

Congress News

ESC Congress **Paris 2019**

Together with **World Congress of Cardiology**

Day 2

Sunday 1 September

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Its growing importance explained

United in the global rhythms of cardiology: ESC Congress 2019 together with the World Congress of Cardiology 2019

"Thank you. You saved my life!"
Those were the words of a cardiovascular patient to the healthcare professionals assembled for the Congress Inaugural Session.

ESC President, Professor Barbara Casadei, then went on to give her own heartfelt thanks to delegates for their work and enthusiasm that has led to dramatic improvements both in cardiovascular disease (CVD) survival and quality of life.

"Yet so much remains to be done," she continued. "We have a duty to be unrelenting in our calls for greater investment in CVD and a renewed focus on drug development, innovation and implementation."

Prof. Casadei was passionate in her message that we all work together to make a further real impact. "We already live in an era of imagination and as a community, we are in our prime," she said. "The opportunities at our disposal are now extraordinary. We owe it to our patients not to be silent and we owe it to ourselves to pursue what we know to be right—there's just too much at stake to do otherwise."

"The ESC is committed to making CVD a greater global priority," said Prof. Casadei as she welcomed Professor Karen Sliwa, President of the World Heart Federation (WHF), to the stage. Prof. Sliwa was keen to emphasise that everyone has a role to play in the global health effort. "I have seen firsthand how important it is to advance healthcare without regard to boundaries," she said. "Even countries with relatively low gross domestic product have been able to improve access to healthcare over the past decade and to provide better health equity for their citizens. They have shown us that small steps in the right direction can make a huge difference." Prof. Sliwa continued, "We as healthcare providers are all potential champions for better access to, and management of, cardiovascular medicine. Let us walk this road together!"



A tantalising snapshot of the wide range of scientific sessions that lie in store was given by the ESC Congress Programme Committee Chairs. Professor Silvia Priori described how the programme has been created to "motivate and energise for years to come." While Professor Marco Roffi exclaimed "Fasten your seatbelts and enjoy the ride!"

Describing them as "trailblazers, advocates, mentors and an inspiration to us all," Prof. Casadei awarded the ESC Gold Medal to three cardiologists for their exceptional contributions: Professors Christine Seidman, Hugo A. Katus and Mariell Jessup. Prof. Jessup also received the WHF Award for Outstanding Contribution to Global Cardiovascular Health, while Professor Sidney Smith and Doctor Reino Roa were awarded the WHF Lifetime Achievement Award and the WHF Advocacy Award in Cardiovascular Health, respectively. Acknowledged for their dedication to advocacy and education, Professors

Karin Sipido, Alan Fraser, Lino Goncalves and Alec Vahanian received the new Silver Medal for Outstanding Contribution to the ESC.

Prof. Casadei congratulated the Young Investigator Award winners and welcomed more than 300 newly elected Fellows of the ESC (FESC). And with a final flourish, Prof. Casadei and Prof. Sliwa declared "OUR congress" officially open!

Funding for YOUR project



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At ESC Plaza

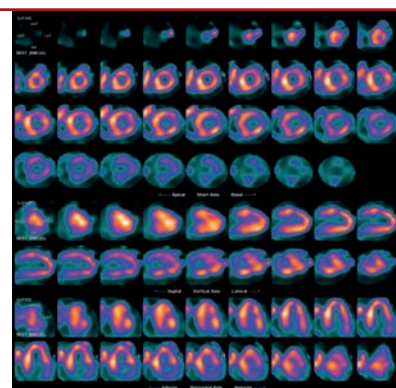
www.escardio.org/funding

What's Your Diagnosis?

BROUGHT TO YOU BY THE EUROPEAN ASSOCIATION OF CARDIOVASCULAR IMAGING (EACVI)

A 72-year-old male with recent onset of fatigue and dyspnoea.
Alessia Gimelli, Fondazione Toscana Gabriele Monasterio, Pisa, Italy

EACVI
European Association of
Cardiovascular Imaging



Answer on page 10.

Refocussing efforts to achieve 30% reduction in CVD by 2030



Prof. David Wood



Prof. Diederick Grobbee

Tackling head-on the biggest cause of non-communicable disease (NCD) mortality worldwide—cardiovascular disease (CVD) was responsible for 44% of NCD deaths in 2016¹—the goal of a 30% reduction in CVD by 2030 captures the 2015 UN Resolution's Strategic Development Goal (SDG) to reduce premature deaths from NCDs by one-third by 2030.²

Ambitious, yes, but achievable, thinks Professor David Wood (Imperial College London, London, UK). “We need to approach CVD reduction on three fronts: secondary prevention, detection and treatment of hypertension, and reduction in tobacco use. If we do this, we will achieve 80% of the target to reduce premature mortality from CVD, which will go a long way towards the SDG.”

The considerable problem of combatting smoking has seen the topic included in several sessions at ESC Congress 2019. Prof. Wood, who co-chaired yesterday's session ‘Personalized tobacco cessation strategies for your patient: patches, drugs or e-cigarettes?’, thinks taxation will yield the best results. “There is very good evidence from around the world that increasing the price of cigarettes decreases consumption. And using income from tobacco taxation to fund universal health coverage, and specifically prevention of CVD, brings a payback for society. Beyond taxation, public health measures, such as banning smoking in public places and including graphic image warnings on tobacco products, reduce consumption. Smoking cessation services for individual smokers, involving professionally led behavioural interventions supported by pharmacotherapy, are also an important part of the package.”

Obesity also features prominently at this year's Congress. “This global epidemic, which is growing year on year in high- and upper-middle-income countries, is now spreading into lower-middle-income countries and, ultimately, will also impact low-income countries,” warns Prof. Wood. “The consequence is diabetes and the concern is that, in high-income countries at least, obesity-diabetes may start to reverse the downward trend we have seen in CVD mortality rates.”

Speaking ahead of tomorrow's session ‘New approaches to tackle the global burden of cardiovascular disease’, Co-Chair Professor Diederick Grobbee (University Medical Center Utrecht, Utrecht, Netherlands) says the cardiovascular community needs to start using a different approach to the one it is used to.

“We need to focus more on the developing world, because that is where the largest burden of CVD lies.”

“The problem is that high-income countries have developed a very refined and labour-intensive model, which cannot be transferred to lower-income regions, because of their relative lack of resources, both financial and human. In lower-income countries, what resources there are may be diverted elsewhere, for example to combat neonatal deaths and infectious diseases, and it is difficult for healthcare systems to prioritise. We need to put the knowledge we have gained from our own journey to reducing CVD in the context of other regions. If we think about the clinical practice guidelines, for instance. They are probably not useful for 80% of the world, unless we contextualise them and provide levels of priorities that can be used in different resource settings.”

Prof. Grobbee thinks that technology will be necessary to find scalable solutions to help cope with the size of the problem, for example by rolling out large hypertension screening and management programmes. “We also need to create a chain of access to high-quality, affordable medicines,” he says, concluding, “Organisations and professional societies, like the ESC, can help by creating a dialogue with resource-limited regions to work towards more appropriate solutions to reduce the impact of CVD.”

1. WHO Global Health Observatory data: NCD mortality and morbidity. https://www.who.int/gho/ncd/mortality_morbidity/en/
2. Transforming our world: the 2030 agenda for Sustainable Development. https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Don't miss!

- **How to reduce global CVD by 30% by 2030?**
Today, 08:30 – 10:00; Camus – The Hub
- **The weight of the world: the global challenge of obesity**
Today, 11:00 – 12:30; London – Village 2
- **New approaches to tackle the global burden of cardiovascular disease**
Monday, 08:30 – 10:00; Camus – The Hub
- **Smoking cessation – What's new?**
Tuesday, 14:30 – 15:40; Colette – The Hub

Cardio-oncology – a new subspecialty for a growing problem



Dr. Alexander Lyon

Fuelled by the combination of improved long-term survival of cancer patients, the cardiovascular side effects of cancer treatment and an increasing elderly population, cardio-oncology has developed out of necessity as a new subspecialty within modern cardiology.

Last year, the ESC formed the ESC Council of Cardio-Oncology to help address the new clinical challenge of a growing number of patients presenting to cardiology services during or after cancer treatment. ESC Cardio-Oncology Council Treasurer, Doctor Alexander Lyon (Royal Brompton Hospital, London, UK), explains, “The aim of this new Council is to improve the standard of care for oncology patients and cancer survivors treated with cardiotoxic cancer therapies or radiotherapy. This involves developing

an ESC strategy for training, education, patient care and management to treat and prevent the cardiovascular complications of cancer therapies. Given the broad scope and rapid growth of the field, a multidisciplinary membership—representing cardiology, oncology, haematology, radiotherapy and related disciplines—from Europe and beyond was felt to be crucial.”

New cancer therapies are being developed at a rapid pace, and so cardio-oncology is a fast-moving area adapting to these new advances. Over the next few days at ESC Congress 2019, several symposia will discuss different aspects of cardio-oncology. Dr. Lyon is Co-Chair of a symposium today and he provides a flavour of what to expect. “The symposium will discuss risk factors common to both cardiovascular disease and cancer, including inflammation, and mechanisms of toxicity that can guide new cardiovascular drug development. The different cardiovascular toxicities of new anti-tumour therapies will be reviewed. Finally, approaching cancer and cardiovascular disease from the opposite direction, research will be presented showing an increased risk of cancer in patients with

heart failure, and the interesting search for potential mechanisms—some of these will be discussed this morning.”

A symposium on Monday will further explore the cardiovascular toxicity of anticancer treatments, says Dr. Lyon. “Cardiovascular toxicities are changing with the use of new cancer treatments. Many cardiologists will be familiar with anthracycline- and trastuzumab-associated cardiotoxicity. However, new cardiovascular diseases are emerging as a result of treatment with targeted cancer agents, such as the checkpoint inhibitors and tyrosine kinase inhibitors. And the effects of radiotherapy, commonly used to treat many cancers, should not be neglected.”

A session on Tuesday morning will focus on cardio-oncology clinical pathways and patient management. Dr. Lyon, who will be discussing the role of cardiovascular biomarkers in patients receiving cancer treatment, stresses the importance of this symposium for clinical practice. “The session is designed to help cardiovascular healthcare professionals to recognise the complexity of risk associated with cancer

treatment, and its continuation during survivorship, and to provide guidance on incorporating expert recommendations into clinical practice.”

He concludes, “The field of cardio-oncology is only going to grow, and in the coming years, all cardiologists can expect to see increasing numbers of patients with cardiovascular issues related to cancer and its treatment. We should all be aware of the problems facing these patients and how we can manage them, and ideally prevent them, where possible.”

Don't miss!

- **Cardio-Oncology: Novel mechanisms and clinical implications**
Today, 11:00 – 12:30; Athens – Village 3
- **Cardio-oncology: what every cardiologist should know about cardiovascular effects of cancer treatment**
Monday, 08:30 – 10:00; Colette – The Hub
- **Cardiovascular health in cancer patients and survivors**
Tuesday, 11:00 – 12:30; Colette – The Hub

Want to be involved with the ESC Council of Cardio-Oncology? Find out more at the ESC Stand

Twitter gives you more!



Professor Mamas Mamas
(@mmamas1973; Keele University,
Stoke-on-Trent, UK)
ESC Social Media Ambassador

"Our Twitter Ambassadors team of over 50 individuals from all over the globe, will ensure that the reach of educational content from the ESC is truly international. Social media platforms such as Twitter provide a means for the rapid global dissemination of educational and scientific material from the ESC in real time, allowing cardiovascular health professionals to interact in a global network for the benefit of patients."

Be part of the ESC Twitter family!

Don't miss!

- **Career development: Be a Twitter Pro**
Today, 10:30 - 11:00 and 13:30 - 14:00;
Professional Members' Lounge - ESC Plaza



#ESCCongress #ESCGuidelines
#ESCDigital #ESCGuidelines #WCC2019

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Abstract of the day:

Intensive antiplatelet therapy may be harmful in MINOCA

Treatment with intensive antiplatelet regimens may increase the risk of subsequent events in patients with myocardial infarction (MI) without obstructive coronary artery disease (MINOCA).

This is what Doctor Matthias Bossard (Luzerner Kantonsspital, Luzern, Switzerland) will present in a session on MINOCA this afternoon (Abstract 2387).

"MINOCA is a broad category and there are currently no uniform recommendations for antiplatelet therapy use in these patients," says Dr. Bossard. "To try to address this, we compared the data for MINOCA and non-MINOCA patients treated in the large CURRENT-OASIS 7 trial,¹ which investigated the impact of double-dose clopidogrel (600 mg day 1; 150 mg days 2-7; then 75 mg daily) vs standard-dose clopidogrel (300 mg day 1; then 75 mg daily) in patients presenting with acute coronary syndromes (ACS)." The primary endpoint was a combination of cardiovascular death,

MI and stroke. MINOCA patients—who accounted for 6.7% of the 28,783 included patients with MI—tended to be younger, more likely to have non-ST-segment elevation MI and had fewer comorbidities than non-MINOCA patients. In addition, rates of all-cause mortality, cardiovascular mortality, repeat MI and major bleeding were <1% in MINOCA patients and 3-4-times lower than those in non-MINOCA patients.

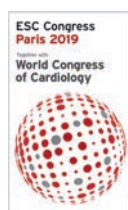
The findings were clear, but unexpected. "Since plaque erosion or rupture, thromboembolism, spontaneous coronary dissection and microvascular disorders are commonly encountered in MINOCA patients, we had thought that an intensified antiplatelet regimen may offer some benefits to these low-risk patients," says Dr. Bossard. "Instead, what we saw was that double-dose clopidogrel more than tripled the risk of cardiovascular death, MI and stroke compared with standard-dose therapy in patients with MINOCA (hazard ratio [HR] 3.57; p=0.013)." This increased risk with intensified therapy was not seen

in patients with obstructive coronary artery disease (CAD). Double-dose clopidogrel did not increase the rate of major bleeding in MINOCA patients (HR 0.99; p=0.987) compared with the standard dose, but it did in patients with obstructive CAD (HR 1.26; p=0.010). "Although these data need to be interpreted with caution since they stem from a post-hoc analysis of a large ACS trial, it seems to send out an important signal. One needs to take into account that we should not put all patients with ACS into the same pot," says Dr. Bossard. "There is currently no good evidence for the routine use of intensive antiplatelet therapy in MINOCA and our results—which pave the way for more clinical trials in this setting—suggest that doctors should be very cautious using such treatment in these patients."

1. CURRENT-OASIS 7 Investigators. N Engl J Med 2010;363:930-942.

Don't miss!

- **MINOCA - Unravelling the enigma**
Today, 16:40 - 17:50; Helsinki - Village 8



This programme is accredited by the European Board for Accreditation in Cardiology (EBAC) for "1" hour of external CME credit(s). Each participant should claim only those hours of credit that have been spent in the educational activity.

Organised by: University Hospital of Umeå, Sweden
Course Director: Ulf Nässtrand, Professor of Cardiology



UNIVERSITY HOSPITAL
OF UMEÅ

EBAC ACCREDITED SATELLITE SYMPOSIUM HELD DURING THE ESC CONGRESS 2019

Intensive platelet inhibition in acute coronary syndromes – Where are we a decade after PLATO study results?



Sunday 1st September | 13:00 – 14:00
Tbilisi, Village 6 (Level 3)

Lunch boxes will be provided for delegates attending this session

Welcome and Introduction

Lars Wallentin | Sweden

Manipulating the platelet – successes and failures

Robert F Storey | UK

Changing clinical outcomes with more intensive platelet inhibition

Christopher P Cannon | US

Effects in various clinical settings, patient subsets and healthcare realities

Stefan K James | Sweden

Discussion – Intensive platelet inhibition – Have we reached the ceiling or are there options for further development?

All faculty

Summary and Close

Roxana Mehran | US

Supported by an unrestricted educational grant from AstraZeneca. This scientific programme has not been influenced in any way by its sponsor.

In compliance with EBAC guidelines, all speakers/ chairpersons participating in this programme have disclosed or indicated potential conflicts of interest which might cause a bias in the presentations. The Organizing Committee/Course Director is responsible for ensuring that all potential conflicts of interest relevant to the event are declared to the audience prior to CME activities



The new Medical Devices Regulation is just around the corner



Prof. Alan Fraser

In just nine months’ time, the new Medical Devices Regulation (MDR) will be applicable across the European Union.¹ This legislation—which will be discussed in Global Exchange sessions tomorrow and Tuesday—will have enormous implications for the cardiovascular community and for patients across Europe.

“The new MDR will affect all physicians, healthcare professionals and hospitals, and we all need to be ready,” advises Professor Alan Fraser (University Hospital of Wales, Cardiff, UK), Chair of the ESC Regulatory Affairs Committee.

Prof. Fraser and the ESC Regulatory Affairs Committee, part of ESC Advocacy, have been heavily involved as stakeholders in influencing the new regulation, which has an expanded scope compared with previous legislation, providing new or stricter guidance on a range of aspects, such as risk classification, clinical investigations and performance studies, designation of Notified

Bodies, in-house devices, reprocessing of single-use devices and transparency. The Committee has made considerable contributions, particularly to this last topic, as Prof. Fraser explains: “The most important development, and the thing that we have been really pushing for, is that from next year there will be detailed information available about every single high-risk medical device on the market.” This information, which comes in the form of a Summary of Safety and Clinical Performance (SSCP), will be available publicly at the European portal on medical devices, EUDAMED. Every clinician will now be able to review evidence relating to safety and clinical efficacy before adopting new medical devices.

The MDR should be good news for patients.

“Each SSCP is going to have a section written especially for patients, using terms they can understand and in the national language of each country in which a device is sold or marketed,” says Prof. Fraser, who was a member of the regulators’ task force writing guidance for the SSCP and who also involved the European Patients’ Forum in the process. “More than that, each implanted high-risk device will carry a unique identification number that will be used by hospitals to register the device and that will be given to

patients. It can be used to trace the patient if there are any issues with the device.”

Post-marketing surveillance is another crucial aspect of the new MDR that the Committee has been actively promoting. Independent medical associations and societies, like the ESC, are developing registries to collect data from all individuals with high-risk implanted devices to monitor their benefit-risk profile and enable early detection of any potential harm. All clinicians should in future contribute to this surveillance, which will be shared with regulators.

Prof. Fraser describes one of the current challenges and how ESC members can help: “For the first time, panels of independent clinical and scientific experts will be created to review the evidence for high-risk medical devices before they are approved. The Expert Panels will provide opinions to Notified Bodies on their evaluation of technical files submitted by manufacturers, and the Notified Bodies will have to consider these recommendations when deciding whether or not to issue a certificate and CE mark for a new device. The European Commission now needs experts for five cardiovascular panels—concerning prosthetic heart valves, stents and vascular prostheses, electrophysiological devices, structural interventions, and cardiac surgery—who are able to devote one or two days a month to review evidence remotely.

It is difficult to overstate the importance of this process in ensuring the involvement of the clinical community in device approval.” Visit <https://ec.europa.eu/docsroom/documents/36041/attachments/1/translations/en/renditions/native> for details on how to apply and help ensure high standards for new cardiovascular devices. This work will be reimbursed by the European Commission.

Prof. Fraser concludes with a plea for international regulatory convergence, something for which the Committee has campaigned for a long time. “It’s about joining forces and having common standards internationally,” he says, “Fitting sentiments for a Congress celebrating collaboration and promoting global health.”

1. European Commission. <https://ec.europa.eu/growth/sectors/medical-devices>

Any questions? Want to get involved? Contact ESC Advocacy at: advocacy_representation@escardio.org

Don’t miss!

- **Medical devices in the global era: balancing access, safety and innovation**
Monday, 09:00 – 09:45; Global Exchange 1 – ESC Plaza
- **New EU Regulations for medical devices: impacting all clinical practice from May 2020**
Tuesday, 11:00 – 12:00; Global Exchange 1 – ESC Plaza

Lipids: How low to go? How and when?



Prof. François Mach



Prof. Eva Prescott

Ahead of the presentation of the 2019 ESC/EAS Guidelines for the management of dyslipidaemias tomorrow (08:30 – 10:00; Paris – Main Auditorium), Professor François Mach (Geneva University Hospital, Geneva, Switzerland), one of the Guideline Task Force Chairs, and Professor Eva Prescott (Center for Cardiovascular Research, Bispebjerg Frederiksberg Hospital, University of Copenhagen, Denmark), member of the Congress Programme Committee, will whet our appetite about what’s new in dyslipidaemias and what lies in store at ESC Congress 2019.

Prof. Mach explains, “We now know that low-density lipoprotein-cholesterol (LDL-C) has a causal relationship with atherosclerotic cardiovascular disease (ASCVD). Emerging evidence from observational studies, Mendelian randomisation studies and randomised controlled trials have helped us to dismiss the ‘LDL-C hypothesis’—now it is not a hypothesis—we have established evidence that high levels of LDL-C are causally related to ASCVD and that by lowering LDL particles as far as possible, through long-standing treatments like statins and ezetimibe and also newer treatments, such as proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors, cardiovascular events can be reduced. Outcomes trials with anti-PCSK9 monoclonal antibodies appear to show that very low LDL-C levels are safe, although these trials only lasted for ~3 years, which is not sufficient to be conclusive.”

An individual’s risk of ASCVD is determined by the number and magnitude of risk factors and also the total duration of exposure and this is why we should think of risk reduction in a life-course perspective emphasises Prof. Prescott. “We know from genetic risk modelling studies that we must consider lifetime risk. This highlights that we should encourage all individuals to

lead healthy lives from childhood but also leads to questions on whether we should be starting therapy earlier on in life. I think many cardiologists and GPs are struggling with this. Tomorrow, we will hear from Professor Eugene Braunwald who will share his perspective on current lipid-lowering concepts, including his thoughts on the right age to start lipid-lowering therapy (14:30 – 15:15; Colette – The Hub).”

On Tuesday, a lively debate session entitled ‘Controversies in secondary prevention: treating residual risk’ will see Professor John Kastelein and Professor Paul Ridker offer different opinions on driving LDL-C as low as possible beyond high-intensity statins (14:30 – 15:40; Duras – The Hub). Professor Ph. Gabriel Steg and Professor Jane Armitage will then debate ‘Fish oil: It’s all about triglycerides.’ Also on Tuesday, the very latest evidence on targeting triglycerides to prevent ASCVD will be presented (14:30 – 15:40; Reykjavik – Village 2) and a session entitled ‘Evolving concepts in lipidology’ will look at a range of issues from the side effects of statins to new ways of lowering lipids (08:30 – 10:00; Prague – Village 2).

Prof. Mach concludes, “With the new ESC Guidelines on dyslipidaemia management and a range of stimulating sessions, the stage is set for enhanced understanding of how we can modify lipids to improve ASCVD prevention.”

Want to learn more about the secondary prevention of ASCVD?

A range of resources are available as part of the ESC Prevention of CVD Programme at: <https://www.escardio.org/Education/ESC-Prevention-of-CVD-Programme>



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Congresses

Research

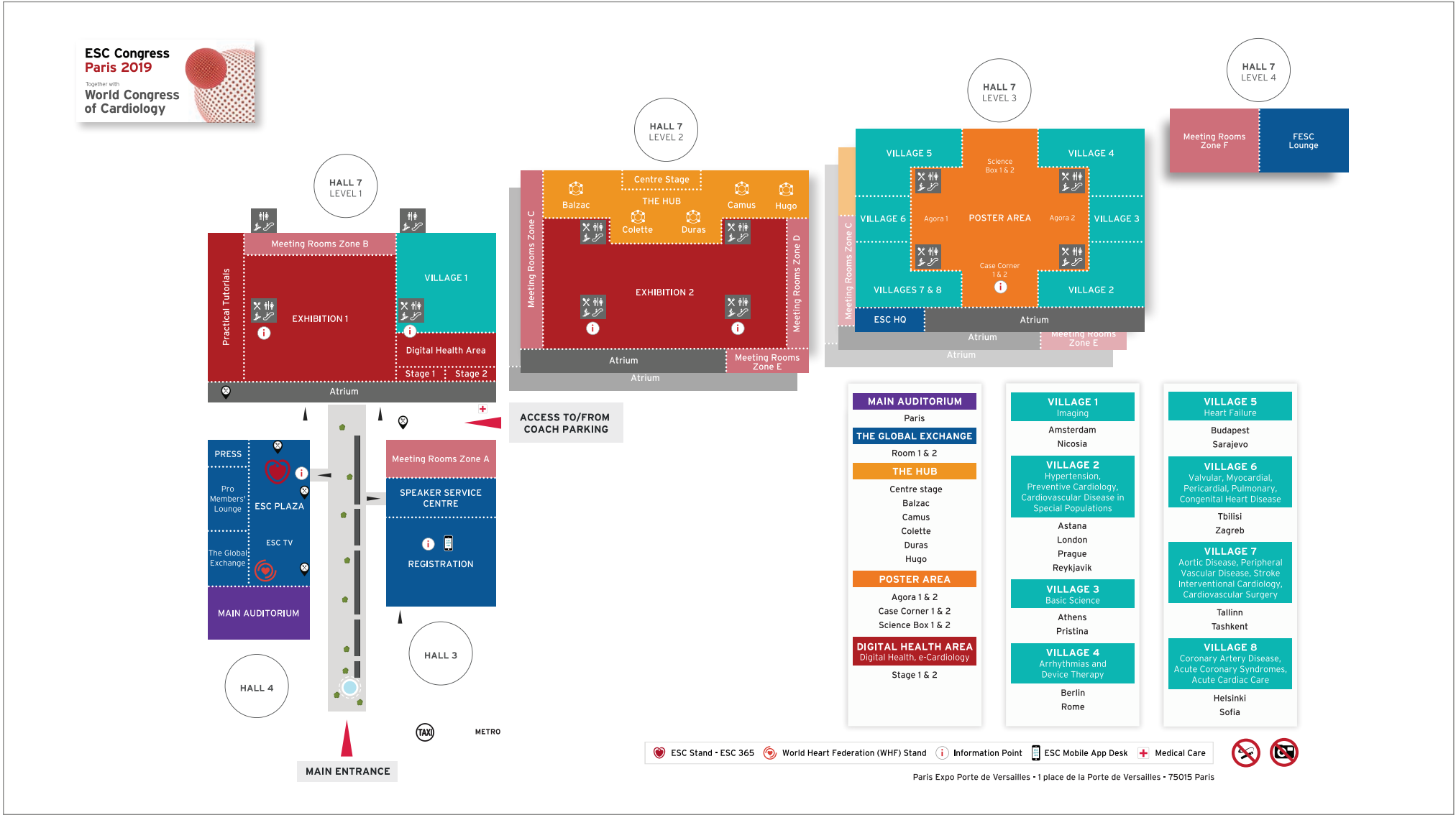
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ACTELION SATELLITE SYMPOSIUM
ESC CONGRESS 2019 | PARIS, FRANCE

PAH – THE IMPORTANCE
OF ASSESSING RISK
IN TREATMENT AND
MANAGEMENT TO DELAY
DISEASE PROGRESSION

SUNDAY, 1 SEPTEMBER 2019 | 13:00 – 14:00 | ROOM TASHKENT | VILLAGE 7

13:00 – 13:05 | MARC HUMBERT
INTRODUCTION

13:05 – 13:20 | PASCAL DE GROOTE
PATIENT CASE: PART 1 – REALIZING THE CHALLENGES AND
ASSESSING THE RISK IN PULMONARY ARTERIAL HYPERTENSION

13:20 – 13:35 | VALLERIE MCLAUGHLIN
PATIENT CASE: PART 2 – RISK ASSESSMENT-BASED MANAGEMENT
FOR OPTIMAL OUTCOMES IN PULMONARY ARTERIAL HYPERTENSION

13:35 – 13:55
PANEL DISCUSSION

13:55 – 14:00 | NAZZARENO GALIÈ
CLOSING REMARKS



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REGISTRY DATA MONOTHERAPY
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QUALITY
TRIPLE CLINICAL
PERSPECTIVE
PATIENT
PAH-CTD DOUBLE
PGI₂ COMBINATION
PATHWAY
TRITON
STUDY
DOUBLE
COMBINATION
GENDER
HEMODYNAMICS
SYMPTOMS
PERSPECTIVE
PAH-
CHD
EXERCISE REHABILITATION
RISK ASSESSMENT
PAH
IMPROVING OUTCOMES
PAH
ADHERENCE
COLLABORATION
ESC/ERS GUIDELINES
PULMONARY
HYPERTENSION

Getting to the heart of diabetes



Prof. Francesco Cosentino

More than 425 million people are affected by diabetes worldwide and this figure will likely grow to 629 million by 2045 if nothing is done.¹ People with diabetes are 2 to 3 times more likely to have cardiovascular disease (CVD) than those without CVD. Indeed, among middle-aged people with type 2 diabetes living in high- and middle-income countries, up to 27 people out of 1,000 die from CVD each year; a third of them die from stroke and one quarter from coronary artery disease. The economic burden is also huge—in low- and middle-income countries, it has been estimated that USD 84 billion of gross domestic product was lost due to CVD and diabetes in the 10 years from 2005 to 2015.

Since 2007, the ESC and the European Association for the Study of Diabetes (EASD) have joined forces to write guidelines on the management of diabetes, pre-diabetes and CVD. Professor Francesco Cosentino (Unit of

Cardiology, Karolinska University Hospital, Stockholm, Sweden) thinks these guidelines may have played a major part in changing how cardiologists now approach patients with type 2 diabetes. He says, “Previously, considering diabetes as a risk factor for CVD was delegated to endocrinologists when they treated hyperglycaemia, but now, cardiologists are taking their place alongside endocrinologists in a team effort, realising there must be collaboration across specialities for the benefit of patients.”

Regulatory authorities are also becoming more aware of the cardiovascular effects of glucose-lowering agents and from 2008, they issued mandatory guidelines requiring evaluation of the cardiovascular safety for all new therapies to treat type 2 diabetes in order to rule out excess cardiovascular risk. Prof. Cosentino explains, “Since then, many cardiovascular outcomes trials have been performed, accruing a very large body of evidence, with more than 160,000 patients enrolled. These trials highlight that some glucose-lowering treatments have a neutral effect on cardiovascular risk, while certain drugs within the new classes of glucagon-like peptide receptor agonist (GLP-1RA) and sodium-glucose co-transporter-2 (SGLT2) inhibitors exert very important cardioprotective effects, significantly reducing major clinical hard endpoints, including myocardial infarction, stroke and cardiovascular death.”

Cardiovascular outcomes trials were initially conducted predominantly in patients with diabetes and established CVD, looking at secondary prevention of cardiovascular events, but there has been a shift in recent times towards the primary prevention setting, including patients without established CVD who are at high cardiovascular risk due to the presence of multiple risk factors. Based on very recent data, the beneficial effects of specific SGLT2 inhibitors and GLP-1RAs appear to be observed in both settings.

Prof. Cosentino describes further benefits: “Patients with diabetes are at very high risk of developing heart failure. Reductions in the occurrence of hospitalisation for heart failure have also been seen with certain new glucose-lowering agents, particularly in trials with SGLT2 inhibitors. These are really important findings, related to reducing both the clinical and economic impact of diabetes.”

All the evidence on cardiovascular safety has been considered by the latest ESC and EASD Task Force and been used to inform a very timely update of the 2013 guidelines—the 2019 recommendations will be presented tomorrow at ESC Congress 2019 and published simultaneously.

The ESC together with the European Association of Preventive Cardiology (EAPC) also provide the ‘Diabetes and CVD Programme’ (<https://www.escardio.org/Education/Diabetes-and-CVD>), a collection of educational resources, including webinars, ‘how-to’ articles, literature reviews and recommended reading. Prof. Cosentino, who is Co-Chair of the Programme Oversight Committee, feels strongly that a ‘go-to’ place is needed as a platform for the latest knowledge on the topic. “We initiated this programme to disseminate new findings as they are discovered, not only among cardiologists but for other healthcare professionals. New therapeutic solutions exist—healthcare professionals need to stay informed and incorporate advances into clinical practice as soon as possible so that the benefits can begin to be transmitted to in-need patients.”

1. IDF Diabetes Atlas. Eighth edition 2017. <https://diabetesatlas.org/>

Don’t miss!

- **Heart failure and diabetes: what is on the horizon**
Monday, 11:00 – 12:30; Sarajevo – Village 5
- **2019 ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD**
Monday, 14:30 – 15:40; Paris – Main Auditorium
- **SGLT2 inhibitors and cardiovascular outcomes: Joint session with EASD**
Monday, 16:40 – 17:50; Prague – Village 2

ESC William Harvey Lecture on Basic Science

Dissecting the genetic code of inherited cardiac disorders



Prof. Connie Bezzina

Two decades spent studying the genetics of inherited cardiac disorders makes Professor Connie Bezzina (Amsterdam University Medical Center [UMC], Amsterdam, Netherlands), presenter of this afternoon’s ESC William Harvey Lecture on Basic Science, one of the foremost international experts in this area.

A pharmacy graduate, whose research in molecular cardiogenetics has changed the understanding of inherited arrhythmias, she has authored over 170 publications and is a member of the prestigious Royal Netherlands Academy of Arts and Sciences.

Prof. Bezzina came to arrhythmia research by accident rather than by design. “Having finished my PhD, I moved to the Netherlands and, with a keen interest in genetics, searched

for a post-doctoral position in this area.” She came into contact with Professor Arthur Wilde, who was starting a research group on primary cardiac electrical disorders at Amsterdam UMC. “So it was a case of my being in the right place at the right time.” Twenty-two years later, Prof. Bezzina is still at Amsterdam UMC and working on the same topic.

“DNA sequencing technologies have improved tremendously during this time,” she says. “The opportunities now offered by whole genome sequencing were unimaginable just a few years ago. When I started, we were sequencing small parts of genes at a time and now, because of the huge advances in technology, we are sequencing whole genomes. Applying the latest state-of-the-art genomic technologies to understand the genetic basis of disease is what I find exciting and what has kept me interested in the same area for so long. I also really enjoy working closely with clinicians and focusing on making research translational. This is helped by the fact that I am embedded in an academic hospital and need to walk only a few metres to discuss with clinicians the clinical presentation of the patients that we study and the implications of our genetic findings for patients.”

Asked to select her main research achievements, Prof. Bezzina chooses from the start of her career and the present day. “In the beginning, we did a lot of work in identifying monogenic causes of inherited cardiac disorders, with many of our discoveries in this area being related to the sodium channelopathies.^{1,2}” More recently, and the subject that will form the basis of her lecture ‘When genetic burden reaches threshold’, her group is focussing on those inherited cardiac disorders that have remained genetically unresolved. “Some of these disorders probably have complex inheritance,” she says, adding, “Now we have recognised this, the challenge is to apply the appropriate research tools.” This involves a new set of challenges. “The cardiac disorders that we study, such as Brugada syndrome, are rare and to actually dissect the genetic factors involved you need a lot of patients. We therefore collaborate with clinicians and researchers worldwide to help get the patient numbers we need.”

“International collaboration is absolutely crucial for complex inheritance disorders—without it, we cannot do the research.”

She expresses her gratitude to the patients involved and to her colleagues who provide access to the data that enables her group to do its research. The work on complex inheritance is shaping her group’s future research plans. “Up to now, we have been looking at common genetic variants that contribute a small amount of susceptibility to disease. We want to look more in depth at the intermediate frequency and rare variants, which we think make a much greater contribution to susceptibility.”

Prof. Bezzina concludes with a few words of advice for basic scientists starting out. “It is no doubt a challenging career, particularly if you find yourself chasing grants for funding. However, it is very rewarding. My tips would be to find a good mentor early on, to do the work you really believe in and, above all, to persevere.”

1. Remme CA, et al. Trends Cardiovasc Med 2008;18:78–87.
2. Bezzina C, et al. Circ Res 1999;85:1206–1213.

Don’t miss!

- **ESC William Harvey Lecture on Basic Science**
Today, 15:30 – 16:10; Pristina – Village 3

Patients and doctors working in partnership to fight CVD



**Dr.
Hywel Jones**



**Prof.
Donna Fitzsimons**

Actively involving patients in their care sounds like a good idea. On paper. But in reality, if a condition has been successfully managed, what more is there to learn from patients? Surely it will just take time away from busy healthcare teams and add to the cost of treatment?

“Not so!”, says cardiovascular patient Doctor Hywel Jones, who will be speaking at this afternoon’s session ‘Patient involvement: unleashing the potential for true excellence in cardiovascular care’. A heart attack provided Dr. Jones with the opportunity to see patient care from the other side of the bed covers. He is now a member of the ESC Patient Forum—a group of 25 patients from 11 European countries. He explains, “I speak with many patients from all over Europe who have had different cardiovascular conditions treated in very different healthcare systems. But we all have one thing in common, the need to be treated as a human being with emotional as well as physical needs and this requirement is not always met. Patients are extremely grateful for the care they have received but more should be done to help them live healthier lives—physically and mentally—after the event. To do that, it seems not only the

behaviour of professionals but also the system needs to change.”

“Currently, when the mechanics—the plumbing and wiring bit—has happened, the patient is discharged into the world to fend for themselves.”

“Even as a doctor, I can honestly say it really is a frightening world after a cardiac event. For instance, what do you do six months after having your coronary artery fixed when you get a pain? Some people just don’t know where to turn and are left in a constant state of worry, which does not help their condition. Others keep going back to the emergency room to get reassurance from tests that they are fine. This cannot be an efficient use of healthcare resources.”

Having spent 30 years as a general physician undertaking acute medical admissions, Dr. Jones understands the time pressures facing cardiologists, which may mean they have less time for the ‘soft side’ of patient care. “However, if we can persuade the cardiology community and healthcare systems that this is important to achieve better outcomes for patients and that it will save money, then it will happen.”

Leading the way on patient engagement for the ESC is Professor Donna Fitzsimons (Queen’s University Belfast, Belfast, UK). “The ESC Patient Forum was put together a year ago by the Society as a way of formalising its efforts to champion patient engagement and to encourage patients and cardiovascular healthcare professionals to work in partnership,” she says. “It is a very different perspective we can get from someone living with the



disease than from someone researching it or treating it. We feel that the future of the ESC will be enhanced by including patients in the agenda.” Meeting four times a year, the Forum has already achieved a great deal in its first year. “In the long-term, we can see the Forum becoming a Council within the ESC, with its own structure and governance, in the meantime we have a very active group that are helping to road test and quality assure many ESC outputs—everything from educational curricula to guidelines. That should enhance their implementation in practice and help us reduce the burden of cardiac disease,” she says.

Dr. Jones concludes, “It really is fantastic to be part of this exciting new ESC initiative. All Forum members have been nominated by an ESC Professional Member and we are seeking to extend the membership. You need to speak English, be able to travel, and have the time and enthusiasm to take part. As the

Forum becomes more established, we would like to recruit more patients to increase the diversity of the demography. At the moment however, there are a lot of people all over Europe who are suffering in silence and the ESC Patient Forum is working hard to make their views heard.”

In light of the new ESC Clinical Practice Guidelines, four ESC Patient Forum members have shared with us what it is like to live with a heart condition, such as supraventricular tachycardia or chronic coronary syndrome. To see their video testimonials, please go to: www.escardio.org/patients

Don’t miss!

- **Patient involvement: unleashing the potential for true excellence in cardiovascular care**
Today, 13:00 - 14:00; Global Exchange 1 - ESC Plaza

Live in a Box Alcohol septal ablation of hypertrophic cardiomyopathy



**Prof. Hubert
Seggewiss**

This morning, Professor Hubert Seggewiss (Juliusspital Klinikum Würzburg Mitte, Würzburg, Germany) will guide delegates through a case of alcohol septal ablation of hypertrophic cardiomyopathy, recorded live from Klinikum Würzburg Mitte - Standort Juliusspital, Würzburg, Germany.

In addition to significant myocardial hypertrophy, around 70% of patients

with hypertrophic cardiomyopathy have some form of left ventricular outflow tract obstruction. While medical treatment is suitable for many patients, a subset fail to respond and are referred for other approaches.¹ Alcohol septal ablation, a technique devised by Professor Ulrich Sigwart in the early 1990s, is based on interrupting the blood supply to the thickened myocardium in the heart, thereby creating an area of infarction, leading to muscle thinning and relief of the obstruction. Prof. Seggewiss, whose team worked with Prof. Sigwart at that time, explains, “It is crucial to precisely identify the area that will be ablated. Early observations by my colleague, Lothar Faber, that the alcohol was sometimes not directed to the exact location, led us to use echo-

contrast media to visualise the septal area supplied by the blood vessel.” With certain refinements such as these, Prof. Seggewiss performs alcohol septal ablation in much the same way today as he did twenty years ago, with success in around 95% of patients. The remaining 5% of patients require a different approach, often because a septal branch defining a target area cannot be found. With few alternative techniques, these patients are usually referred for surgical treatment.

Prof. Seggewiss thinks the Live in the Box sessions offer a unique real-world opportunity for delegates. “I have been doing interventional cardiology for 35 years, and from my point of view, the most important aspect of learning a technique is

not how it works but where the difficulties are and what you need to do to avoid complications.” The pre-recorded case being presented this morning is a prime example. Prof. Seggewiss will describe problems the team encountered passing the wire through the patient’s septal branch and provide useful tips for managing such difficulties. He will also discuss 3-month echocardiographic and haemodynamic data, giving an update on the patient’s condition after the procedure.

1. Nishimura RA, et al. Circ Res 2017;121:771-783.

Don’t miss!

- **Alcohol septal ablation of hypertrophic cardiomyopathy**
Today, 08:30 - 10:00; Centre Stage - The Hub

Sessions of the day

7:30	
Camus	Stent thrombosis at 3 a.m - How to manage it?
Duras	How to implement PCSK9 inhibitor treatment in my practice
Hugo	General cardiology crash course - Part 1
Balzac	General cardiology crash course - Part 2
Agora 2	Women in basic science: challenges and opportunities
Colette	Nocturnal hypertension@breakfast
8:30	
Amsterdam	How should I image a patient to differentiate constriction from restriction? And a patient with a cardiac mass?
Sofia	How should I treat NSTEMI frail patients
Helsinki	Managing acute right heart failure
Tbilisi	New hopes for patients with tricuspid regurgitation
Zagreb	How should I treat heart failure - From ejection fraction to personalised medicine
Duras	Experts on the spot: exploring new dimensions in glucagon-like peptide-1 receptor agonists and cardiovascular risk. Sponsored by Novo Nordisk A/S
Tallinn	Acute stroke - What a cardiologist should know
Reykjavik	Targeting inflammation in cardiovascular disease - Is it feasible? And safe?
Digital Health 1	Digital cardiovascular health solutions
Colette	Cardioncology for general cardiology: not only heart failure
Centre Stage	Alcohol septal ablation of hypertrophic cardiomyopathy. Recorded Live Procedure from Klinikum Würzburg Mitte-Standort Juliusspital, Würzburg, Germany
Hugo	Multimodality imaging quiz: the whole is greater than the sum of its parts
Case Corner 1	Acute Cardiac Care
Case Corner 2	Non-Atherosclerotic Coronary Diseases
Nicosia	Role of diastolic dysfunction in cardiovascular risk prediction
Prague	Complex patient-centered interventions in cardiovascular care
Sarajevo	Treatment of conundrum in acute heart failure
Tashkent	Advances in revascularisation strategies in patients with multivessel disease
Berlin	Arrhythmia detection and device therapy - Essential Update Part 2
Rome	Meet the Experts - Pushing the boundaries. Are there any limits for atrial fibrillation ablation indications?
Budapest	Hard to diagnose and hard to treat heart failure patients.
Astana	Management of high risk hypertension
London	What's hot on the plate?
Camus	How to reduce global CVD by 30% by 2030?
Athens	Emerging arrhythmia therapies
Pristina	Patient derived iPSC-modelling of inherited cardiovascular disorders. Organised with ESHG
Balzac	JACC's Year in Cardiology: four challenges to enhance major health factors. Organised with JACC
Science Box 2	Novelties in atrial fibrillation and flutter management
Science Box 1	Catheter-based renal denervation: recent developments and new frontiers
Agora 1	Hot topics in myocardial and pericardial diseases
Agora 2	Signaling in heart failure
Paris	2019 ESC Guidelines Overview
9:00	
Global Exchange 2	Meet and Share Forum - Campaigns
10:00	
Digital Health 2	Other e-Health and Digital Health
Global Exchange 1	Investor session
10:10	
Agora 1	Blockbusters from the Young - Multimodality Imaging in coronary artery disease
Agora 2	Blockbusters from the Young in preventive cardiology
Centre Stage	The EHJ's advances from prevention to intervention: the year in Cardiology. Organised with EHJ
Athens	Inspirational Lecture in Translational Science
10:15	
ESC TV Stage	Meet the Gold Medalist - Christine Seidman
Balzac	The bigger picture in stroke prevention: integrating atrial fibrillation, kidney disease and diabetes to optimise patient care. Sponsored by Bayer AG
Camus	Optimizing heart failure care: where do we stand? Sponsored by Servier
Hugo	Implications of new CV risk reduction indication of PCSK9 inhibitors - Focus on ODYSSEY outcomes. Sponsored by Sanofi and Regeneron
Duras	Latest strategies to reduce cardiac device infections: WRAP-IT study results. Sponsored by Medtronic
Colette	The ideal renal denervation patient: interactive discussion on patient selection. Sponsored by Medtronic
10:20	
Prague	ESC Geoffrey Rose Lecture on Population Sciences
11:00	
Amsterdam	Meet the Experts - How to avoid traps in your echocardiographic studies

Sofia	Acute heart diseases in young adults
Tbilisi	Transcatheter treatment of valvular heart disease: stretching the limits
Duras	Controversies in the management of pulmonary hypertension and venous thromboembolism
Digital Health 1	How Big Data will impact cardiology: a physician's guide
Colette	Aneurysms: optimal management in 2019
Centre Stage	PCI of the left main bifurcation. Recorded Live Procedure from Clinique Pasteur Toulouse, France
Hugo	Designing a clinical study - Learning from the masters
Pristina	Atrial cardiomyopathies
Case Corner 1	Acute Coronary Syndromes II
Case Corner 2	Echocardiography masterclass
Nicosia	Predicting outcomes after aortic valve intervention
Zagreb	From trials to clinical use: transcatheter interventions in secondary mitral regurgitation
Rome	What is new in tachyarrhythmia? Essential Update Part 1
Budapest	Expert Advice - Focus on heart failure with preserved ejection fraction (HFpEF)
Sarajevo	Interventional therapy for heart failure
Astana	The year in hypertension: hot papers 2018/2019
London	The weight of the world: the global challenge of obesity
Reykjavik	Is cardiac rehabilitation still a must in the 21st century?
Athens	Cardio-Oncology: Novel mechanisms and clinical implications
Tashkent	Optimal therapy for aortic arch disease. Organised with EACTS
Tallinn	Heart and Stroke - Clinically relevant interactions. Organised with ESO
Balzac	Highlights from the NEJM: editors' choice. Organised with NEJM
Camus	Global and regional burden of cardiovascular disease: what are the evidence gaps and how to fix them
Prague	YIA Session - Population sciences
Science Box 1	Immune modulation in cardiovascular disease
Science Box 2	Lifestyle scores best
Agora 1	New treatment studies in heart failure
Agora 2	Challenges in hypertension treatment
Paris	2019 ESC Guidelines on Chronic Coronary Syndromes
Berlin	Late Breaking Science in Atrial Fibrillation 2
Helsinki	Late Breaking Science in Acute Coronary Syndromes 2

11:15	
Global Exchange 1	Part I: Towards Integrity in Research. A continuing challenge. Organised with the Ethics and Oversight Committee and the ESC Journals Family Ethics Committee

12:15	
ESC TV Stage	Meet Dr E. Olson

12:30	
Digital Health 2	Artificial Intelligence for ACC and CAD

12:45	
ESC TV Stage	Eugene Braunwald and ESC Women in cardiology

13:00	
Tashkent	Pulmonary arterial hypertension - The importance of assessing risk in treatment and management to delay disease progression. Sponsored by Actelion Pharmaceuticals Ltd
Amsterdam	Innovations in digital medicine. Sponsored by WeHealth Digital Medicine
Nicosia	Diet and risk reduction of cardiovascular disease - Evidence, controversies, and consensus. Sponsored by Cleveland Clinic
Hugo	Recovering hearts - Saving lives. Sponsored by Abiomed Europe GmbH
Athens	Multi-dimensional glucagon-like peptide-1 receptor agonists – Positioning their role in treatment of type 2 diabetes and cardiovascular disease. Sponsored by Novo Nordisk A/S
Tallinn	NOACs in cancer associated thrombosis: managing anticoagulation in cancer patients in clinical practice. Sponsored by Bayer AG
Centre Stage	New approach for worsening chronic heart failure. Sponsored by Bayer AG
Astana	Beyond statins - Evolving concepts for the management of dyslipidaemia. Sponsored by Daiichi Sankyo Europe GmbH
Tbilisi	Intensive platelet inhibition in acute coronary syndromes - Where are we a decade after PLATO study results? (EBAC Accredited). Sponsored by an unrestricted educational grant from AstraZeneca
Rome	10 years since RE-LY: comprehensive experience for atrial fibrillation patients. Sponsored by Boehringer Ingelheim
London	SGLT2 inhibitors in clinical cardiology: modern-day cardiovascular management in patients with type 2 diabetes. Sponsored by The Boehringer Ingelheim, Eli Lilly and Company Alliance
Berlin	PCSK9 inhibitors: let's get real. Sponsored by Amgen Europe GmbH
Sarajevo	Achieving the new blood pressure targets: from control to protection. Sponsored by Servier
Colette	Let's talk about high-sensitivity troponin I: perspectives from the cardiology and the emergency departments. Sponsored by Siemens Healthineers

Budapest	Evolving scientific evidence with PCSK9 inhibitors based on ODYSSEY outcomes. Sponsored by Sanofi and Regeneron
Camus	Bridging the gap in the management of stable angina patients. Sponsored by Menarini Group
Zagreb	Hypercholesterolemia management - What will be our options after tomorrow? Sponsored by Mylan
Pristina	Echocardiography, more than just an imaging modality. Panel discussion illustrated by clinical cases. Sponsored by Philips Healthcare
Reykjavik	Insertable cardiac monitors to detect arrhythmias: evidence update and future outlook. Sponsored by Medtronic
Balzac	Aortic stenosis treatment evolution - Which therapy for which patient? Sponsored by Medtronic
Sofia	Looking to the future of identifying transthyretin amyloid cardiomyopathy. Sponsored by Pfizer
Duras	Innovative development in watch-type wearable SMART blood pressure monitoring and its clinical application. Sponsored by OMRON Healthcare Europe
Helsinki	Cities as drivers of cardiovascular health: examples from three continents. Sponsored by the Novartis Foundation and the American Heart Association
Prague	The ORION Program - What to look for in ORION-11. Sponsored by the Medicines Company
Global Exchange 1	Patient involvement: unleashing the potential for true excellence in cardiovascular care

13:30	
ESC TV Stage	Meet the Gold Medalist - Hugo Katus
Digital Health 2	Artificial Intelligence for Arrhythmias

14:00	
Global Exchange 2	Meet and Share Forum - Advocacy

14:15	
Global Exchange 1	Female patients and female physicians. Does it make any difference? - Promoted by Women in ESC

14:30	
Sofia	New insights into sex differences in acute coronary syndromes
Duras	Controversies in anti-platelet therapy
Tashkent	Lower extremity artery disease: when to revascularise?
Prague	"Meet the Experts - Clinical challenges while dealing with antithrombotic therapy"
Astana	Advancing the management of hypertension for nurses and allied professions
Rome	Difficult issues for atrial fibrillation patients in general cardiology
Zagreb	Guidelines in Daily Practice - Valvular Heart Disease. Organised with the French Society of Cardiology (SFC)
Amsterdam	Tips and tricks for your daily Transesophageal Echocardiogram Image Interpretation with the Masters
Case Corner 1	Bradycardia
Case Corner 2	Device therapy
Digital Health 1	Ethics in research: participants, trials and guidelines
Nicosia	Left atrial function evaluation in clinical practice
Reykjavik	Inflammation, cardiovascular disease and cancer
Berlin	Advances and challenges in cardiac pacing therapy
Sarajevo	Devices and heart failure: new insights
Budapest	Chronic heart failure: Essential Update
London	Personalising cardiovascular risk assessment in primary prevention
Athens	Molecular underpinning of HFpEF
Helsinki	New insights into cardiopulmonary resuscitation. Organised with ERC
Colette	Can we trump advanced heart failure, once and for all? Intercontinental perspectives. Organised with CCS
Camus	Cardiovascular highlights from the JAMA Network, 2018-19. Organised with JAMA
Hugo	Best clinical cases - Awards session
Tbilisi	YIA Session - Thrombosis
Pristina	YIA Session - Basic Science
Science Box 2	Non-troponin biomarkers in acute coronary syndromes
Science Box 1	Factors affecting prognosis of CABG patients
Agora 1	Risk behaviour and psychological distress in cardiovascular patients and their family
Agora 2	Coronary artery disease and comorbidities
Paris	Hot Line Session 1
Balzac	Late Breaking Basic and Translational Science - Hypertension and Endothelial dysfunction

15:30	
Pristina	ESC William Harvey Lecture on Basic Science
Global Exchange 1	Discussions with the Investors

15:45	
Digital Health 2	Digital Health

15:50	
Agora 1	Blockbusters from the Young - Mental Health and Environmental Challenges in Cardiovascular Disease
Agora 2	Blockbusters from the Young in Basic Science
Centre Stage	Meet the Task Force of the 2019 ESC Guidelines on Chronic Coronary Syndromes

16:00	
ESC TV Stage	Meet the trialist - THEMIS/THEMIS PCI
Balzac	Vascular protection: practical insights. Sponsored by Bayer AG
Colette	10 years since RE-LY: applying innovations in anticoagulation. Sponsored by Boehringer Ingelheim
Duras	Evidence, guidelines, clinical practice - The evolving role of cardiologists in the SGLT2 inhibitor era. Sponsored by The Boehringer Ingelheim and Eli Lilly and Company Alliance
Hugo	PCSK9 inhibitors: let's get real. Sponsored by Amgen Europe GmbH
16:30	
ESC TV Stage	Meet the trialist - PARAGON-HF
16:40	
Tashkent	Integrating new perspectives in cardiac surgery
Rome	CATCH ME - Insights into atrial fibrillation
Digital Health 1	Telemedicine in heart failure management - The minimum, the optimum, and the unnecessary
Colette	The future of randomized clinical trials
Sofia	Chronic Ischemic Cardiovascular Disease - The "Big Picture". Organised with the Romanian Society of Cardiology
Camus	Cardiac anatomy for interventional cardiologists - An update Cardiac Anatomy
Amsterdam	Cardiac magnetic resonance Image Interpretation with the Masters
Pristina	Active Learning: Clinical Genomics Bootcamp
Case Corner 1	Non-Coronary Cardiac Interventions
Case Corner 2	Pulmonary Circulation and Right Heart Failure
Reykjavik	New developments in anti thrombotic drug therapy
Sarajevo	Risk prediction in heart failure outcome
Helsinki	MINOCA - Unravelling the enigma
Berlin	Tips and tricks to prevent, diagnose and treat Cardiac Implantable Electronic Device (CIED) infections
Budapest	Acute Heart failure: Essential Update
Duras	Controversies in hypertension management
Athens	Success stories in translation from bench to bedside

Prague	Sleep-disordered breathing and cardiovascular disease: two sides of the same coin? Organised with ERS
Tbilisi	New hope for neglected cardiovascular diseases. Organised with BSC
Hugo	Tips and tricks for chronic total occlusion PCI. Organised with JCS
Astana	Moving from risk to benefit in prevention Guidelines. Organised with AHA
Balzac	The Lancet-ESC symposium on ischemic heart disease. Organised with The Lancet Journal
Zagreb	YIA Session - Coronary Pathophysiology and Microcirculation
Science Box 2	Diagnosis, management and prognosis in myocarditis
Science Box 1	Immuno-inflammation as therapeutic target in heart failure
Agora 1	New insights in arrhythmia management in congenital heart disease
Agora 2	Optimizing device therapy for arrhythmia
Centre Stage	The Great Cardiovascular Quiz
Paris	Hot Line Session 2
Global Exchange 1	Cardiovascular disease and women: global threat or macro-opportunity - Promoted by Women in ESC
18:15	
Centre Stage	Rewriting the textbooks: SGLT2 inhibitors and cardiovascular disease in type 2 diabetes. Sponsored by the Mundipharma network of independent associated companies
Helsinki	Treating patients with HFpEF: what progress are we making? Sponsored by Novartis Pharma AG
Berlin	Non-vitamin K antagonist oral anticoagulants (NOACs): from new evidence to improved patient outcomes in atrial fibrillation. Sponsored by The Bristol-Myers Squibb/Pfizer Alliance
Balzac	Impact of low-surgical-risk TAVI trials on clinical decision making. Sponsored by Medscape Education Global
Amsterdam	Recent advances in risk stratification of cardiovascular disease. Sponsored by Abbott
Sarajevo	Could neuromodulation via the baroreflex work in heart failure after all? Sponsored by CVRx Inc

Today in the ESC Professional Members' Lounge

09:45 - 10:15	ESC Cardio Talk
10:15 - 10:30	Make the most of your benefits: ESC 365
10:30 - 11:00	Career development: Be a Twitter Pro
11:45 - 12:00	Career development: How to write your CV?
12:15 - 12:30	Career development: Tips for job interviews
12:30 - 13:00	Make the most of your benefits: ESC CardioMed
13:30 - 14:00	Career development: Be a Twitter Pro
14:00 - 14:30	Career development: How to become an active member of the ESC?
14:30 - 15:00	Why Investors at ESC Congress
15:00 - 15:15	Make the most of your benefits: ESC 365
15:15 - 15:30	Make the most of your benefits: ESC CardioMed is evolving - New 3D enhancement
15:40 - 16:40	Professional Horizons (Experts from Associations and Women in ESC)
16:00 - 16:30	New Clinical Case Gallery
17:00 - 17:30	ESC Cardio Talk

Public Event

11:00 - 19:00	
Paris City Hall	Le cœur de Paris bat plus fort

Satellite Symposium: *multi-dimensional GLP-1RAs - positioning their role in treatment of T2D and CVD*
1 September 2019, Sunday, 13.00-14.00
Athens, Village 3, Hall 7 (Level 3)

Chair: Lars Rydén (Sweden)
Subodh Verma (Canada)
Mikhail Kosiborod (USA)

Satellite Symposium - Experts on the spot: *exploring new dimensions in GLP-1RAs and CV risks*
3 September 2019, Tuesday, 16.00-16.30
Duras - The Hub, Hall 7 (Level 2)

Chair: Mikhail Kosiborod (USA)
John Deanfield (UK)
Ben Scirica (USA)

ESC Congress 2019, Paris, France

Please visit us at booth **V100** in the exhibition area to hear more!

Building collaboration
to create new dimensions in patient care



HFpEF: Challenges and opportunities



Prof. John Cleland

Yesterday, at a joint session with the American Heart Association, we heard about the ‘conundrum of heart failure with preserved ejection fraction’ (HFpEF; left ventricular ejection fraction [LVEF] ≥50%). Ahead of further sessions on HFpEF, Professor John Cleland (National Heart and Lung Institute, Imperial College, London and University of Glasgow, UK) describes the current state of play:

“Many patients with heart failure (HF) have an LVEF ≥50%—they are generally older and have multiple comorbidities. When other potential reasons for breathlessness and ankle swelling exist, such as lung disease or obesity, a diagnosis of HFpEF is often missed and diuretics given without further cardiac investigation. Even when an echocardiogram is done, if the LVEF is ‘normal’, it is interpreted as excluding HF. A combination of elevated natriuretic peptides and cardiac imaging is needed to determine whether HF is present and whether it is due to HFpEF, HF with reduced ejection fraction (HFrEF; LVEF <40%) or another cause. The hallmark of HFpEF is left atrial dilation, often accompanied by left ventricular hypertrophy and increased stiffness.

The pathophysiology of HFpEF is heterogenous. Hypertension, left ventricular hypertrophy

and inflammation, possibly driven by obesity, diabetes and epicardial fat deposits, leading to myocardial fibrosis appear important. Many patients have co-existing coronary artery disease, atrial fibrillation and renal dysfunction. Conceptually, there is a spectrum of HFpEF pathophysiology; one extreme is characterised by myocardial hypertrophy and slow early relaxation of the ventricle and the other by infiltration of the myocardium by collagen or amyloid, which arrests filling in mid-diastole, causing a restrictive defect.

For those with an LVEF of 40–49%, the term ‘HF with mid-range ejection fraction (HFmrEF)’ was introduced in the 2016 ESC Guidelines—it caused some controversy but is now accepted as an important innovation. Measurement of LVEF is only accurate to within 5–10%; HFmrEF comprises those who genuinely have an LVEF of 40–49% and also those found to have an LVEF <40% or >50% if subsequently re-measured. HFmrEF is a zone of uncertainty, providing clear separation between HFrEF and HFpEF, where clinicians and trialists are obliged to think twice about what they are doing.

Taking a fresh look at randomised-trial data of patients with LVEF >40% over the last 15 years, it appears that HFmrEF and HFrEF respond similarly to treatment. This has led to suggestions that HFrEF should be re-defined as an LVEF <50% or even <55%. However, there is value in retaining HFmrEF for interpreting trial results. Consider a trial including patients with an LVEF >40% for a treatment already known to be effective for HFrEF. Overall, the trial might be positive because of benefit only in those with HFmrEF

(some of whom would have had an LVEF <40% if re-measured); even if the treatment was ineffective for HFpEF, these patients might be recommended an ineffective therapy based on the positive result of the overall trial. Alternatively, the trial might be neutral overall, due to a lack of effect in HFpEF, leading to patients with HFmrEF being denied an effective treatment. In the future, new categories may be needed; for instance, there are patients with supra-normal LVEF who still have a poor prognosis.¹

To date, trials for HFpEF have not shown clear reductions in morbidity and mortality; however, patients often have other medical conditions that are therapeutic targets, e.g. atrial fibrillation (anticoagulation and optimal rate control) and hypertension. Although guidelines indicate that the treatment of HFrEF and HFpEF should be very different, in clinical practice, because of such comorbidities, patients often receive the same treatment but for different reasons as we will show in a moderated poster presentation tomorrow (Abstract P4148).

This afternoon in a Hot Line Session, we will hear the first results from PARAGON-HF that investigated angiotensin receptor neprilysin inhibition with sacubitril/valsartan vs valsartan alone in HFpEF. In contrast to many other trials of HFpEF, elevated natriuretic peptide levels and echocardiographic evidence of cardiac dysfunction (particularly left atrial dilation) were inclusion criteria in PARAGON-HF. This is the first trial of HFpEF with robust diagnostic criteria; some previous trials

were probably neutral because they included many patients who did not have HF! The results are eagerly awaited, especially following the PARADIGM-HF trial, which showed that sacubitril/valsartan was superior to enalapril for HFrEF, throughout the studied range of LVEF (up to 40%).²

There are still many gaps in understanding about the aetiology, pathophysiology and treatment of HFpEF with a clear need to improve both diagnosis and treatment—further research is a key component to improving the well-being and longevity of our patients.”

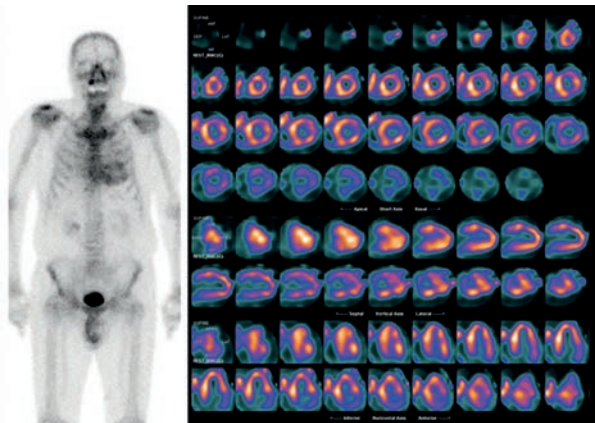
1. Wehner GJ, et al. Eur Heart J 2019 Aug 6. pii: ehz550. doi: 10.1093/eurheartj/ehz550. [Epub ahead of print]
2. McMurray JJ, et al. N Engl J Med 2014;371:993-1004.

Don’t miss!

- **Expert Advice – Focus on heart failure with preserved ejection fraction (HFpEF)**
Today, 11:00 – 12:30; Budapest – Village 5
- **Molecular underpinning of HFpEF**
Today, 14:30 – 15:40; Athens – Village 3
- **Hot Line: PARAGON-HF – Angiotensin Receptor Neprilysin Inhibition in Heart Failure with Preserved Ejection Fraction**
Today, 14:30 – 16:10; Paris – Main Auditorium
- **New hope for HFpEF patients**
Monday, 11:00 – 12:30; Budapest – Village 5
- **Real world heart failures populations**
Monday, 15:45 – 16:35; Moderated ePoster 4 – Poster Area

What’s Your Diagnosis?

BROUGHT TO YOU BY THE EUROPEAN ASSOCIATION OF CARDIOVASCULAR IMAGING (EACVI)



Solution: Transthyretin amyloidosis

The patient was submitted to planar and SPECT scintigraphy with ^{99m}Tc DPD, for the evaluation of the presence of cardiac transthyretin amyloidosis. Planar image (on the left) shows a cardiac uptake of the tracer (graded as Perugini 2) and the SPECT acquisition (on the right) allows the evaluation of the regional uptake of the tracer that is higher in the septal wall and in the inferior wall. Alessia Gimelli, Fondazione Toscana Gabriele Monasterio, Pisa, Italy

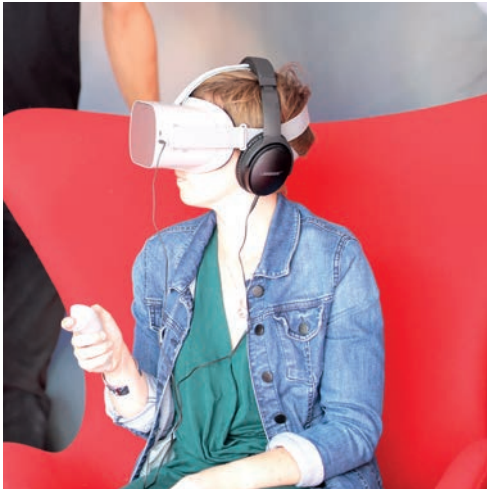


ESC Public Event

Le cœur de Paris bat plus fort at Paris’ City Hall



Visitors to the ESC Public Event learn valuable lessons – CPR workshops, a virtual reality journey through an artery, talks and hands-on demonstrations plus advice on prevention, diagnosis and living with heart disease.



Stemming the tide of rising CIED infections



**Dr. Maria
Grazia Bongiorno**

Cardiac implantable electronic device (CIED) infections are growing at a faster rate than can be accounted for by the rise in the use of these devices.¹

Associated with an increase in hospitalisation, morbidity, mortality and cost, CIED infections represent a significant healthcare issue.² “The risk of CIED infection depends on several factors, and the burden and complexity of operations maintain a pivotal role,” says Doctor Maria Grazia Bongiorno (University Hospital of Pisa, Pisa, Italy) who will be taking part in Tuesday afternoon’s Live in the Box session, with a recorded live procedure of a transvenous lead extraction. “For *de-novo* implant, the risk of infection is 0.5-1.0%, but

this can increase up to 5% for replacement or upgrades. Once a person has a systemic infection, up to 65% of patients will die with conservative treatment, but, even with appropriate treatment, the one-year mortality remains around 15%.”

“The reason for the disproportionate increase in CIED infections is probably due to the fact that we are treating more complex patients—who are often older and have more comorbidities than 10 or 20 years ago—and we are treating them with more complex devices.”

Dr. Bongiorno thinks that prevention is the best cure. “Antibiotic prophylaxis, with intravenous administration one hour before the procedure, is fundamental. Post-procedure antibiotic administration, on the other hand, is not recommended. Cardiologists should also take care to reduce the factors that increase the risk of infections, such as pocket haematomas, which can be prevented with

proper management of anticoagulants and proper use of electrocautery. In high-risk patients, an antibacterial envelope may reduce the chances of developing an infection. CIED implantations should be avoided in patients who have had fever the day before the procedure.” Any reintervention carries a risk of infection. “In high-risk patients, it is preferable to delay reintervention if possible,” says Dr. Bongiorno. “When any implant is required, it is best if it is carried out as a one-step process and that temporary implantations are avoided.” Advances in device technology should help to protect against infection. “Leadless pacemakers and subcutaneous implantable cardioverter defibrillators are probably less susceptible to infection and, especially for the latter, the occurrence of systemic infection is unlikely and treatment is easier,” she says.

Treatment of CIED infections is already well defined and involves complete removal of the device and the lead together with tailored antibiotic therapy. “There are no half

measures,” explains Dr. Bongiorno, “and it has been shown that attempts at conservative approaches generally lead to relapse. Leads removal should be performed percutaneously at an experienced centre and, with the correct tools and facilities, we can achieve a clinical success in more than 98% of cases.”

In conclusion, Dr. Bongiorno says that, “Carefully planned prophylaxis, with management of risk factors, should reduce the risk of CIED infection and, for those with an infection, aggressive treatment following removal can improve survival.”

1. Voigt A, et al. J Am Coll Cardiol 2006;48:590-591.
2. Bongiorno MG, et al. Eur Heart J 2019;40:1870-1872.

Don't miss!

- **Tips and tricks to prevent, diagnose and treat cardiac implantable electronic device (CIED) infections**
Today, 16:40 - 17:50; Berlin - Village 4
- **Live in the Box: Transvenous lead extraction**
Tuesday, 14:30 - 15:40; Centre Stage - The Hub

The Tour de Coeur has its own Tour de France!

Promoting the importance of physical activity, the now-famous group of Swiss cardiologists completed their ninth annual ‘Tour de Coeur’ by cycling over 500 km from Geneva to the ESC Congress venue, arriving in Paris yesterday.



In 90 seconds

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*Rules and regulations for participation available on dedicated desks.

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#ESCBreakfastBuzz
Sunday to Tuesday - 08:00 to 08:20

Case Corner

A 16-year-old boy suffered a cardiac arrest due to ventricular fibrillation during soccer practice. Following successful resuscitation, left ventricular ejection fraction (LVEF) was globally reduced with no ST elevation on ECG. Coronary CT (figure) and coronary angiography revealed the absence of the ostium of the left coronary artery while the left system was retrogradely perfused from the right coronary artery. He underwent CABG, LVEF normalised and he was discharged with no devices.

Submitted by Doctor Nobunari Tomura (Omihachiman Community Medical Center, Shiga, Japan) (FP# 2127)

Want to know more about left main coronary artery atresia?

Join the Cardiologists of Tomorrow’s Best Clinical Cases Awards Session:
Today, 14:30 - 15:40; Hugo - The Hub

And there are more interesting cases at Case Corner 1 and 2 in the Poster Area today!

Is exercise the best medicine?



**Prof.
Sanjay Sharma**

We put this question to Professor Sanjay Sharma (St. George's, University of London, London, UK) and asked him to pick out abstracts at ESC Congress 2019 that further inform about the positive effects of exercise.

“The benefits of physical activity on the cardiovascular system are unrivalled. We already know that individuals who exercise regularly live at least 3 years longer than sedentary counterparts and are around 50% less likely to have an adverse cardiac event later in life, and this is due to a myriad of favourable effects, including improvements in blood pressure, the lipid profile and insulin sensitivity. Exercise is also beneficial for vascular ageing. Tomorrow, we will hear about a Swiss study that examined large artery stiffness and retinal microvascular diameter in older adults who were healthy and active (n=38), healthy and sedentary (n=36) or sedentary with ≥2 cardiovascular risk factors (n=84) (Abstract 4095). Active participants were less likely to have large arterial stiffness and more likely to have favourable retinal vessel diameters than sedentary people. Furthermore, when sedentary individuals with ≥2 risk factors underwent 12 weeks of high-intensity training, improvements in retinal microvasculature were observed. Large artery changes were not significantly different but may have been seen with time—at EuroCMR 2019, a study demonstrated reduced aortic stiffness and a ~4-year

reduction in vascular ageing in novice athletes who trained for and completed their first marathon.¹

People who don't regularly exercise generally have higher resting heart rates (RHR) and we know that elevated RHR is a risk factor for heart failure. Tomorrow, a large study in 1,008,485 Swedish young men will be presented, which demonstrates a positive association between RHR and the development of dilated cardiomyopathy over 34 years' follow up (adjusted hazard ratio 1.58; 95% confidence interval 1.37-1.83) (Abstract P3821). This study provides more evidence that a slower RHR is beneficial—that's another improvement that regular exercise can bring.

ESC Guidelines recommend a minimum of 30 minutes of moderate intensity exercise five times a week but state that additional benefits can be gained from twice this amount.² In fact, the most benefit can be gained from physical activity around five times higher than currently recommended levels, but it's important to emphasise that any exercise is better than none and that simple 'free' exercise, such as regular brisk walks in the park can contribute towards improved cardiovascular health.

But is exercise beneficial for people who already have established atherosclerotic cardiovascular disease (CVD)? Yes, is the answer, according to today's presentation of a South Korean study of 441,798 individuals with and without CVD (Abstract 1272). Of note, after around 6 years' follow up, individuals with CVD appeared to benefit from physical activity to a greater extent: every 500 metabolic equivalents (METs)-min/week increase in physical activity resulted in a 14% reduction in mortality in those with CVD and a 7% reduction in those without.



Apart from cardiovascular benefits, exercise is known to reduce the risk of developing certain malignancies. Yesterday, a study from Israel revealed that physical fitness may also improve survival in cancer patients (Abstract P626). The cumulative probability of death in patients who developed cancer was significantly lower in fitter than less fit patients.

Exercise is undeniably the most effective, accessible and cheapest therapy available and has very few side effects.

But are there situations where exercise is detrimental? We occasionally hear of sudden cardiac deaths in young athletes, often due to undetected inherited conditions, including hypertrophic cardiomyopathy. Until recently, patients diagnosed with these conditions were generally advised not to participate in sports. However, due to evolving knowledge, a recent position statement from the European Association of Preventive Cardiology (EAPC) takes a less restrictive approach for

asymptomatic or mildly symptomatic patients with cardiomyopathies.³ A poster on Tuesday reviews the data from 27 papers and also supports 'taking off the shackles' and moving away from prohibition to a safe and sensible level of exercise in patients with hypertrophic cardiomyopathy (Abstract P5548)."

Prof. Sharma concludes, "It's clear that the benefits of exercise are obtained regardless of age, sex, race and the presence of most comorbidities—it's never too late to start."

1. <https://esc365.escardio.org/Congress/EuroCMR-2019/Young-Investigator-Award-session/191529-training-for-a-first-time-marathon-reverses-vascular-ageing>
2. Piepoli M, et al. Eur Heart J 2016;37:2315-2381.
3. Pelliccia A, et al. Eur Heart J 2019;40:19-33.

Don't miss!

- **Exercise at the extremes - U-shaped curve for cardiovascular risk?**
Monday, 07:30 - 08:15; Duras - The Hub
- **Physical activity, exercise, and sports**
Monday, 14:30 - 15:40; Agora 2 - Poster Area
- **Expert Advice - Cardiovascular evaluation before competitive sports**
Tuesday, 14:30 - 15:40; Prague - Village 2

ESC Geoffrey Rose Lecture on Population Sciences

Regional research informs global health



**Prof.
Karen Sliwa**

Population studies are the lifeblood of Professor Karen Sliwa (University of Cape Town, Cape Town, South Africa), who will deliver this morning's ESC Geoffrey Rose Lecture on Population Sciences.

Prof. Sliwa's studies in Africa have helped to map previously unknown cardiovascular disease patterns throughout the region—leading to policy changes—and paved the way for further global cardiovascular health studies. A world leader in cardiovascular disease in pregnancy and postpartum, her work has been instrumental in helping to establish the ESC EURObservational Programme on Peripartum Cardiomyopathy global registry, which she chairs jointly with

Professor Johann Bauersachs. Across a range of areas, her involvement in setting up registries led to the initiation of a number of major research projects and programmes, and has helped train doctors across Africa. In 2019, Prof. Sliwa started a new challenge when she began her two-year term as President of the World Heart Federation (WHF).

A German national, Prof. Sliwa has spent much of her working life on the African continent. Her lecture—"Heart failure can affect everyone"—draws on the research she started early in her career. "I immigrated to South Africa in 1992 and worked for 18 years in Soweto. It was there, at the Chris Hani Baragwanath Hospital, that I started what became a ground-breaking project, the Heart of Soweto Study. This project described the cardiovascular health of people living in Soweto over a period of three years. Because the roughly three million people living in Soweto have access to only one hospital—my hospital—everyone with a heart problem came to us. This allowed us to get a very detailed

description of the different cardiovascular diseases in over 8,000 people." A primary publication in *The Lancet* in 2008,¹ was followed by over 30 subsequent reports on different aspects of heart disease. "Before this project, a lot of the information had just not been known for African populations," she says. Prof. Sliwa then joined forces with regional cardiovascular colleagues to expand her research across other African countries, in the Heart of Africa studies. "These studies investigated a range of cardiovascular diseases, including heart failure, pulmonary hypertension, cardiac disease in pregnancy and, of course, peripartum cardiomyopathy."

She is proud of speaking up for those who have no voice. "My research has focused mainly on diseases of poverty, in people who have poor access to healthcare. It has traditionally been difficult to get people in more affluent regions, such as North America and much of Europe, to be interested in global health. And, in the past, many journals have not been keen to publish these types

of data. With the Heart of Soweto study, and its publication in *The Lancet*, we managed to break through these barriers." She is also proud that others have been inspired by her work to explore health issues in their own countries. "For example, one of my PhD students and WHF Emerging Leader, Dike Ojji, was first author on the CREOLE study, published in *New England Journal of Medicine* in March this year, which investigated the best two-drug combination of antihypertensive agents for use in black African patients.² I want to encourage researchers from all countries and to say that it is worthwhile setting up research that is relevant for your region and submitting to high-impact journals. We need this type of research because we can all learn from population studies."

1. Sliwa K, et al. Lancet 2008;371:915-922.
2. Ojji DB, et al. N Engl J Med 2019;380:2429-2439.

Don't miss!

- **ESC Geoffrey Rose Lecture on Population Sciences**
Today, 10:20 - 11:00; Prague - Village 2

Air pollution is a bigger killer than tobacco



Prof. Thomas Münzel

Air pollution is killing more people every year than smoking. This statement may be surprising to some, but not to Professor Thomas Münzel and his group (University Medical Center of the Johannes Gutenberg University, Mainz, Germany) who revealed that the air pollution-related disease burden is much greater than previously thought.¹

“Air pollution comprises a mixture of gases and particulate matter,” he explains. “The type of damage caused by inhaled particles depends on their size. Coarse particulate matter (<10 µm; PM₁₀) tend to lodge in the lung tissues, causing respiratory diseases. Particles that are fine (<2.5 µm; PM_{2.5}) and ultrafine (<0.1 µm; nanoparticles) enter the bloodstream, and importantly also the brain, and infiltrate the vascular tissue leading to endothelial dysfunction, increased oxidative stress, inflammation and, ultimately, cardiovascular disease (CVD),” he says. It is also important to note that recent research indicates that the mechanisms underlying noise-induced vascular dysfunction are strikingly similar to that caused by air pollution, and hence a similar acceleration of the atherosclerotic process is to be expected for the latter.³

In itself, the negative health impact of air pollution is not new. “According to the Global Burden of Diseases, airborne particulate matter was the fourth greatest risk factor for death in 1990. In 2015, it was the fifth. It surprises me that while other high-ranked risk factors, such as high blood pressure, smoking, high plasma glucose and high cholesterol, attract a great deal of attention, the impact of pollution seems to pass under the radar.” He admits that this

is probably related to the fact that pollution is a policy problem. “With the other risk factors, individuals can tackle the problem themselves, such as stopping smoking or changing diet. With air pollution, we need politicians to step up and do something to improve air quality.” In the case of Europe, drastic measures are needed. “Europe has the highest annual mean air quality limit for PM_{2.5} concentrations,” says Prof. Münzel. “At 25 µg/m³, the limit is double that of the US and two-and-a-half-times the guideline concentration set by the World Health Organization (WHO).”

Prof. Münzel and his group made headlines with a new estimate for excess cardiovascular deaths caused by air pollution.¹ “Using an extended database-based Global Exposure Mortality Model, we found that the 2015 global mortality rate due to a combination of PM_{2.5} and ozone almost doubled from previous estimates of 4.55 million to 8.79 million. Compare this with WHO’s estimated 7.2 million deaths/year from cigarette smoking.” Prof. Münzel continues, “In Europe alone, almost half of the 790,000 excess deaths per year due to ambient pollution relate directly to ischaemic heart disease and stroke (Figure). The number of deaths due to CVD is likely to be higher when you include deaths from arterial hypertension and diabetes mellitus, known risk factors for CVD.”

Prof. Münzel thinks it’s time for urgent action. “We must raise awareness of the problem among politicians,” he says. “We need to identify whether lifestyle changes such as exercise, specific cardiovascular drugs or better urban planning to improve environmental quality and human well-being may impact significantly on the adverse health effects caused by environmental stressors. Further, we need to demand effective emissions control, to eliminate the use of fossil fuels and biomass burning and to move to clean energy sources. We also need to identify the main sources of air pollution specific to different countries and tailor pollution control measures appropriately.”

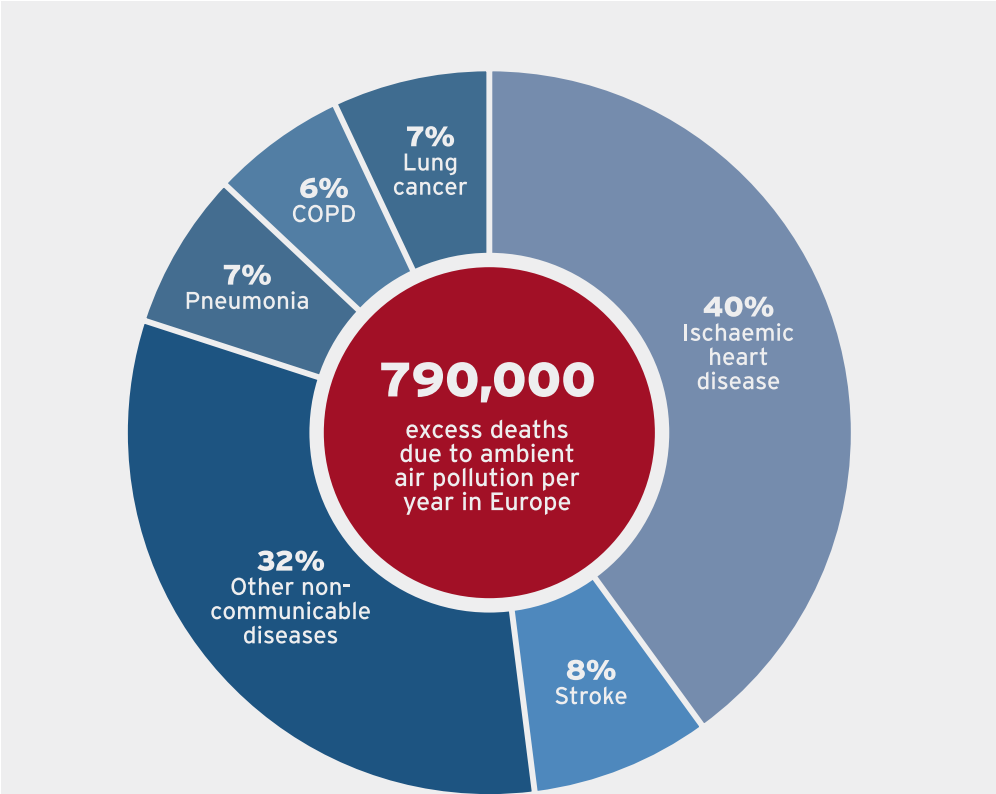


Figure. Estimated excess mortality attributed to air pollution by contributing disease categories¹

COPD, chronic obstructive pulmonary disease

Reprinted from Lelieveld J, et al. Cardiovascular disease burden from ambient air pollution in Europe reassessed using novel hazard ratio functions. Eur Heart J 2019;40:1590-1596. By permission of Oxford University Press on behalf of the European Society of Cardiology.

1. Lelieveld J, et al. Eur Heart J 2019;40:1590-1596.
2. Münzel T, et al. Eur Heart J 2018;39:3543-3550.
3. Münzel T. Cardiovasc Res 2019 Jun 23. pii: cvz134. doi: 10.1093/cvr/cvz134. [Epub ahead of print]

Don't miss!

- **Environment and cardiovascular health**
Monday, 11:00 - 12:30; Camus - The Hub

Outstanding abstracts on air pollution from our Young Investigators:

- **Short-term effects of exposure to ambient fine particulate matter on out-of-hospital cardiac arrest: a**

nationwide case-crossover study in Japan (Abstract 1271)

Blockbusters from the Young in preventive cardiology
Today, 10:10 - 10:50; Agora 2 - Poster Area

- **Sex and age differences in short-term exposure to ambient fine particulate matter and out-of-hospital cardiac arrest: a nationwide case-crossover study in Japan (Abstract 2284)**
Blockbusters from the Young - Mental Health and Environmental Challenges in Cardiovascular Disease
Today, 15:50 - 16:30; Agora 1 - Poster Area

Controversies in hypertension management: How low can you go?



Prof. Bryan Williams

The American College of Cardiology/American Heart Association guidelines on hypertension caused quite a stir when they recommended stringent goals for blood pressure (BP) in 2017.¹ A debate session this afternoon will hear arguments for and against stricter goals and will also consider whether lifestyle interventions are effective in improving outcomes.

Professor Bryan Williams (University College London, London, UK), ESC Task Force Chair for the 2018 ESC/European Society of Hypertension Guidelines² and a presenter in the debate sets the scene: “In a nutshell, whereas the US guidelines recommend a fairly aggressive blanket approach of reducing BP to 130/80 mmHg for all patients, the new European goals suggest a more tailored, graded approach. The European guidelines recommend reductions of BP below 140/90 mmHg for all patients, with further reductions for young fit patients to 130/80 mmHg and 120-<130/80 mmHg, if possible and if tolerated. When it comes to elderly patients, systolic BP goals of 130-<140 mmHg are recommended.”

Prof. Williams argues that while the decrease in mortality seen in the SPRINT trial³ following

systolic BP reduction to 120 mmHg cannot be denied, treatment is about balancing benefits and risk. “Some patients, particularly the elderly, are unlikely to be able to tolerate the side effects of treatment that will accompany intensive treatment, which is why it is important to tailor treatment to suit the individual. Also, data from observational studies suggests that excessive BP lowering can be harmful.”

He is keen to hear the cases for and against the impact of lifestyle interventions. “Lifestyle interventions promote general good health and can reduce BP and treatment requirements. However, because there are no randomised trials, we don’t know if they actually contribute to reducing cardiovascular events or deaths. The other

problem is that this approach is not feasible long-term for most people, who are unable to maintain the changes.”

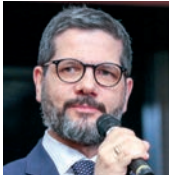
Prof. Williams concludes that, “The discussion generated by the US BP guidelines is still going strong. I am very excited to be taking part in this afternoon’s debate and I look forward to seeing where the consensus of opinion will lie.”

1. Whelton PK, et al. J Am Coll Cardiol 2018;71:e127-e248.
2. Williams B, et al. Eur Heart J 2018;39:3021-3104.
3. SPRINT Research Group. N Engl J Med 2015;373:2103-2116.

Don't miss!

- **Controversies in hypertension management**
Today, 16:40 - 17:50; Duras - The Hub

The evolving role of multimodality imaging



Prof. Bogdan A. Popescu

Why is multimodality imaging gaining such prominence in cardiology and at ESC Congress 2019? Professor Bogdan A. Popescu (University of Medicine and Pharmacy ‘Carol Davila’ - Eurocolab, Institute of Cardiovascular Diseases ‘Prof. Dr. C. C. Iliescu’, Bucharest, Romania), Past-President of the European Association of Cardiovascular Imaging (EACVI), explains:

“The concept of multimodality imaging has become increasingly relevant from a clinical perspective—it makes sense to address the clinical question for a specific patient with the best-suited technique in order to choose the most appropriate therapy and not just use the technique that is most familiar or available.

The ESC with the EACVI have worked hard over a number of years to bring all the separate imaging entities under a single umbrella and make the shift to multimodality imaging. The EACVI itself was

created in 2013 by merging the European Association of Echocardiography with the ESC Working Groups on Cardiac Magnetic Resonance (CMR) and Nuclear Cardiology & Cardiac Computed Tomography (CT). Several imaging modalities are often required for the best patient care and it was a logical step to move from ‘modality-oriented’ groups to a unified ‘patient-oriented’ association with a re-structured board.

We are now in a very good position, having aligned all our major assets. We have the flagship journal, *European Heart Journal - Cardiovascular Imaging*, a series of recommendation papers involving multimodality imaging and, rather than separate events, the first unified multimodality imaging EACVI Congress will be held in December 2020.

At the EACVI, we believe that the contribution of the young community is crucial and we are proud that our Association has the largest proportion of young members. They are really enthusiastic about adopting the open-minded way of thinking and as part of our evolution towards multimodality imaging, we now want to ensure they receive the best training possible.

The ideal theory for the multimodality imaging concept is there, but we must conquer difficulties in practice, such as variations in the availability of techniques

and of training opportunities in different European countries. It is a complex process, but I think we are on the right path. It is heartening now that the programme of the ESC Congress 2019 reflects the shift. There are presentations dedicated to specific techniques but there are also sessions focussing on multimodality imaging.

Yesterday, we had an important ‘Meet the Experts’ session that looked at cardiac imaging in challenging patient subsets: a patient with advanced kidney disease, a patient with a cardiac device and a patient with a prosthetic heart valve. The point was made that it is not just the disease plus recommended algorithms that guide the choice of imaging modality, but that certain characteristics of the patients also contribute to the decision-making process.

Something different for this morning is a session entitled ‘Multimodality imaging quiz: the whole is greater than the sum of its parts,’ organised by the Cardiologists of Tomorrow. Four clinical problems will be presented from the perspective of one modality (CMR, CT, echocardiography and nuclear imaging), then the alternative techniques will also be discussed. This afternoon, we have the opportunity to showcase the best research with a ‘Blockbusters from the Young’ session featuring high-graded abstracts on multimodality imaging in coronary artery disease.

In a symposium on EACVI recommendations on Tuesday, the focus will be on major clinical problems, addressing dilated cardiomyopathy, aortic stenosis and congenital heart disease and will discuss how imaging can be employed in these settings.

An essential update on multimodality imaging, part of the ‘Cardiology in 4 days’ track, will take place on Tuesday afternoon to discuss how multimodality imaging can be used in suspected acute coronary syndrome, cardiomyopathies, endocarditis and arrhythmias.

We look forward to discovering more about where multimodality imaging can take us—watch this space!”

Don’t miss!

- **Multimodality imaging quiz: the whole is greater than the sum of its parts**
Today, 08:30 – 10:00; Hugo – The Hub
- **Blockbusters from the Young – Multimodality Imaging in coronary artery disease**
Today, 10:10 – 10:50; Agora 1 – Poster Area
- **Updated recommendations on multimodality imaging from the EACVI**
Tuesday, 11:00 – 12:30; Nicosia – Village 1
- **Multimodality cardiac imaging in clinical practice: Essential Update**
Tuesday, 16:40 – 17:50; Amsterdam – Village 1

Cardiac biomarkers – the good, the bad and the new



Prof. Christian Müller

Professor Christian Müller (University Hospital Basel, Basel, Switzerland), Chair of the ESC-Heart Failure Association Study Group on Diagnosis and a member of the ESC-Acute Cardiovascular Care Association Biomarker Study Group, knows exactly what constitutes the ideal cardiac biomarker: objective, reproducible, fast, quantitative, inexpensive, widely available and well studied. He uses high-sensitivity cardiac troponin (hs-cTn) as a good example of some of the key features for success.

“hs-cTn is the most important advance in cardiac biomarkers in the last decade due to the conduct of very large diagnostic studies and to extensive clinical development. Because of this, very soon after the first assay became clinically available in 2011, testing was incorporated into ESC Guidelines. Subsequently, many manufacturers were able to launch their own hs-cTn assays. In 2015, ESC Guidelines included a rapid assessment algorithm based on hs-cTn and sampling at 0 and 1 hour to rule-in and rule-out acute myocardial infarction (AMI). Through strong collaborative efforts

between assay manufacturers and academic investigators, data were generated so that this scheme universally applies to all available hs-cTn assays.

So, not only did we have detailed information on the biomarker itself, but manufacturers and academic investigators together thoroughly evaluated diagnostic performance and also provided guidance for clinicians on how to use them.

Biomarkers assays are run very successfully in large clinical chemistry platforms operated by hospital central laboratories—they have fantastic standardisation and from an economic perspective, this is the way that most blood tests are run. However, point-of-care biomarker measurement has been important in cardiovascular medicine for the last few years as on-the-spot measurements are needed in some situations, for example, in outpatient settings, in small hospitals or to reduce time delay when results are needed urgently in the emergency department. This highlights another area where progress is being made with hs-cTn testing. Through technical modifications, a point-of-care assay is currently undergoing clinical evaluation, with promising pilot study data, which may substantially broaden the clinical settings in which testing, with all its benefits, can be used.”

Another success story is that of the clinical implementation of B-type natriuretic peptide (BNP) and NT-proBNP into clinical care pathways for patients presenting with shortness of breath. Again, based on solid data obtained from academic collaborations, as well as academic-industry collaborations, current ESC Guidelines recommend, with a class Ia recommendation, the use of BNP/NT-proBNP concentrations as a key element in the early diagnosis of heart failure.

Prof. Müller now explains an area where biomarkers are not so well developed. “There are a multitude of cardiac biomarkers being evaluated in various studies and various disease states, but it is important to add a cautious note, particularly with heart failure, where there has been some over-enthusiasm. There is still a huge unmet need in heart failure management and there was some hope that cardiac biomarkers could help to better phenotype patients and guide improved treatment. However, some biomarkers have been put forward to clinicians where only a very superficial understanding exists on pathophysiology, the cells/organs that produce the biomarkers and how the information provided should be used. Relatively quick and easy studies have been used to show that a certain biomarker concentration is associated with adverse outcomes, but these data are not clinically useful alone and we need to be conservative with what we recommend to clinicians without sufficient evaluation.”

The search for new biomarkers continues in other areas. For example, the recent EU-funded RiskyCAD has helped to identify new biomarkers

in the field of lipidology. RiskyCAD examined mechanisms of lipid activity at the molecular level and analysed specific species of lipids linked to inflammation and cardiovascular disease in an attempt to identify novel lipid and small RNA circulating biomarkers. A new diagnostic test involving distinct ceramide species is currently undergoing evaluation for its possible clinical utility. In addition, new human mouse models of coronary artery disease and plaque vulnerability were also developed during RiskyCAD that may support further research in basic research, new biomarkers, new treatment targets and drug screening.

Prof. Müller concludes, “Rigorous studies are needed in the development of new cardiac biomarkers to ensure we have a strong link between mechanisms and measurements, and that an adequate level of evidence and knowledge is reached to ensure we can incorporate the information provided by the biomarker in a way that most benefits patients.”

Don’t miss!

- **Non-troponin biomarkers in acute coronary syndromes**
Today, 14:30 – 15:40; Science Box 2 – Poster Area
- **Hot Line: HISTORIC - High-Sensitivity cardiac Troponin On presentation to Rule out myocardial Infarction: A stepped-wedge cluster randomised controlled trial**
Today, 16:40 – 17:52; Paris – Main Auditorium
- **Cardiac troponins and other biomarkers in acute coronary syndromes**
Monday, 11:00 – 12:30; Agora 1 – Poster Area

ESC Andreas Grüntzig Lecture on Interventional Cardiology

Striking the right balance



Dr. Roxana Mehran

Doctor Roxana Mehran (Icahn School of Medicine at Mount Sinai, New York, New York, USA), who will deliver the Andreas Grüntzig Lecture tomorrow, believes that teamwork is the future for interventional cardiology and encourages women to join what she describes as “a really interesting and rewarding subspecialty.”

A widely published author, recipient of numerous awards, and long-term collaborator with regulatory agencies, Dr. Mehran’s many achievements during her 22 years in interventional cardiology include spearheading ground-breaking research and leading the development of not one, but two coordination centres to support multicentre

trials in interventional procedures. It is perhaps unexpected then that she was taken aback to be asked to deliver the Andreas Grüntzig Lecture. “I was very honoured and at the same time really quite surprised when I heard,” she says. It is fitting that the lecture is being given by someone who felt an immediate affinity to interventional cardiology. “My inspiration for the field was really sparked on the first day of being in the cath lab. I immediately saw the joy not only of working in a team to help the patient but also in getting results there and then.”

The first female fellow ever to train in interventional cardiology at Mount Sinai, Dr. Mehran is pleased and proud to have paved the way for other women to follow. “When I started in interventional cardiology, I thought it was really strange that there were no other women in this field and felt strongly that talented women should be encouraged to move into it. I can honestly say that, even more than the research papers I’ve published, I consider one of my biggest achievements to be having inspired more women to become

interventional cardiologists. The numbers of women entering the field are continuing to increase and I feel sure that over time the numbers of female practitioners will equal those of men.”

Dr. Mehran thinks that the focus of her lecture—“The evolution of dual antiplatelet therapies/antithrombotic regimens in interventional cardiology: a thirty year journey”—is very much in keeping with the spirit of Andreas Grüntzig’s approach. “He was such an incredible innovator that, instead of presenting a historical account of pharmacological therapy, I have chosen to emphasise where we are now, highlighting the importance of drug-device synergy, and to discuss where this journey may take us.” She considers that while there is so much to be done in interventional cardiology and, according to her, so little time to achieve it, this is an exciting time for the field. “The message I would like to pass on is that if we are going to make progress, we need to join forces. We can no longer act as individuals in this field. Instead we need to work hand in

hand as teams to take care of our patients with cardiovascular disease.” In addition to this, information on research and education has moved beyond distinct academic centres. “Interventional cardiologists are now working in a global arena and full dissemination of information, through technology and social media, is the way forward. A more pragmatic, data-sharing approach should help us to find solutions to treatment problems, and so we must all learn to share our data, our expertise, and our tips for taking care of patients.”

“Combining global cooperation with individual patient care is going to be the greatest challenge for interventional cardiologists.”

Don’t miss!

- **ESC Andreas Grüntzig Lecture on Interventional Cardiology**
Monday, 15:50 - 16:30; Tashkent - Village 7

Heart Healthy Cities: Reducing the urban CVD burden

Growing urbanisation is a reality. By 2050, over two-thirds of the world’s population is expected to live in urban areas,¹ and these environments pose particular challenges for cardiovascular health in terms of air and noise pollution and resulting stress.

Strategies to combat urban-associated damage to cardiovascular health require commitment from policymakers to foster heart-healthy environments and ensure that healthy choices are available and accessible to all citizens.

Relentless in its mission to reduce cardiovascular disease, the ESC is proud to announce that Paris will be the first host for a new initiative: Heart Healthy Cities.

At a meeting at Paris City Hall tomorrow, ESC Advocacy is bringing together local authorities and experts to ensure that cardiovascular health is high on the policy agenda and to formulate a concrete action plan to raise awareness and reduce the urban burden.

The public is encouraged to attend and actively participate in the meeting, which will feature presentations from scientific experts on air quality, how to be prepared for a cardiac emergency, as well as panel discussions with local politicians. And once the meeting is over, the efforts will not stop. The Heart Healthy Cities initiative will be sustained over time and developed further at subsequent ESC Congresses.

ESC Advocacy works to bring together scientific experts and politicians to encourage evidence-based policy making. Professor Lina Badimon (IR-Hospital de la Santa Creu I Sant Pau, Barcelona, Spain), Chair of the ESC Advocacy Committee, says, “This is a turning point in ESC Advocacy. It is a forward-looking initiative that aims to support municipalities in addressing the urban cardiovascular challenge by means of scientific-based interventions. I am so pleased that Paris wants to join forces with the ESC in this new endeavour, and I look forward to progressing it with the future ESC Congress hosts, Amsterdam and London.”

The inaugural Heart Healthy Cities meeting will take place in Paris City Hall: Monday; 14:00 - 18:00

1. <https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf>

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Nuffield Department of POPULATION HEALTH



ESC Working Group Cardiovascular Pharmacotherapy



Eating for cardiovascular health – it’s all about process



Prof. Monique Verschuren

A healthy diet for a healthy heart. But with advancing research, it is becoming more and more difficult to understand just what a ‘healthy’ diet is.

Professor Monique Verschuren (Centre for Nutrition, Prevention and Health Services of the National Institute for Public Health and the Environment, Bilthoven, Netherlands), one of the speakers in yesterday’s session ‘Controversies in dietary fat’, understands why it can seem complex. “Take for example fats. People do not always recognise foods that contain a lot of saturated fatty acids. Also the continuing debate about saturated fats, and results of ongoing research that gives more insight into the effect of different types of saturated fat (showing differential effects) can be very confusing for the general public.”

Her advice is to keep it simple. “It is better to focus on dietary patterns than individual

foods,” she says. “Eating less salt and less sugar is in itself valid advice, but it is hard for people to know how to go about this and, importantly, to stick to it long term.”

“Probably the most important message to give patients, and the general public, is to eat as little ultra-processed food as possible.”

“People don’t realise how much sugar, fat and salt is ‘hidden’ in ultra-processed food. For instance, some cookies contain high levels of salt, something people might not expect to find in a sweet food. Also, white bread has lost a lot of the healthy parts of the grain. So avoiding ultra-processed foods already ticks a lot of the boxes for healthy eating, and it is advice that is easy for people to understand and to follow,” thinks Prof. Verschuren. This should be combined with a plant-based diet, rich in fruit and vegetables, and moderate—or no—alcohol consumption.

It’s not all about the quality of the food, however. The balance between the quantity of food we eat and our level of physical

activity is more and more disturbed, leading to a rise in obesity and type 2 diabetes, important cardiovascular disease risk factors. Prof. Verschuren acknowledges that this is a challenge, noting that, “In today’s society, where there is a fast-food outlet on every corner, it is harder for individuals to make the right dietary choices.”

Education and support will help to point individuals in the right direction for a healthy diet. But this will not be enough to improve the dietary intake of people on a large scale. Our food environment has got to change for the better. “And there needs to be more efforts from industry to reduce the sugar, fat and salt content of foods,” says Prof. Verschuren. “We know that messages about a healthy diet tend to reach mainly the more educated members of society. We want everyone to have access to a healthy diet and managing the content of foodstuffs before they reach the consumer can significantly help towards this. This is already happening in some countries but it is often done on a voluntary basis and the progress is slower than we would like to see.” She notes that restrictions on the numbers of outlets selling unhealthy food and on advertising, as has been successfully done for children in some countries,

may also help towards improving the cardiovascular health of our societies.

Don’t miss!

- **What’s hot on the plate?**
Today, 08:30 – 10:00; London – Village 2

Pick of the posters:

Monday

- A higher habitual flavonoid intake is associated with a lower risk of atrial fibrillation (P3783): 08:30 – 12:30
- Dimethylguanidino valerate a lifestyle related metabolite associated with future coronary artery disease and cardiovascular mortality (P4495): 14:00 – 18:00

Tuesday: 14:00 – 18:00

- Salt consumption as a predictor of cardiovascular events among hypertensive patients: a 5-year follow-up study (P6221)
- Potato consumption is associated with total and cause-specific mortality: a population-based cohort study and pooling of prospective studies with 73,717 participants (P6229)
- Impact of whole grain consumption on arterial stiffness. Results of the Corinthian cross-sectional survey (P6255)

Sunday, September 1, 2019

13:00-14:00

Sarajevo – Village 5

Organized by



Satellite Symposium

Achieving the new BP target: from control to protection

Chairpersons:

G. Mancia (Italy)
C. Venkata S. Ram (India)

Speakers:

G. Mancia (Italy)
N. Poulter (UK)
C. Venkata S. Ram (India)
J. Wolf (Poland)

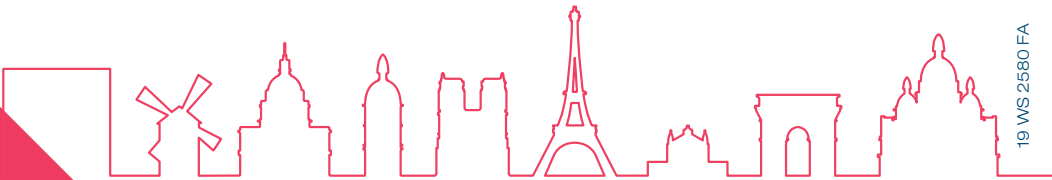
Don’t forget

**Satellite Symposium
Experts on the Spot**

**Optimizing heart failure care:
where do we stand?**

Chairpersons: **M. Cowie** (UK), **C. Saldarriaga** (Colombia)
Speakers: **M. Cowie** (UK), **T. N. P. Do** (Vietnam),
J. A. Magana Serrano (Mexico), **C. Saldarriaga** (Colombia)

Sunday, September 1, 2019, **10:15-10:45**
Camus – The Hub



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