

The Year in Cardiovascular Medicine 2020: Coronary Prevention

Looking back on the Year in Cardiovascular Medicine for 2020 in the field of coronary prevention is Professor Ramon Estruch, Dr Luis Ruilope, and Professor Francesco Cosentino. Mark Nicholls meets them

Professor Ramon Estruch



Professor Ramon Estruch is a leader in the field of cardiovascular prevention with a strong focus on the benefits of a Mediterranean diet and a healthy lifestyle to combat heart disease.

He is Director of the Research Group on Nutrition, Cardiovascular Risk Factors and Aging at the Institute of Biomedical Research and the Scientific Director of the

Mediterranean Diet Foundation in Barcelona, Spain, where research focuses on the role of the consumption of certain foods (extra-virgin olive oil, nuts, and moderate wine consumption) and healthy dietary patterns, such as the Mediterranean diet.

'We have good weapons to combat cardiovascular disease, but we still have a lot to learn in the prevention and treatment of cancer', he remarked. 'In addition, cardiovascular disease and cancer share many aspects in common, so what has been learned in cardiovascular prevention could also be useful in the study of cancer'.

Prof. Estruch has been a Senior Consultant at the Internal Medicine Department of the Hospital Clinic (Barcelona) since 2002 and an Associate Professor at Barcelona University since 1996.

His interest in the field stems from medical school when he became convinced of the importance of lifestyle in cardiovascular prevention. Today, his main research involves the cardiovascular effects of the Mediterranean diet; effects of extra-virgin olive oil on cardiovascular risk factors, and oxidative stress and inflammatory biomarkers related to atherosclerosis; mechanisms of the protective effects of moderate wine and beer intake: effects on the expression and function of cellular and endothelial adhesion molecules related to the development of atherosclerosis; and the effects of chronic alcohol consumption on heart, liver, and brain.

He said: 'The most important achievement was to demonstrate with the highest level of scientific evidence that the traditional Mediterranean diet reduced by 30% the incidence of cardiovascular

events. This is similar to what can be achieved with drugs (e.g. statins) but without the side effects they sometimes cause'. He was the Coordinator and PI of the PREDIMED trial looking at the associations between adherence to the Mediterranean diet and cardiovascular risk and is a member of the Steering Committee of PREDIMED PLUS.

His highlights from the field of cardiovascular prevention in the last year include findings that women disclose higher incidence of cardiovascular disease than men and different treatment protocols should be applied in men and women; new genetic findings allow advances in precision medicine in patients with hypercholesterolaemia; physical activity in adolescents can reduce the long-term risk of CVD; intermittent fasting can reduce body weight and improve several chronic conditions and 'reverse' aging; while a healthy sleep pattern reduces coronary heart disease and stroke by 34%.

'Metabolomics profiling allows us to better stratify individuals based on dietary response and disease risk, and while there is new evidence on the protective effects of vegetables and fibre intake on ischaemic stroke, high egg consumption increases the risk of haemorrhagic stroke', said Prof. Estruch. He also notes that sodium glucose co-transporter 2 inhibitors have demonstrated favourable effects on CVD and kidney outcomes, including progression of diabetic kidney disease; new guidelines for the management of dyslipidaemias from the ESC and EAS; and COVID-19 affects multiple organs, including the cardiovascular system.

Looking ahead to 2021, he said: 'I believe precision medicine will be greatly developed with the help of more useful genetic tests. A joint study program on cardiovascular, neurological, and cancer diseases will also be developed'.

However, he also hopes that post-COVID 19, funds will be available to continue supporting CVD and cancer research.

'I firmly hope that in the coming year we will have a safe and effective vaccine against COVID-19, so that this disease does not distort the progress made in the last few years in Preventive Cardiology', added Prof. Estruch, who has published more than 540 manuscripts in peer-review Journals.

Dr Luis M. Ruilope



Dr Luis Miguel Ruilope has spent many years conducting investigations and research in the field of hypertension and cardiovascular risk. A particular focus of his work in the area of cardiovascular prevention relates to the control of arterial hypertension and accompanying comorbidities, in particular diabetes, hyperlipidaemia, and chronic kidney disease (CKD).

He is Chief of Cardiorenal Investigation at the Institute of Research of the Hospital 12 de Octubre in Madrid, directing the cardiorenal risk unit and working closely with primary care doctors and co-chair with Dr Gema Ruiz Hurtado the Cardiorenal Translational Laboratory. He is also Chairman of the Spanish Ambulatory Blood Pressure Monitoring (ABPM) Registry. Over the last two decades, he has analysed the evolution of renal function in multiple trials of hypertension and diabetes.

'Of course', he states, 'obesity is frequently an accompanying comorbidity and treatment using pills or surgery is also considered. The use of ABPM measurement and the adequacy of therapy to control BP depending on values obtained with this methodology—ABPM and Home Blood Pressure Monitoring—is becoming more and more a relevant part to attain an adequate BP control'. Additionally, lifestyle—diet and physical activity—remains fundamental for the adequate prevention of CV disease.

Dr Ruilope first used the limit of 60 mL/min/m² of estimated glomerular filtration rate to define the presence of CKD when he published the renal data of the HOT study in January 2002. The figure was immediately accepted by the KDIGO (renal Guidelines) and remains as such. He added: 'Since then, I have analysed the evolution of renal function in multiple trials of hypertension and diabetes and participated in the Executive Committee of many of the trials. The role of albuminuria in the progression of CKD in hypertension, as well as in diabetes was also a part of my investigations'.

He has been a member of the task force of the ESC Guidelines of Hypertension and Heart Failure. In addition, the relevance of ABPM and its phenotypes in cardiorenal risk has been the objective of a series of publications initiated in the Spanish ABPM Registry that he has chaired since its origin. The simultaneity of renal and CV damage and its management is probably the most important part of my work', said Dr Ruilope.

His interest in this area dates from his residency in Nephrology and a Fellowship in arterial hypertension, where his mentor was nephrologist and hypertension specialist Dr Carlos Romero from the Mayo Clinic. From there, he established a hypertension unit in his hospital, which later became a unit of cardiorenal risk. The unit has evolved in the years since and more recently Artificial Intelligence techniques have been incorporated into the detection of cardiorenal risk to facilitate adequate management.

He points to recent highlights in the field of cardiovascular prevention including the definition of difficult to treat hypertension as a step previous to consider resistant hypertension and the adequate management in this stage. New trials in renal denervation include the Global Simplicity Registry; the Bayer Finerenone in CKD in diabetes trial; and the need to adequately treat cardiorenal risk at younger

ages (below 40 years). Dr Ruilope sees these as areas of continuing development and investigation going forward into 2021, along with the definition of the phenotype of early cardiorenal risk (before albuminuria appears, eGFR goes below 60, and established CV disease), with the use of the machine and deep learning playing an increasing role.

Professor Francesco Cosentino



Professor Francesco Cosentino is a clinical cardiologist with extensive experience in prevention, coronary artery disease, and heart failure. His translational research interests focus on the effects of gene-environment interaction on cardiac and vascular phenotypes in the setting of elevated cardiometabolic risk.

He graduated in medicine and specialized in internal medicine and cardiovascular disease at the University of Rome, Italy, and trained at the Mayo Clinic in Rochester, MN, USA. During his stay at Mayo, he obtained a PhD in cardiovascular pharmacology before moving back to Europe where he first joined the Cardiovascular Division at the University Hospital of Bern and then the Division of Cardiology of Zurich University Hospital. Later, he was nominated Titular Professor of Cardiology at the University of Zurich and Associate Professor of Cardiology at the University of Rome 'Sapienza'.

Today, he is Professor of Cardiology at the Karolinska Institute and Karolinska University Hospital in Stockholm, Sweden, where the impact and importance of his research program is underlined by the fact that the prevalence of obesity and type 2 diabetes is increasing at an alarming rate worldwide.

Prof. Cosentino said: 'Although advances in therapy have reduced morbidity and mortality, cardiovascular risk is far from being eradicated and mechanism-based therapeutic approaches are in high demand. In this perspective, deciphering the molecular networks of cardiovascular disease will be instrumental in developing novel therapeutic strategies'. The research program also aims to understand the link between environmental factors, metabolic disease, and premature cardiovascular aging. These objectives are accomplished by a translational approach with a focus to characterize cardiovascular phenotypes through novel technologies in experimental models and clinical studies.

In recent ESC Board mandates, Prof. Cosentino was first elected Councillor and then Secretary/Treasurer. He chaired the 2019 Task Force that prepared the ESC Guidelines on Diabetes, Pre-diabetes and Cardiovascular Disease. He said: 'In this regard, recent years have been among the most exciting time ever in the field of diabetes and CVD, and several cardiovascular outcome trials (CVOTs) have been performed with newer glucose-lowering agents'. 'The ESC guidelines reflect such an unprecedented increase in the new evidence-base that is available and have prompted a paradigm shift for the management of patients with diabetes at high/very high CV risk. Thanks to the availability of drugs that have shown significant cardiovascular and renal protective effects, we are moving away from a glucocentric view towards an event-driven approach'.

Prof. Cosentino is Vice-President of the ESC and chairs the Partnership and Policy Committee and is also one of the Deputy Editors of the European Heart Journal and Consulting Editor of Cardiovascular Research. With a busy professional life, across several locations, he is proud of having been able to successfully build up and coordinate clinical and research teams in different countries.

Beyond his professional life, running an olive tree farm in Southern Italy, which has been in the family for several generations, affords him an important link to nature that he considers essential for well-being.

Conflict of interest: none declared.

