Andersen also leads a national program promoting genetic testing in heart failure clinics. His work is recognized internationally, and he regularly presents at global cardiology and genomic medicine conferences.

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